Annex 555

"Restoring the Quality of our Environment: Report of the Environmental Pollution Panel for the President's Science Advisory Committee", *The White House*, November 1965

RESTORING THE QUALITY OF OUR ENVIRONMENT



Report of The
Environmental Pollution Panel
President's Science Advisory Committee

THE WHITE HOUSE
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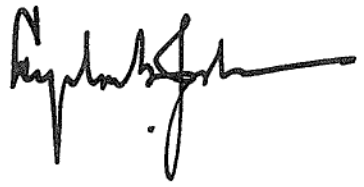
November 5, 1965

Ours is a nation of affluence. But the technology that has permitted our affluence spews out vast quantities of wastes and spent products that pollute our air, poison our waters, and even impair our ability to feed ourselves. At the same time, we have crowded together into dense metropolitan areas where concentration of wastes intensifies the problem.

Pollution now is one of the most pervasive problems of our society. With our numbers increasing, and with our increasing urbanization and industrialization, the flow of pollutants to our air, soils and waters is increasing. This increase is so rapid that our present efforts in managing pollution are barely enough to stay even, surely not enough to make the improvements that are needed.

Looking ahead to the increasing challenges of pollution as our population grows and our lives become more urbanized and industrialized, we will need increased basic research in a variety of specific areas, including soil pollution and the effects of air pollutants on man. We must give highest priority of all to increasing the numbers and quality of the scientists and engineers working on problems related to the control and management of pollution.

I am asking the appropriate Departments and Agencies to consider the recommendations and report to me on the ways in which we can move to cope with the problems cited in the Report. Because of its general interest, I am releasing the report for publication.



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ENVIRONMENTAL POLLUTION PANEL

JOHN W. TUKEY, *Chairman,* Professor of Mathematics, Princeton University, and Associate Executive Director, Research—Communications Sciences Division, Bell Telephone Laboratories

Martin Alexander, Associate Professor of Soil Science, New York State College of Agriculture, Cornell University, Ithaca

H. Stanley Bennett, Dean, Division of Biological Sciences, University of Chicago

Nyle C. Brady, Director of Office of Science and Education, U.S. Department of Agriculture (until August 31, 1965), Director of the Cornell University Experiment Station, Director of Research, New York State College of Agriculture, Cornell University, Ithaca

John C. Calhoun, Jr., Science Advisor to the Secretary of the Interior (until February 5, 1965), Vice President for Programs, Texas A & M University System, College Station

John C. Geyer, Chairman, Department of Sanitary Engineering and Water Resources, The Johns Hopkins University, Baltimore

Aarie J. Haagen-Smit, Professor of Biochemistry, California Institute of Technology, Pasadena

Norman Hackerman, Vice Chancellor for Academic Affairs, University of Texas, Austin

James B. Hartgering, Director of Research and Education, American Hospital Association, Chicago

David Pimentel, Head, Department of Entomology and Limnology, New York State College of Agriculture, Cornell University, Ithaca

Roger Revelle, Director, Center for Population Studies, Harvard University

Louis H. Roddis, President, Pennsylvania Electric Company, Johnstown

William H. Stewart, (member until June, 1965) Office of the Secretary, U.S. Department of Health, Education, and Welfare, Washington

James L. Whittenberger, Professor of Public Health, Harvard School of Public Health

John L. Buckley, *Staff,* Technical Assistant, Office of Science and Technology, Washington

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Acknowledgements

The study was conducted under the general supervision of Colin M. MacLeod, Deputy Director, Office of Science and Technology.

The Panel drew on scientists and engineers from within the Federal Government, from state governments, universities and industry to form subpanels of experts, each of which explored a different problem. These busy men put in, on the average, several weeks of their time talking to scientists, studying and evaluating information published and unpublished, and writing reports. The reports are included as the "Y" Appendixes.

The members of the subpanels are listed on the following pages.

SOIL CONTAMINATION

H. Stanley Bennett, *Chairman*
Dean, Division of Biological Sciences
University of Chicago

Martin Alexander
Associate Professor of Soil Science
New York State College of Agriculture
Cornell University, Ithaca

Sterling B. Hendricks
Soil and Water Conservation Research Division
Agricultural Research Service
U.S. Department of Agriculture
Beltsville, Maryland

H. L. Lucas
Professor and Director of Biomathematics Training Program
Institute of Statistics
North Carolina State University, Raleigh

Thomas J. Sheets, *Staff*
Crops Research Division
Agricultural Research Service
U.S. Department of Agriculture
Beltsville, Maryland
(Present address) Associate Professor of Entomology and Crop Science
North Carolina State University, Raleigh

HEALTH EFFECTS OF ENVIRONMENTAL POLLUTION

James L. Whittenberger, *Chairman*
Professor of Public Health
Harvard School of Public Health

Aarie J. Haagen-Smit
Professor of Biochemistry
California Institute of Technology, Pasadena

Lincoln E. Moses
Executive Head
Department of Statistics
Stanford University

William H. Stewart (member until June 1965)
Office of the Secretary
U.S. Department of Health, Education, and Welfare, Washington

John R. Bagby, Jr., *Staff*
Communicable Disease Center
Public Health Service
U.S. Department of Health, Education, and Welfare, Atlanta, Georgia

H. Bruce Dull, *Staff*
Communicable Disease Center
Public Health Service
U.S. Department of Health, Education, and Welfare, Atlanta, Georgia

BENCHMARK SURVEILLANCE

Aarie J. Haagen-Smit, *Chairman*
Professor of Biochemistry
California Institute of Technology
Pasadena

Louis H. Roddis, *Vice Chairman*
President
Pennsylvania Electric Company
Johnstown

Nyle C. Brady
Director of Science and Education
U.S. Department of Agriculture
(until August 31, 1965)
Director of the Cornell University Experiment Station
Director of Research
New York State College of Agriculture
Cornell University, Ithaca

Raymond J. Jessen
Professor of Business Statistics
Graduate School of Business Administration
University of California, Los Angeles

James L. Whittenberger
Professor of Public Health
Harvard School of Public Health

W. J. Youden
4821 Upton Street NW.
Washington

John L. Buckley, *Staff*
Technical Assistant
Office of Science and Technology
Washington

ATMOSPHERIC CARBON DIOXIDE

Roger Revelle, *Chairman*
Director, Center for Population Studies
Harvard University

Wallace Broecker
Professor of Geology
Columbia University, New York

Harmon Craig
Professor of Geochemistry
Department of Earth Sciences
University of California, La Jolla

Charles D. Keeling
Scripps Institution of Oceanography
La Jolla, California

J. Smagorinsky
Weather Bureau
Environmental Sciences Services Administration
U.S. Department of Commerce
Suitland, Maryland

SOLID WASTES

John C. Calhoun, Jr., *Chairman*
Science Adviser to the Secretary
U.S. Department of the Interior
(until February 5, 1965)
Vice President for Programs
Texas A & M University System
College Station

Patrick Conley
Senior Fellow
Mellon Institute, Pittsburgh

Aarie J. Haagen-Smit
Professor of Biochemistry
California Institute of Technology
Pasadena

Norman Hackerman
Vice Chancellor for Academic Affairs
University of Texas, Austin

Leonhard Katz
President
Astro Dynamics, Inc.
2d Avenue, Northwest Industrial Park
Burlington, Massachusetts

George J. Maslach
Dean, College of Engineering
University of California, Berkeley

Louis H. Roddis
President
Pennsylvania Electric Company
Johnstown

James E. Hill, *Staff*
Bureau of Mines
U.S. Department of the Interior
Washington

COMBINED SEWERS

John C. Geyer, *Chairman*
Chairman
Department of Sanitary Engineering and Water Resources
The Johns Hopkins University
Baltimore

Leonhard Katz
President
Astro Dynamics, Inc.
2d Avenue, Northwest Industrial Park
Burlington, Massachusetts

EFFECTS OF CHLORINATING WASTES

Martin Alexander, *Chairman*
Associate Professor of Soil Science
New York State College of Agriculture
Cornell University, Ithaca

Deric O'Bryan, *Staff*
Geological Survey
U.S. Department of the Interior
Washington

John C. Geyer
Chairman
Department of Sanitary Engineering and Water Resources
The Johns Hopkins University, Baltimore

AGRICULTURAL WASTES

Martin Alexander, *Chairman*
Associate Professor of Soil Science
New York State College of Agriculture
Cornell University, Ithaca

Deric O'Bryan, *Staff*
Geological Survey
U.S. Department of the Interior
Washington

Nyle C. Brady
Director of Science and Education
U.S. Department of Agriculture
(until August 31, 1965)
Director of the Cornell University Experiment Station
Director of Research, New York State College of Agriculture
Cornell University, Ithaca

AQUATIC BLOOMS

Martin Alexander, *Chairman*
Associate Professor of Soil Science
New York State College of Agriculture
Cornell University, Ithaca

John B. Moyle
Department of Conservation
St. Paul, Minnesota

Ruth Patrick
Academy of Natural Sciences
Philadelphia, Pennsylvania

Leon Weinberger
Division of Water Supply and Pollution Control
Public Health Service
U.S. Department of Health, Education, and Welfare, Washington

Deric O'Bryan, *Staff*
Geological Survey
U.S. Department of the Interior
Washington

EFFECTS OF POLLUTANTS ON LIVING ORGANISMS OTHER THAN MAN

David Pimentel, *Chairman*
Head, Department of Entomology and Limnology
New York State College of Agriculture
Cornell University, Ithaca

Don W. Hayne
Professor of Experimental Statistics
Institute of Statistics
North Carolina State University
Raleigh

Louis A. Krumholz
Professor of Biology
University of Louisville

John T. Middleton
Director, Air Pollution Research Center
University of California
Riverside

Lionel A. Walford
Director, Sandy Hook Marine Laboratory
Bureau of Sport Fisheries and Wildlife
U.S. Department of the Interior
Highlands, New Jersey

John L. Buckley, *Staff*
Technical Assistant
Office of Science and Technology
Washington

IMPROVED PEST CONTROL PRACTICES

David Pimentel, *Chairman*
Head, Department of Entomology and Limnology
New York State College of Agriculture
Cornell University, Ithaca

Donald A. Chant
Chairman, Department of Biological Control
University of California, Riverside

Arthur Kelman
Professor of Plant Pathology and Forestry
North Carolina State University, Raleigh
Present Address—
Chairman, Department of Plant Pathology
University of Wisconsin, Madison

Robert L. Metcalf
Vice Chancellor
University of California, Riverside

L. D. Newsom
Head, Department of Entomology
Louisiana State University, Baton Rouge

Carroll N. Smith, *Staff*
Entomology Research Division
Agricultural Research Service
U.S. Department of Agriculture
Gainesville, Florida

Introduction

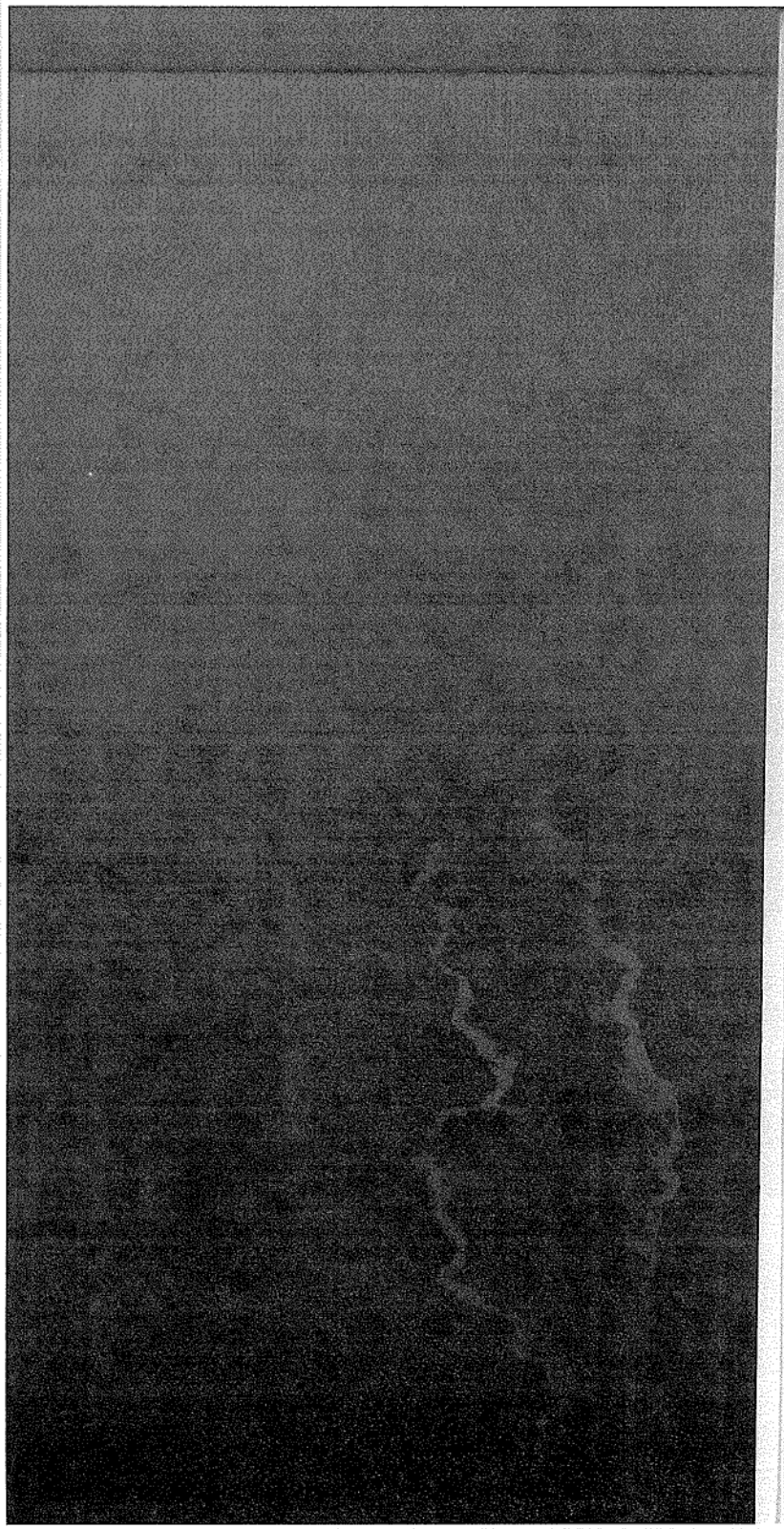
> Environmental pollution is the unfavorable alteration of our surroundings, wholly or largely as a by-product of man's actions, through direct or indirect effects of changes in energy patterns, radiation levels, chemical and physical constitution and abundances of organisms. These changes may affect man directly, or through his supplies of water and of agricultural and other biological products, his physical objects or possessions, or his opportunities for recreation and appreciation of nature.

The production of pollutants and an increasing need for pollution management are an inevitable concomitant of a technological society with a high standard of living. Pollution problems will increase in importance as our technology and standard of living continue to grow.

Our ancestors settled in a fair and unspoiled land, easily capable of absorbing the wastes of its animal and human populations. Nourished by the resources of this continent, the human inhabitants have multiplied greatly and have grouped themselves to form gigantic urban concentrations, in and around which are vast and productive industrial and agricultural establishments, disposed with little regard for state or municipal boundaries.

Huge quantities of diverse and novel materials are dispersed, from city and farm alike, into our air, into our waters and onto our lands. These pollutants are either unwanted by-products of our activities or spent substances which have served intended purposes. By remaining in the environment they impair our economy and the quality of our life. They can be carried long distances by air or water or on articles of commerce, threatening the health, longevity, livelihood, recreation, cleanliness and happiness of citizens who have no direct stake in their production, but cannot escape their influence.

Pollutants have altered on a global scale the carbon dioxide content of the air and the lead concentrations in ocean waters and human populations. Pollutants have reduced the productivity of some of our finest agricultural soils, and have impaired the quality and the safety of crops raised on others. Pollutants have produced massive mortalities of fishes in rivers, lakes and estuaries and have damaged or destroyed



commercial shellfish and shrimp fisheries. Pollutants have reduced valuable populations of pollinating and predatory insects, and have appeared in alarming amounts in migratory birds. Pollutants threaten the estuarine breeding grounds of valuable ocean fish; even Antarctic penguins and Arctic snowy owls carry pesticides in their bodies.

The land, water, air and living things of the United States are a heritage of the whole nation. They need to be protected for the benefit of all Americans, both now and in the future. The continued strength and welfare of our nation depend on the quantity and quality of our resources and on the quality of the environment in which our people live.

The pervasive nature of pollution, its disregard of political boundaries including state lines, the national character of the technical, economic and political problems involved, and the recognized Federal responsibilities for administering vast public lands which can be changed by pollution, for carrying out large enterprises which can produce pollutants, for preserving and improving the nation's natural resources, all make it mandatory that the Federal Government assume leadership and exert its influence in pollution abatement on a national scale.

We attempt here to describe the problem, to distinguish between what is known and what is not, and to recommend steps necessary to assure the lessening of pollution already about us and to prevent unacceptable environmental deterioration in the future.

an adequate number to start with. They should be selected by use nodern probability methods.

The waters of a single drainage area may vary from small trickles to ge lakes. In sampling these waters, however, we can take advantage the way in which the waters flow from smaller streams into larger s, and from larger ones into rivers and lakes.

The lands of a drainage area may vary even more widely: highly cul- ated farm lands may grade through rangelands to rocky mountains and erts. All are part of the general environment; the pollution of all st be considered in the overall result. We can take advantage of what know about the likelihood of pollution of different kinds of land in nning the details of the sampling, but we must give all lands their ropriate chance to contribute to the final result.

APPENDIX Y4

Atmospheric Carbon Dioxide

ROGER REVELLE, *Chairman*

WALLACE BROECKER
HARMON CRAIG
C. D. KEELING
J. SMAGORINSKY

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Section I. CARBON DIOXIDE FROM FOSSIL FUELS—THE INVISIBLE POLLUTANT

INTRODUCTION

Only about one two-thousandth of the atmosphere and one ten-thousandth of the ocean are carbon dioxide. Yet to living creatures, these small fractions are of vital importance. Carbon is the basic building block of organic compounds, and land plants obtain all of their carbon from atmospheric carbon dioxide. Marine plants obtain carbon from the dissolved carbon dioxide in sea water, which depends for its concentration on an equilibrium with the carbon dioxide of the atmosphere. Marine and terrestrial animals, including man, procure, either directly or indirectly, the substance of their bodies and the energy for living from the carbon compounds made by plants.

All fuels used by man consist of carbon compounds produced by ancient or modern plants. The energy they contain was originally solar energy, transmuted through the biochemical process called photosynthesis. The carbon in every barrel of oil and every lump of coal, as well as in every block of limestone, was once present in the atmosphere as carbon dioxide.

Over the past several billion years, very large quantities of carbon dioxide have entered the atmosphere from volcanoes. The total amount was at least forty thousand times the quantity of carbon dioxide now present in the air. Most of it became combined with calcium or magnesium, freed by the weathering of silicate rocks, and was precipitated on the sea floor as limestone or dolomite. About one-fourth of the total quantity, at least ten thousand times the present atmospheric carbon dioxide, was reduced by plants to organic carbon compounds and became buried as organic matter in the sediments. A small fraction of this organic matter was transformed into the concentrated deposits we call coal, petroleum, oil shales, tar sands, or natural gas. These are the fossil fuels that power the world-wide industrial civilization of our time.

Throughout most of the half-million years of man's existence on earth, his fuels consisted of wood and other remains of plants which had grown only a few years before they were burned. The effect of this burning on the content of atmospheric carbon dioxide was negligible, because it only slightly speeded up the natural decay processes that continually recycle carbon from the biosphere to the atmosphere. During the last few centuries, however, man has begun to burn the fossil fuels that were

locked in the sedimentary rocks over five hundred million years, and this combustion is measurably increasing the atmospheric carbon dioxide.

In the geologic past, the quantity of carbon dioxide in the atmosphere was determined by the equilibrium between rates of weathering and photosynthesis, and the rate of injection of volcanic carbon dioxide. On an earthwide average, both weathering and photosynthesis must speed up when the carbon dioxide content of the air is increased, and slow down when it is diminished; consequently, over geologic time the carbon dioxide in the air must have risen when volcanic activity was high, and must have gone down when volcanoes were quiescent. On a human scale, the times involved are very long. The known amounts of limestone and organic carbon in the sediments indicate that the atmospheric carbon dioxide has been changed forty thousand times during the past four billion years, consequently the residence time of carbon in the atmosphere, relative to sedimentary rocks, must be of the order of a hundred thousand years.

The present rate of production of carbon dioxide from fossil fuel combustion is about a hundred times the average rate of release of calcium and magnesium from the weathering of silicate rocks. As long as this ratio holds, precipitation of metallic carbonates will be unable to maintain an unchanging content of carbon dioxide in the atmosphere. Within a few short centuries, we are returning to the air a significant part of the carbon that was slowly extracted by plants and buried in the sediments during half a billion years.

Not all of this added carbon dioxide will remain in the air. Part of it will become dissolved in the ocean, and part will be taken up by the biosphere, chiefly in trees and other terrestrial plants, and in the dead plant litter called humus. The part that remains in the atmosphere may have a significant effect on climate: carbon dioxide is nearly transparent to visible light, but it is a strong absorber and back radiator of infrared radiation, particularly in the wave lengths from 12 to 18 microns; consequently, an increase of atmospheric carbon dioxide could act, much like the glass in a greenhouse, to raise the temperature of the lower air. [Water vapor also absorbs infrared radiation, both in the range of the CO_2 band centered at 15 microns, and at wave lengths near 6.3 microns. With the average concentration of water vapor in the lower air at mid latitudes, the effect of carbon dioxide absorption is reduced to about half that which would exist in an absolutely dry atmosphere. (Möller, 1963.) Ozone, which is an important constituent of the upper air, also absorbs some infrared at wave lengths around 9.6 microns, but its principal effect on air temperature is due to its absorption of ultraviolet and visible sunlight.]

The possibility of climatic change resulting from changes in the quantity of atmospheric carbon dioxide was proposed independently by the

American geologist, T. C. Chamberlain (1899) and the Swedish chemist, S. Arrhenius (1903), at the beginning of this century. Since their time, many scientists have dealt with one or another aspect of this question, but until very recently there was little quantitative information about what has actually happened. Even today, we cannot make a useful prediction concerning the magnitude or nature of the possible climatic effects. But we are able to say a good deal more than formerly about the change in the quantity of atmospheric carbon dioxide, and about the partition of carbon dioxide from fossil fuel combustion among the atmosphere, the ocean, and the biosphere.

THE RECENT INCREASE IN ATMOSPHERIC CARBON DIOXIDE

During the five years from 1958 through 1962, 5.3 x 10^{16} grams of carbon dioxide were produced by the combustion of coal, lignite, petroleum and other liquid hydrocarbons, and natural gas (see Tables 1 and 2).

TABLE 1.—*Carbon Dioxide Produced by Fossil Fuel Combustion, 1950–62*

[10^{16} grams]

Year	Coal [1]	Lignite [2]	Liquid Hydrocarbons [3]	Natural Gas [4]	Total	As % of Atmospheric CO_2 in 1950
1950	0.37	0.09	0.17	0.04	0.67	0.29
1951	.38	.09	.20	.05	.72	.31
1952	.38	.09	.21	.05	.73	.31
1953	.38	.09	.22	.05	.74	.32
1954	.38	.09	.23	.06	.76	.32
1955	.41	.10	.25	.06	.82	.35
1956	.44	.11	.27	.07	.89	.38
1957	.45	.13	.29	.07	.94	.40
1958	.46	.14	.29	.08	.97	.41
1959	.48	.14	.32	.09	1.03	.44
1960	.50	.14	.34	.10	1.08	.46
1961	.48	.15	.36	.10	1.09	.46
1962	.50	.15	.39	.11	1.15	.49
Total	5.61	1.51	3.54	.93	11.59	4.93

[1] Assumed carbon content, coal=75 percent.
[2] Assumed carbon content, lignite=45 percent.
[3] Assumed carbon content, liquid hydrocarbons=86 percent.
[4] Assumed carbon content, natural gas=70 percent. (Corresponding to a mixture by volume of 80 percent CH_4, 15 percent C_2H_6 and 5 percent N_2.)

Source: Computed from Table 2.

TABLE 2.—*World Production of Fossil Fuels—1950–62*

[Millions of Metric Tons]

Year	Coal	Lignite	Liquid Hydrocarbons [1]	Natural Gas [2]	Total
1950	1,340	530	540	155	2,565
1951	1,375	550	620	180	2,725
1952	1,375	550	655	200	2,780
1953	1,380	555	690	210	2,835
1954	1,375	550	725	220	2,870
1955	1,500	630	790	240	3,160
1956	1,595	665	860	260	3,380
1957	1,625	765	905	285	3,580
1958	1,665	825	930	305	3,725
1959	1,730	845	995	345	3,915
1960	1,810	875	1,075	375	4,135
1961	1,760	900	1,140	405	4,205
1962	1,805	905	1,235	440	4,385
Total	20,335	9,145	11,160	3,620	44,260

[1] Includes Petroleum and Natural Gasoline.
[2] Assumed density of 8×10^{-4} gm cm^{-3} ($1000 m^3 = 0.8$ ton).

Source: World Energy Supplies. Statistical Papers, Series J, United Nations, New York.

This is 2.25 percent of the 2.35 x 10^{18} grams of carbon dioxide present in the atmosphere in 1950 (assuming an atmospheric carbon dioxide concentration of 300 ppm by volume—445 ppm by weight—and a mass of 5.2 x 10^{21} grams for the entire atmosphere.) On the average during 1958–1962, the CO_2 produced each year by fossil fuel combustion was 0.45 percent of the quantity in the atmosphere.

Beginning in 1958 and extending through 1963, two nearly continuous series of measurements of atmospheric CO_2 content were made. One of these series was taken at the U.S. Weather Bureau station near the top of Mauna Loa Mountain in Hawaii (Pales and Keeling, 1965), the other at the United States scientific station at the South Pole (Brown and Keeling, 1965). The measurements were carried out on an infrared gas spectrometer, with a relative accuracy for a single measurement of about ±0.1 ppm. The observing stations are located near the centers of vast atmospheric mixing areas, far from uncontrollable sources of contaminants. Because of these nearly ideal locations, together with the high precision of the instruments, and the extreme care with which the samples were taken, these measurements make it possible to estimate the secular trend of atmospheric CO_2 with an accuracy greater by two

orders of magnitude than ever before. Some fifteen thousand measurements were carried out during the five-year period.

The data show, clearly and conclusively, that from 1958 through 1963 the carbon dioxide content of the atmosphere increased by 1.36 percent. The increase from year to year was quite regular, close to the average annual value of 0.23 percent. By comparing the measured increase with the known quantity of carbon dioxide produced by fossil fuel combustion, given in Table 4, we see that almost exactly half of the fossil fuel CO_2 apparently remained in the atmosphere.

Tables 3 and 4 show that between 1860 and 1940 the amount of CO_2 produced by fossil combustion, chiefly coal, was 7.9 percent, and by 1950, 10.3 percent, of the estimated atmospheric CO_2 content in 1950. By 1959, the total CO_2 production was equal to 13.8 percent of the atmospheric CO_2. Unfortunately, the accuracy of measurements of atmospheric CO_2 before 1958 is too low to allow estimates of the secular variation, and it is therefore impossible to compute directly whether the fraction of fossil-fuel CO_2 remaining in the atmosphere throughout the past hundred years has been constant, or slowly or rapidly changing.

TABLE 3.—*Carbon Dioxide Produced by Fossil Fuel Combustion, 1860–1959*

[10^{16} grams]

Decade	Coal [1]	Lignite [2]	Liquid Hydrocarbons [3]	Natural Gas [4]	Total	As % of Atmospheric CO_2 in 1950
1860–69	0.46	0.01	.....	.....	0.47	0.20
1870–79	0.70	.03	.....	.....	.73	.31
1880–89	1.06	.05	0.02	.....	1.13	.48
1890–99	1.49	.08	.04	0.01	1.62	.69
1900–09	2.33	.15	.10	.02	2.60	1.11
1910–19	3.10	.21	.19	.04	3.54	1.53
1920–29	3.26	.31	.48	.07	4.12	1.75
1930–39	3.16	.35	.74	.12	4.37	1.86
1940–49	3.74	.49	1.14	.25	5.62	2.39
1950–59	4.11	1.07	2.44	.62	8.24	3.49
Total	23.41	2.75	5.15	1.13	32.44	13.81

[1] Assumed carbon content, coal=75 percent.
[2] Assumed carbon content, lignite=45 percent.
[3] Assumed carbon content, liquid hydrocarbons=86 percent.
[4] Assumed carbon content, natural gas=70 percent. (Corresponding to a mixture by volume of 80 percent CH_4, 15 percent C_2H_6 and 5 percent N_2).

Source: Computed from Table 4.

TABLE 4.—*World Production of Fossil Fuels, 1860–1959*

[Millions of Metric Tons]

Decade	Coal	Lignite	Liquid Hydrocarbons [1]	Natural Gas [2]	Total
1860–69	1,660	85	5	.....	1,750
1870–79	2,560	180	15	.....	2,755
1880–89	3,850	285	55	10	4,200
1890–99	5,405	495	140	40	6,080
1900–09	8,455	880	310	80	9,725
1910–19	11,240	1,270	590	155	13,255
1920–29	11,850	1,875	1,510	285	15,520
1930–39	11,500	2,135	2,335	485	16,455
1940–49	13,570	2,995	3,605	970	21,140
1950–59	14,960	6,465	7,710	2,400	31,535
Total	85,050	16,665	16,275	4,425	122,415

[1] Includes petroleum and natural gasoline.
[2] Assumed density of 8×10^{-4} gm cm^{-3} ($1000 m^3 = 0.8$ ton).

Sources: From 1860 to 1949, United Nations, Department of Economic and Social Affairs: "World Energy Requirements". Proceedings of the International Conference on the Peaceful Uses of Atomic Energy, Vol. 1, pp. 3–33, 1956. For 1950–59, United Nations, World Energy Supplies. Statistical papers, Series J, United Nations, New York.

There are measurements of a somewhat different kind, which can give us useful information however. These are determinations of the so-called "Suess Effect."

PARTITION OF CARBON DIOXIDE AMONG THE ATMOSPHERE, THE OCEAN, AND THE BIOSPHERE

Because the fossil fuels have been buried for millions of years, they contain no Carbon 14. (This radioactive isotope is produced in the atmosphere by cosmic ray bombardment of nitrogen, and it has a half-life of only about six thousand years.) Consequently, the addition to the atmosphere of CO_2 from fossil fuel combustion, and its subsequent partition among the atmosphere, the ocean, and the biosphere will cause the ratio between radioactive and nonradioactive carbon to decrease. This manifests itself as a measurable reduction in the amount of radioative carbon, for example, in tree rings grown in recent years compared with rings that grew during the 19th Century. This reduction, due to fossil fuel combustion, is called the "Suess Effect," after Professor Hans Suess, who first observed it (see Revelle and Suess, 1956).

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The measurement of the "Suess Effect" is beset with many difficulties, the chief among them being that the Carbon 14 content of the atmosphere—more precisely the ratio of C^{14} to $C^{12}+C^{13}$—varies by 1 or 2 percent from century to century apparently depending on the long-term variations in sunspot intensity. Tree ring measurements show that this ratio went up during the 15th and 17th Centuries, and down during the 16th and 18th, in each case by about 2 percent (Suess, 1956). Prior to the atomic weapons tests of the mid-Fifties, the ratio was lower by between 1 and 2 percent than in the middle of the 19th Century. This change during the past hundred years was apparently largely due to the "Suess Effect."

Taking the "Suess Effect" as between 1 and 2 percent over the period from 1860 to 1950, during which time the total carbon dioxide produced from fossil fuels was 10% of the atmospheric CO_2, and assuming that presently occurring changes in the magnitude of the "Suess Effect" are in the same proportion to CO_2 from fossil fuel combustion as in the past, we can compute both the relative sizes of the oceanic and biosphere reservoirs that are taking up part of the added CO_2, and the partition of CO_2 between these reservoirs. The amount taken up in the biosphere will be different if there are two or more sources of additional carbon dioxide, than if fossil fuels are the only source, but the amount absorbed by the ocean will not vary. Implied in the calculation is the further assumption that any CO_2 from other sources will have about the same ratio of C^{14} to total carbon as the atmosphere. Details are given in Section II.

The calculation shows that if the oceanic layer mixing with the atmosphere is several hundred meters thick, the amount of exchangable carbon in the biosphere is less than or about equal to that in the atmosphere. These are both "reasonable" values. On the other hand, if another significant source of CO_2 is assumed for the last few decades, the amount of CO_2 added to the biosphere becomes so large that it should have been observed. In fact, no increase in the biosphere has been noted. Perhaps the most striking result is that the ocean takes up a relatively small fraction of the total added CO_2, probably about 15%. In the past, the usual scientific belief has been that by far the larger part of any added CO_2 would be absorbed in the ocean. This is undoubtedly true if we consider a sufficiently long time period, of the order of thousands or even, perhaps, hundreds of years, because the ocean as a whole contains nearly sixty times as much carbon dioxide as the atmosphere. But over shorter times, only the uppermost layers of the ocean take part in exchanges with the air. Moreover, most of the oceanic carbon dioxide is present as carbonate and bicarbonate, balanced against metallic cations,

and a marked increase in oceanic CO_2 therefore requires an increase in cation concentration, which can be brought about only by rock weathering or solution of calcium-rich sediments. These are slow processes.

PROBABLE FUTURE CONTENT OF CARBON DIOXIDE IN THE ATMOSPHERE

We can conclude with fair assurance that at the present time, fossil fuels are the only source of CO_2 being added to the ocean-atmosphere-biosphere system. If this held true throughout the last hundred years, the quantity of CO_2 in the air at the beginning of the present decade was about 7% higher than in the middle of the last century (see Table 3).

Throughout these hundred years, the rate of fossil fuel combustion, and thus of CO_2 production, continually increased, on the average about 3.2 percent per year. The amount produced in 1962 was almost 25 times the annual production in the mid-1860's. The rate of increase may be accelerating. During the eight years from 1954 to 1962, the average rate of increase was 5%.

We can ask several questions about the future CO_2 content of the atmosphere. Two of these questions are:

(1) What will the total quantity of CO_2 injected into the atmosphere (but only partly retained there) be at different future times?

(2) What would be the total amount of CO_2 injected into the air if all recoverable reserves of fossil fuels were consumed? At present rates of expansion in fossil fuel consumption this condition could be approached within the next 150 years.

The second question is relatively easy to answer, provided we consider only the estimated recoverable reserves of fossil fuels. The data are shown in Table 5. We may conclude that the total CO_2 addition from fossil fuel combustion will be a little over 3 times the atmospheric content, and that, if present partitions between reservoirs are maintained, the CO_2 in the atmosphere could increase by nearly 170 percent.

The answer to the first question depends upon the rate of increase of fossil fuel combustion. Table 6 shows that if this combustion remains constant at the 1959 level, the total CO_2 injected into the atmosphere by the year 2000 will be about 28 percent of the atmospheric content in 1950. If the average rate of increase of combustion continues at 3.2 percent per year, the quantity injected into the atmosphere by the year 2000 will be about 42 percent; if the 5% rate of increase during the last 8 years persists, the quantity injected will be close to 60 percent. Assuming further that the proportion remaining in the atmosphere continues to be half the total quantity injected, the increase in amospheric CO_2 in the year 2000 could be somewhere between 14 percent and 30 percent.

Based on projected world energy requirements, the United Nations Department of Economic and Social Affairs (1956) has estimated an amount of fossil fuel combustion by the year 2000 that with our assumed partitions would give about a 25 percent increase in atmospheric CO_2, compared to the amount present during the 19th Century. For convenience, we shall adopt this figure in the following estimate of the effects on atmospheric radiation and temperature.

TABLE 5.—*Estimated Remaining Recoverable Reserves of Fossil Fuels*

	10^9 Metric Tons	Carbon Dioxide Equivalent, 10^{18} gms	As % of Atmospheric CO_2 in 1950
Coal and Lignite [1]	2, 320	5. 88	252
Petroleum and Natural Gas Liquids [2]	212	. 67	29
Natural Gas [3]	166	. 43	18
Tar Sands [2]	75	. 24	10
Oil Shales [2]	198	. 63	27
Total	2, 971	7. 85	336

[1] Assumed to be 20 percent lignite containing 45 percent carbon, and 80 percent bituminous coal containing 75 percent carbon.

[2] Assumed carbon content of petroleum, natural gas liquids, and hydrocarbons recoverable from tar sands and oil shales=86 percent.

[3] Assumed composition of natural gas by volume: CH_4=80 percent, C_2H_6=15 percent, N_2=5 percent.

Source: Computed from data given by M. King Hubbert, "Energy Resources, A Report to the Committee on Natural Resources of the National Academy of Sciences—National Research Council," NAS Publication 1000–D, 1962, pp. 1–141.

TABLE 6.—*Estimates of Carbon Dioxide From Fossil Fuel Combustion in Future Decades, Assuming Different Rates of Increase of Fuel Use*

Year	As percent of Atmospheric CO_2 in 1950		
Growth rate, percent/year	0	3. 2	5. 0
1959	13. 80	13. 80	13. 80
1969	17. 30	18. 00	18. 47
1979	20. 79	23. 79	26. 15
1989	24. 28	31. 94	37. 90
1999	27. 77	41. 96	58. 75
2009	31. 26	57. 04	93. 14

POSSIBLE EFFECTS OF INCREASED ATMOSPHERIC CARBON DIOXIDE ON CLIMATE

One of the most recent discussions of these effects is given by Möller (1963). He considers the radiation balance at the earth's surface with an average initial temperature of 15°C (59°F), a relative humidity of 75 percent, and 50% cloudiness. We may compute from his data that with a 25 percent increase in atmospheric CO_2, the average temperature near the earth's surface could increase between 0.6°C and 4°C (1.1°F to 7°F), depending on the behavior of the atmospheric water vapor content. The small increase would correspond to a constant absolute humidity, that is, a constant weight of water in the atmosphere. The larger increase would correspond to a constant relative humidity, that is, as the temperature rose, the water vapor content would also rise to maintain a constant percentage of the saturation value. A doubling of CO_2 in the air, which would happen if a little more than half the reserves of fossil fuels were consumed, would have about three times the effect of a twenty-five percent increase.

As Möller himself emphasized, he was unable to take into account the vertical transfer of latent heat by evaporation at the surface and condensation aloft, or of sensible heat by convection and advection. For this reason he was unable to consider the interactions between different atmospheric layers in a vertical column. In consequence, Möller's computations probably over-estimate the effects on atmospheric temperature of a CO_2 increase. A more comprehensive model is being developed by the U.S. Weather Bureau. This includes processes of convection and of latent heat transfer through the evaporation and condensation of water vapor. Meaningful computations should be possible with this model in the very near future. But climatic changes depend on changes in the general circulation in the atmosphere, and these will be related to the spatial distribution and time variation of carbon dioxide and water vapor. The ratio of CO_2 to water vapor is higher in the polar regions than in low latitudes, higher in winter than in summer, and much higher in the stratosphere than near the ground. For example, the volume of carbon dioxide in the atmosphere at high latitudes is about half the volume of water vapor, while near the equator it is less than a tenth of the water vapor volume. As a result, the radiation balance of the earth will be affected differently at different seasons, latitudes, and heights by changes in the atmospheric CO_2 content. Without a comprehensive model incorporating both the fluid dynamics and the radiation transfer processes of the atmosphere it is not possible to predict how these effects will perturb the general circulation. Such a model may be available within the next two years.

Models of atmospheric thermal equilibrium in which vertical convection is allowed to maintain the observed vertical temperature gradient have recently been constructed by S. Manabe of the U.S. Weather Bureau (Manabe and Strickler, 1964; Manabe, 1965). These show that the effect of infra red absorption from the present atmospheric carbon dioxide at mid latitudes is to maintain a ground temperature about 10°C (18°F) higher than would prevail if no CO_2 were present. An increase in the CO_2 content without a change in absolute humidity would, according to these models, produce a somewhat smaller surface temperature rise than that estimated by Möller. But a considerable change would occur in the stratosphere, where the CO_2 concentration by volume is perhaps 50 times that of water vapor. A 25% rise in carbon dioxide would cause stratospheric temperatures to fall by perhaps 2°C (3.6°F) at an altitude of 30 kilometers (about 100,000 feet) and by 4°C (7°F) at 40 kilometers (about 130,000 feet).

One might suppose that the increase in atmospheric CO_2 over the past 100 years should have already brought about significant climatic changes, and indeed some scientists have suggested this is so. The English meteorologist, G. S. Callendar (1938, 1940, 1949), writing in the late 1930's and the 1940's on the basis of the crude data then available, believed that the increase in atmospheric CO_2 from 1850 to 1940 was at least 10%. He thought this increase could account quantitatively for the observed warming of northern Europe and northern North America that began in the 1880's. From Table 2 and our estimate of the CO_2 partition between the atmospheric, the ocean, and the biosphere, we see that the actual CO_2 increase in the atmosphere prior to 1940 was only 4%, at least from fossil fuel combustion. This was probably insufficient to produce the observed temperature changes. [But it should be noted that up to 2.5% of the atmospheric carbon dioxide (after partition with the ocean and the biosphere) could also have been added by the oxidation of soil humus in newly cultivated lands.]

As Mitchell (1961, 1963) has shown, atmospheric warming between 1885 and 1940 was a world-wide phenomenon. Area-weighted averages for surface temperature over the entire earth show a rise in mean annual air temperature of about 0.5°C (0.9°F). World mean winter temperatures rose by 0.9°C (1.6°F). Warming occurred in both hemispheres and at all latitudes, but the largest annual rise (0.9°C or 1.6°F) was observed between 40° and 70° N latitudes. In these latitudes, the average winter temperatures rose by 1.6°C (2.8°F).

The pronounced warming of the surface air did not continue much beyond 1940. Between 1940 and 1960 additional warming occurred in northern Europe and North America, but for the world as a whole and also for the northern hemisphere, there was a slight lowering of about 0.1°C (0.2°F) in mean annual air temperature (Mitchell, 1963). Yet during this period more than 40% of the total CO_2 increase from fossil fuel combustion occurred. We must conclude that climatic "noise" from other processes has at least partially masked any effects on climate due to past increases in atmospheric CO_2 content.

OTHER POSSIBLE EFFECTS OF AN INCREASE IN ATMOSPHERIC CARBON DIOXIDE

Melting of the Antarctic ice cap.—It has sometimes been suggested that atmospheric warming due to an increase in the CO_2 content of the atmosphere may result in a catastrophically rapid melting of the Antarctic ice cap, with an accompanying rise in sea level. From our knowledge of events at the end of the Wisconsin period, 10 to 11 thousand years ago, we know that melting of continental ice caps can occur very rapidly on a geologic time scale. But such melting must occur relatively slowly on a human scale.

The Antarctic ice cap covers 14 million square kilometers and is about 3 kilometers thick. It contains roughly 4×10^{16} tons of ice, hence 4×10^{24} gram calories of heat energy would be required to melt it. At the present time, the poleward heat flow across 70° latitude is 10^{22} gram calories per year, and this heat is being radiated to space over Antarctica without much measurable effect on the ice cap. Suppose that the poleward heat flux were increased by 10% through an intensification of the meridional atmospheric circulation, and that all of this increase in the flow of energy were utilized to melt the ice. Some 4,000 years would be required.

We can arrive at a smaller melting time by supposing a change in the earth-wide radiation balance, part of which would be used to melt the ice. A 2% change could occur by the year 2000, when the atmospheric CO_2 content will have increased perhaps by 25%. Since the average radiation at the earth's surface is about 2×10^5 gram calories per square centimeter per year, a 2% change would amount to 2×10^{22} calories per year. If half this energy were concentrated in Antarctica and used to melt the ice, the process would take 400 years.

Rise of sea level.—The melting of the Antarctic ice cap would raise sea level by 400 feet. If 1,000 years were required to melt the ice cap, the sea level would rise about 4 feet every 10 years, 40 feet per century. This is a hundred times greater than present worldwide rates of sea level change.

Warming of sea water.—If the average air temperature rises, the temperature of the surface ocean waters in temperate and tropical regions could be expected to rise by an equal amount. (Water temperatures in the polar regions are roughly stabilized by the melting and freezing of ice.) An oceanic warming of 1° to 2°C (about 2°F) oc-

curred in the North Atlantic from 1880 to 1940. It had a pronounced effect on the distribution of some fisheries, notably the cod fishery, which has greatly increased around Greenland and other far northern waters during the last few decades. The amelioration of oceanic climate also resulted in a marked retreat of sea ice around the edges of the Arctic Ocean.

Increased acidity of fresh waters.—Over the range of concentrations found in most soil and ground waters, and in lakes and rivers, the hydrogen ion concentration varies nearly linearly with the concentration of free CO_2. Thus the expected 25% increase in atmospheric CO_2 concentration by the end of this century should result in a 25% increase in the hydrogen ion concentration of natural waters or about a 0.1 drop in pH. This will have no significant effect on most plants.

Increase in photosynthesis.—In areas where water and plant nutrients are abundant, and where there there is sufficient sunlight, carbon dioxide may be the limiting factor in plant growth. The expected 25% increase by the year 2000 should significantly raise the level of photosynthesis in such areas. Although very few data are available, it is commonly believed that in regions of high plant productivity on land, such as the tropical rain forests, phosphates, nitrates and other plant nutrients limit production rather than atmospheric CO_2. This is probably also true of the oceans.

Biological processes are speeded up by a rise in temperature, and in regions where other conditions are favorable higher temperatures due to increased CO_2 might result in higher plant production.

OTHER POSSIBLE SOURCES OF CARBON DIOXIDE

We are fairly certain that fossil fuel combustion has been the only source of CO_2 coming into the atmosphere during the last few years, when accurate measurements of atmospheric carbon dioxide content have been available. Carbon dioxide may have been produced by other sources during earlier times but it is not now possible to make a quantitative estimate. However we can examine the order of magnitude of some of the possible inputs from other sources, on the basis of our knowledge of the processes that might be involved.

Oceanic warming.—The average temperature of the ocean cannot have increased by more than 0.15°C during the past century, since any greater warming would have caused a larger rise in sea level than the observed value of about 10 centimeters. A more probable upper limit is .05°C, because most of the sea level rise can be accounted for by glacial melting. An average .05°C rise would correspond to 0.5° in the top 400 meters. This would cause a nearly 3% rise in the CO_2 partial pressure.

After equilibration with the atmosphere, the partial pressure in both the air and the uppermost ocean layer would be higher by about 2.5%.

Burning of limestone.—Annual world production of carbon dioxide from the use of limestone for cement, fluxing stone, and in other ways, is about 1% of the total from fossil fuel combustion, or 4×10^{-5} of the atmospheric CO_2 content per year.

Decrease in the carbon content of soils.—Since the middle of the Ninetenth Century, the world's cultivated farmland has been enlarged by about 50%. This is an increase of close to a billion acres or 1.6 million square miles, corresponding to 2.7% of the land area of the earth, and perhaps to 5% of forests and grass lands. Most soil humus is believed to be concentrated in forests and grassy areas. Assume that the total humus is equal to twice the amount of carbon in the atmosphere and that half the carbon in the humus of the newly cultivated lands has been oxidized to carbon dioxide. The total injected into the atmosphere from this source becomes less than 5% of the atmospheric CO_2.

Change in the amount of organic matter in the ocean.—About 7% of the marine carbon reservoir consists of organic material. Since a 1% change in the carbon dioxide content of the ocean changes the CO_2 pressure by 12.5%, a decrease by 1% in the marine organic carbon (which would increase the total oceanic carbon dioxide by .07%) would raise the carbon dioxide pressure of the ocean and the atmosphere by about 1%. An increase in the temperature of water near the surface, during the past one hundred years, could have speeded up the rate of oxidation of organic matter relative to its rate of production by photosynthesis. Measurements of the content of organic matter in the ocean are neither accurate enough nor sufficiently extended over time to allow a direct estimate of this possibility. A change of several percent could have occurred without detection.

Changes in the carbon dioxide content of deep ocean water.—The deep ocean waters contain about 10% more carbon dioxide than they would if they were at equilibrium with the present atmospheric content. This is a result of the sinking of dead organic remains from the surface waters and their subsequent oxidation in the depths. The combination of biological and gravitational processes can be thought of as a pump that maintains a relatively low carbon dioxide content in the surface waters and in the atmosphere. If the pump ceased to act, the atmospheric carbon dioxide would eventually be increased five fold. Variations in the effectiveness of the pump could have occurred without detection during the past 100 years, and could have caused notable changes in the atmospheric carbon dioxide content.

Changes in the volume of sea water.—During the Ice Age the volume of sea water varied by about 5%. Changes of this magnitude would change the carbon dioxide content of the atmosphere by 10 to 15%.

But during the last several thousand years, variations in oceanic volume have been small. During the past hundred years, world average sea level has varied by less than 10 centimeters. This very small volume change would have no appreciable effect on the atmospheric carbon dioxide.

Carbon dioxide from volcanoes.—Over geologic time, volcanic gases have been the principal sources of new carbon dioxide injected into the atmosphere. On the average the influx of volcanic CO_2 must have balanced the extraction from the atmosphere by rock weathering. The present rate of influx of volcanic CO_2 is close to a hundred fold less than that from fossil fuel combustion. No data exist on the worldwide level of volcanic activity over geologic time. It is conceivable that the level has fluctuated by two orders of magnitude, and that the fluctuations persisted for millenia, or even for millions of years.

Changes due to solution and precipitation of carbonates.—Calcium and magnesium carbonate precipitation on the sea floor lower the total CO_2 content of ocean water, but increase the carbon dioxide pressure and the free CO_2 content. Conversely, chemical weathering of limestone and dolomite on land lower the atmospheric CO_2 and the free CO_2 content of the sea, but increase the total oceanic CO_2. The rates of these processes are about one order of magnitude lower than the present rate of production of carbon dioxide by fossil fuel combustion.

We conclude that the only sources of carbon dioxide comparable in magnitude to fossil fuel combustion during the last 100 years could have been a decrease in soil humus due to the increase in the area of cultivated lands, a decrease in the content of "dissolved" organic matter in the ocean, or a lowering of the carbon dioxide content of deep ocean waters. Marked changes in the oceanic regime would have been necessary for the latter two processes to have significant effects. As we have shown, none of the three processes are likely to be significant at the present time. Nor are any oceanographic data available which suggest that the required changes in the ocean occurred during the last hundred years.

CONCLUSIONS AND FINDINGS

Through his worldwide industrial civilization, Man is unwittingly conducting a vast geophysical experiment. Within a few generations he is burning the fossil fuels that slowly accumulated in the earth over the past 500 million years. The CO_2 produced by this combustion is being injected into the atmosphere; about half of it remains there. The estimated recoverable reserves of fossil fuels are sufficient to produce nearly a 200% increase in the carbon dioxide content of the atmosphere.

By the year 2000 the increase in atmospheric CO_2 will be close to 25%. This may be sufficient to produce measurable and perhaps marked

changes in climate, and will almost certainly cause significant changes in the temperature and other properties of the stratosphere. At present it is impossible to predict these effects quantitatively, but recent advances in mathematical modelling of the atmosphere, using large computers, may allow useful predictions within the next 2 or 3 years.

Such predictions will need to be checked by careful measurements: a series of precise measurements of the CO_2 content in the atmosphere should continue to be made by the U.S. Weather Bureau and its collaborators, at least for the next several decades; studies of the oceanic and biological processes by which CO_2 is removed from and added to the atmosphere should be broadened and intensified; temperatures at different heights in the stratosphere should be monitored on a worldwide basis.

The climatic changes that may be produced by the increased CO_2 content could be deleterious from the point of view of human beings. The possibilities of deliberately bringing about countervailing climatic changes therefore need to be thoroughly explored. A change in the radiation balance in the opposite direction to that which might result from the increase of atmospheric CO_2 could be produced by raising the albedo, or reflectivity, of the earth. Such a change in albedo could be brought about, for example by spreading very small reflecting particles over large oceanic areas. The particles should be sufficiently buoyant so that they will remain close to the sea surface and they should have a high reflectivity, so that even a partial covering of the surface would be adequate to produce a marked change in the amount of reflected sunlight. Rough estimates indicate that enough particles partially to cover a square mile could be produced for perhaps one hundred dollars. Thus a 1% change in reflectivity might be brought about for about 500 million dollars a year, particularly if the reflecting particles were spread in low latitudes, where the incoming radiation is concentrated. Considering the extraordinary economic and human importance of climate, costs of this magnitude do not seem excessive. An early development of the needed technology might have other uses, for example in inhibiting the formation of hurricanes in tropical oceanic areas.

According to Manabe and Strickler (1964) the absorption and reradiation of infrared by high cirrus clouds (above five miles) tends to heat the atmosphere near the earth's surface. Under some circumstances, injection of condensation or freezing nuclei will cause cirrus clouds to form at high altitudes. This potential method of bringing about climatic changes needs to be investigated as a possible tool for modifying atmospheric circulation in ways which might counteract the effects of increasing atmospheric carbon dioxide.

Section II. DETAILED COMPUTATIONS

Calculation of the Relative Sizes of the Ocean and Biosphere Reservoirs and the Probability of Other Sources of Carbon Dioxide at the Present Time

A portion of the carbon dioxide coming into the atmosphere will be transferred to the ocean, and another part will enter the biosphere. We can test the possibility of carbon dioxide sources other than fossil fuel combustion by examining the relative sizes of the required ocean and biosphere reservoirs.

Let

$A = CO_2$ in atmosphere.

$B =$ equivalent CO_2 in the part of the biosphere that exchanges with the atmosphere.

$M = CO_2$ in the oceanic reservoir that exchanges with the atmosphere.

ΔA, ΔB, $\Delta M =$ changes in CO_2 content of these reservoirs.

$s = \dfrac{-\Delta C^{14}O_2}{C^{14}O_2}$ in the reservoir system, $A+B+M$.

$a = \dfrac{\Delta A}{A} =$ fractional change of atmospheric CO_2 content.

$fA = CO_2$ produced by fossil fuel combustion.

$bA = CO_2$ produced by other processes.

Then, at equilibrium,

$\Delta A + \Delta B + \Delta M = (f+b)A$

$\Delta A = aA$

$\Delta M = oM$, where $o = \dfrac{a}{12.5}$, owing to the buffer mechanism of sea water (Bolin and Eriksson, 1958).

And assuming that CO_2 produced by other processes has approximately the same C^{14} content as the atmospheric CO_2, and knowing that fossil fuel CO_2 contains no C^{14}.

$A+B+M = \dfrac{f}{s}A$

Solving for ΔB, M, and ΔM, we find

$$\Delta B = A\left(o+f+b+oc-\frac{of}{s}-a\right) \quad (1)$$

$$M = A\left(\frac{f}{s}-1-c\right) \quad (2)$$

$$\Delta M = oA\left(\frac{f}{s}-1-c\right) \quad (3)$$

Where

$$c = \frac{B}{A}$$

We know from measurements of tree rings grown during the middle of the Nineteenth Century, compared with those grown during the last few years, that for the period 1850–1950

$$0.02 \geq s \geq 0.01 \text{ (the "Suess Effect")}$$

During this same period, $f = 0.1$, hence

$$\frac{f}{5} \geq s \geq \frac{f}{10}.$$

The series of atmospheric CO_2 measurements at Mauna Loa and Antarctica from 1958–1963 show that during these years

$$a = \frac{f}{2}.$$

Substituting in equations (1), (2) and (3) we find, for different values of b and $\dfrac{B}{A}$, the values shown in Table 7 for $\dfrac{M}{A}$, $\dfrac{\Delta M}{f}$ and $\dfrac{\Delta B}{f}$.

From this table we see that with a "Suess Effect" of 2% (the most probable value), with fossil fuel combustion as the sole source of additional CO_2, and with "effective" biosphere sizes of 2.5 to 0.5 times the atmospheric CO_2, the oceanic reservoir is 2.6% to 6.0% of the volume of the oceans, equivalent to a layer of water 100 to 240 meters thick just below the surface. The size of the oceanic reservoir varies inversely with the size of the biosphere. For a "Suess Effect" of 1% (probably too low), and the same range of biosphere sizes, the assumed layer of complete mixing contains 11% to 14% of the ocean volume, and has an effective thickness of 440 to 560 meters.

TABLE 7.—*Possible Sizes of Oceanic and Biosphere Reservoirs and Partition of Added CO_2 Among Reservoirs*

$b=0$; $s=0.2f$; $a=0.5f$ ($f=0.1$)

$\frac{B}{A}$	$\frac{M}{A}$	$\frac{\Delta B}{f}$	$\frac{\Delta M}{f}$	$\frac{\Delta B}{B}$	$\frac{\Delta M}{M}$
0.5	3.5	0.36	0.14	0.072	0.004
1.0	3.0	.38	.12	.038	.004
1.5	2.5	.40	.10	.027	.004
2.0	2.0	.42	.08	.021	.004
2.5	1.5	.44	.06	.018	.004
$b=0$; $s=0.1f$; $a=0.5f$					
0.5	8.5	.16	.34	.032	.004
1.0	8.0	.18	.32	.018	.004
1.5	7.5	.20	.30	.013	.004
2.0	7.0	.22	.28	.011	.004
2.5	6.5	.24	.26	.010	.004
$b=.5f$; $s=0.2f$; $a=0.5f$					
0.5	3.5	.86	.14	.172	.004
1.0	3.0	.88	.12	.088	.004
1.5	2.5	.90	.10	.060	.004
2.0	2.0	.92	.08	.046	.004
2.5	1.5	.94	.06	.038	.004

A layer of water a few hundred meters thick would be acceptable to oceanographers as defining mixing over several decades. Hence, if the "Suess Effect" is close to 2%, the size of the biosphere reservoir is probably about equal to, or less than, that of the atmospheric reservoir. This coincides with other estimates that the effective size of the biosphere on land, including both living organisms and humus, ranges from ½ to one times the atmospheric carbon content. Possibly the organic content of the oceanic mixing layer should be included in the biosphere reservoir, but this is only a few tenths of the atmospheric CO_2.

In terms of the amounts of carbon they contain, the biosphere reservoir is much smaller than the oceanic reservoir. However, over short times in the ocean, only the relatively small "free" CO_2 content (dissolved and hydrated carbon dioxide) needs to be taken into account. Most of the oceanic carbon dioxide is present as carbonate and bicarbonate, and because of the peculiar buffer mechanism of sea water they do not have a very large quantitative effect on the partition between the sea and the air.

The Table shows if sources other than fossil fuel combustion had contributed much carbon dioxide to the air within the last few decades,

the biosphere would have increased in size by what is probably an observable amount. Such an increase has not been noted. We can conclude that, at least during the recent past, fossil fuel combustion has been the only significant source of CO_2 added to the ocean-atmosphere-biosphere system. The available data do not rule out the possibility that in earlier decades carbon dioxide may have come from oxidation of marine or terrestrial humus, as well as from fossil fuels, but if so, more than half of the amount produced was re-absorbed in the biosphere and the ocean.

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Annex 556

G. Seaborg, "The Role of Energy", *United States Atomic Energy Commission*, 13 January 1966

The original records can be found at the Library of Congress (*see* Library of Congress catalogue, available at: https://catalog.loc.gov/vwebv/search?searchCode=LCCN&searchArg=mm%2089078514&searchType=1&permalink=y (last accessed on 10 July 2024)). The Library of Congress can be contacted for assistance by phone (at +1 (202) 707-5000)

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Remarks by
Dr. Glenn T. Seaborg, Chairman
U. S. Atomic Energy Commission
at
The Second Nobel Conference
Gustavus Adolphus College
St. Peter, Minnesota
January 13, 1966

THE ROLE OF ENERGY

It is a privilege and a pleasure for me to be here at your Second Nobel Conference and to take part in discussions of some of man's endeavors that are of vital concern to us today. Because the subject of energy, which I have been asked to cover, is a vast one, I will only be able to touch on some aspects of it. But I will try to highlight those aspects with which we will be most involved in the future - those areas of energy development and use which will, to a great extent, determine our future.

The role of energy in the history of mankind is a fascinating subject, and it is difficult to resist the temptation to trace this relationship in detail. I will try to resist this temptation today. Nevertheless, it is worthwhile to reflect somewhat on the history of energy and to recall some of its landmarks, if for no other reason than to remind ourselves of the dynamics of energy growth and application, and therefore to better prepare ourselves to understand and deal with energy in the future.

Man has been called "the animal who thinks, who reasons," "the tool-making animal," "the information-transmitting creature" and so on. But to a great extent he is a creature who has progressed only in proportion to his ability to extract and convert to useful, productive purposes the energy in his environment; his entire success may be outlined in

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terms of his achievement in energy extraction, conversion and application. And I should remind you that, at this point, I am referring to all energy - including agriculture and the use of animals for food and muscle power.

History reveals that the ascendancy of states and civilizations was greatly affected by their control of energy, whether it was their predominance in the use of animals - the horse or elephant, for example - or the ways in which they used energy to extract and convert mineral resources t tools and weapons. However, if we look back at man's use o energy, we realize that, relatively speaking, it is only in the last few moments of his existence here on earth that he has become an energy-consumer and manipulator to any large degree. Man's energy use has grown in the most remarkably exponential manner. For example: for the first million years of our existence, we consumed and converted energy on on the animal level and only with the crudest of tools to give us any energy advantage over animal life. The discove and control of fire gave us a small amount of light and hea and helped lift us from the Stone Age, but nothing more for thousands of years. With the advent of agriculture and ani mal husbandry, we raised ourselves a few more rungs on the energy ladder. Simple machines raised us further, but we were still using only food energy, converted by human and animal muscle, as our primary power. Taking another step forward, we harnessed wind and water - at times powerful, but sometimes undependable, sources of energy.

In all this time, from the very beginning of our histo - the evolution of the human race - to the beginning of the 18th Century, the manner in which man extracted and convert energy did not change significantly. Men were able to make some use of the energy of wind and water - the windmill and the waterwheel were prime examples of this - but heat and light resulted from the burning of plant and fossil fuels, and kinetic energy was produced for the most part by the same processes of converting the energy of the food chain t muscle power - no matter whether that power came from a man or a team of oxen. Regardless of how we may revel in the glories of the past - the great pyramids, the temples of Ancient Greece, the early empires of the East and West - we must remember that all these were made by the muscle of man and beast - often working side by side and, for the most part, both harnessed to a life of slavery and incessant toi

Then within the span of only a hundred years - the 18t Century - a new advance was conceived and took hold, one

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which added a new link in the energy conversion chain and began to release mankind from a life of endless drudgery. The idea, at first embodied in the steam engine, was that of converting the heat energy of burning fuel to mechanical energy to be used directly by a machine.

I think that too few of us today realize the significance of this discovery. The evolution of the steam engine was far more than the beginning of the Industrial Revolution. It was, in effect, a turning point in a million years of human history, and it happened, relatively speaking, overnight.

Up to this point, man had essentially only one way to amplify all the intelligence and creative energy he had been accumulating and passing on through the ages. That was directly through his own physical labor. The advent of the steam engine - a power machine which could be made portable and was independent of wind and water power - began to release man from living on the subsistence level, allowed him to turn in greater numbers to the use of the intellect and to extend the benefits he was beginning to enjoy to ever-increasing numbers of his fellowmen. It affected every facet of human life - the production and distribution of food, the building of shelters, methods of transportation and communication, the growth of cities, and the rise and fall of nations. In the century following the invention of the steam engine, man used more energy than he had in all previous recorded history, including his food consumption. And at this point in history an upward spiral began in man's creative evolution - his conscious modification of his environment - as well as in his use of energy.

The exponential growth of energy use continued with the invention of the internal combustion engine, which added a new demand for oil to our growing demand for coal. Prior to the use of coal and oil, almost all of man's heat energy had come from his food and the burning of wood. Now as we leaped forward in progress, we were moving backward in time to ancient energy sources - to the fossil fuels created under the earth millions of years ago.

It is interesting to note two factors in relation to man's energy consumption. The first is that we seem always to have discovered a fuel well before we had any great demand for it or technology for using it. Coal, for example, was only a minor substitute fuel for heating homes in England before it was found extremely useful for smelting ore and

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later for powering steam engines, and oil was used as a lamp fuel for centuries before its need as an engine fuel was developed. Secondly, in the course of our energy progress, man's use of various fuels has been evolutionary, with the applications of different fuels and the technologies for using them overlapping in time. The same or similar relationships, incidentally, seem to be present in the introduction of civilian nuclear power. Such relationships, in spite of the incredible changes in our over-all energy picture, were brought to mind most vividly in a recent article which pointed out, quite casually, that a man who had chopped wood as a youth to heat his family's home, and who was now the president of a major electric utility, was about to use nuclear power to supply heat, light and other labor-saving energy to all the homes of his vast community. Here, in the lifetime of one person, is represented a picture of the shift of uses of all major energy resources applied by man since the beginning of time. I have been reminded that many of us still chop and burn some wood today - though I hope more out of pleasure than necessity. And most of us are still using, to varying degrees, and for different uses, all of the major fuels used throughout our energy history - wood, coal, gas and oil.

It is interesting to note that as one energy source replaces another, the replaced material is needed and used for other applications. Wood today represents less than 1% of our total fuel in the U.S., but the demand for it for other uses is great and continues to grow. Though the time is still somewhat in the future, there will come a day when uranium and thorium will have replaced coal to a large extent as an energy source, and when coal will be far more valuable - probably vital - as a source of hydrocarbons and other complex and wondrous organic molecules for the chemical industry. There is even some current thinking about the future use of hydrocarbons as the basis for making synthetic food. This is only speculative, however, and the shift in our possible uses of resources is a vast subject which I cannot explore to any extent today.

Following the development of the steam engine, probably no other development has had as widespread an effect on man as that of electricity. There are many significant factors concerning the introduction and development of electricity which affected man's total energy picture. Electricity provided a rapid means of transporting energy over great distances. It made possible the conversion of heat and mechanical power into a form which could be "shipped" great

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distances through a wire and then converted back into heat and mechanical power and into light. It was able to supply men with power in smaller and more easily controlled quantities. But perhaps most significantly, it was responsible for a revolution in human communication - a revolution which is still continuing. It is almost overwhelming to contemplate the rapid extension of knowledge and ideas since electricity made possible the introduction of the telegraph, telephone, radio, television and the electronics of the computer and data-processing technology.

History may some day show that the discovery and use of electricity, the ingenious ways in which man learned to apply it, were responsible for the most significant advances of the human race. In addition to the control it has given us over larger amounts of energy, its refinement in systems which give us control over the most minute quantities of energy make possible a new relationship between men, and between man and nature, providing us with a better understanding and control of nature. We are just beginning to delve into vast new possibilities in the field of electronics - particularly in relation to computers, automatic data processing equipment, control and communications systems, and the new discipline of bionics. Advances in these areas will have much to do with how we live in the future. They will also be largely responsible for our exploration outward into the cosmos and inward to the mysteries of matter and life. In this latter regard, we are using energy to help us discover what energy is - and also what we, its users, are.

In discussing the role of energy it is important to note that, in terms of end uses, a major energy requirement is for heat - space heat and industrial process heat. About 40% of our total energy input goes for such uses. In these applications natural gas plays a leading role, supplying about 40% of our space heating and about 35% of our industrial process heat. Natural gas and natural gas liquid together supply a larger percentage of our industrial process heat than does coal, and the use of gas for all heating seems to be growing.

We have come a long way in our development of hydroenergy since the days of the waterwheel. However, as large and efficient as our modern hydroelectric systems are, the use of this form of energy accounts for less than 5% of our total energy in the U.S., and its share is declining. This does not hold true in other parts of the world though, where

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the existence of less fossil fuel gives hydropower a re
tively more important role.

Our most recent advance in the history of energy,
control of nuclear fission, has had a profound effect
mankind, partly because of the way it was introduced bu
haps more so because with its introduction came the rea
tion that man had reached a new and crucial point in hi
ability to create and use power. With the first releas
nuclear energy, twenty-odd years ago, we knew that it w
only a matter of time before man would be able to amass
activate enough power to destroy himself completely or
himself to new high standards of living. I think we ha
reached that time in human history.

Today our destiny depends not only on our control
destructive energy - nuclear weapons - a problem of whi
are fully aware and for which we are earnestly seeking
tions, but also on how well we can put all energy to pe
ful and productive uses. Assuming we will go the peace
route - we must if we are to survive - there is still a
tral problem to be faced. And it is a problem ultimate
involved in world peace as the control of nuclear weapo

Looking at the energy statistics of today - or per
just looking at the conditions of peoples of the world
- that problem is starkly revealed. Throughout my rema
to this point I have been talking about energy and "man
but, in reality, when I have been referring to man's ev
growing use of energy and the benefits it has brought h
I have been referring to only a portion - the smaller p
tion - of those people who inhabit this earth. While s
of us have experienced the dramatic growth of energy an
associated blessings, by far the larger percentage of t
world's peoples are still living at the energy level of
primitive man.

I was vividly reminded of this fact again on a tri
around the world last fall following my attendance at a
ference in Tokyo of the International Atomic Energy Age
In several of the countries I visited, I found a majori
the population still living under almost primitive condi
while a small percentage, living on a level commensurate
the more industrially developed nations and using some
science and technology, struggle to raise the living sta
ards of the entire country.

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While the energy consumption of a country is not the only measure of its well-being, it does represent a very important factor. Most of you may be aware of the fact that the United States, with only 6% of the world's population, uses about 35% of the world's energy output. The specific figures showing the general disparity between the energy consumption of developed nations and the developing ones are similarly striking. This does not mean that a greater increase and a sharing of energy resources alone is the key to world development and a higher standard of living throughout the world. Much capital equipment is needed by a developing nation before it can productively use any large amounts of energy. Education and training are essential in order for it to be able to use the equipment and energy. And, of course, in most areas of the world, the very basic energy of food is still not being produced in quantities sufficient to keep the population alive and healthy.

But though most of this must be accomplished before a nation can make maximum use of energy resources, before its economy can reach the so-called "take-off" point, these prerequisites alone require the expenditure of much energy, and that energy must be expended and the equipment and the training to use it must somehow be made available. Before the developing nations can pull themselves up by their bootstraps, someone must supply the boots. In this respect, the developed nations of the world must realize that they are their brother's keeper. If they fail to act as needed, the disparity between the have and the have-not nations will grow at an even greater rate, eventually reaching a point where the situation becomes insoluble by peaceful means. (And considering the destructive power at man's disposal today, the use of other than peaceful means is unthinkable.)

The total energy challenge facing us is compounded by the fact that, when we talk about energy requirements, we are talking about dynamic, ever-growing needs. This is apparent not only because of the growth of world population, which by the end of this century - only 34 years away - will amost double, but also because no developed economy stands still. In the United States, total energy requirements have been increasing at a rate of about 3-1/2% a year and our demand for electricity has been doubling every ten years.

A major challenge facing the world, then, is: Can we muster and put to work enough energy not only to keep our developed and developing nations supplied and growing but also to lift our underdeveloped areas into the mainstream

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of the 20th century - above the mere subsistence level and hopefully to the point where they can begin to enjoy the benefits shared by the rest of mankind?

From the standpoint of the production of energy alone, I think that this can be accomplished and I would like to devote the remainder of my talk to discussing some ways in which this aspect of the problem can be solved. Of course, all that I am going to say is based on the assumption - the necessity - that the major powers of the world solve their political differences peacefully.

First of all, let us tackle a big, over-all question: Do we have enough energy resources here on earth to support our growing population at a high-energy level - a level which will see almost everyone well-fed, well-clothed and well-housed? Projecting the total energy on earth and reaching the earth, and assuming reasonable control of the growth of world population can be obtained, I believe we can be optimistic about this - but only if we take full advantage of all the energy resources at our command and develop the best technologies for using them.

While our fossil fuels are not inexhaustible and we are consuming them at a great rate, new reserves are being discovered which convince most people we are in no danger of running out of such fuel in the near future. But in this era of rapid change, the near future has a way of quickly becoming the present, and therefore it will not be long before we will be depending on the atom - on nuclear fission - to supplement our fossil fuels, and eventually to take over their work in certain areas. In the light of this, technologies are being developed to more efficiently and economically unlock the tremendous nuclear energy in the world's extensive uranium and thorium resources.

I will go into some detail on these technologies later, but just let me bring to light here a few facts which may give you some food for thought. Most of you are aware of the tremendous energy which can be released by nuclear fission from uranium and thorium as compared with the burning of fossil fuels. A cubic inch of uranium metal has the energy-potential of about 20,000 cubic feet of coal, 30,000 cubic feet of oil, or 25 million cubic feet of natural gas. Bearing this in mind, consider that the world's reserves of uranium and thorium number in the millions of tons, and that the breeder reactor technology now under development will allow us to extract two thirds of the nuclear fission energy

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in this quantity of fuel. Such a supply of energy, even at rates of consumption much greater than those of today, could keep us going for centuries to come. From the standpoint of the atom's contribution to our total energy picture, I think you will agree that our future looks bright.

There are, of course, many people who look to the darker side of the picture and point out the total destructive potential of all the nuclear weapons in existence today. Certainly the existence of such destructive power is reason for grave international concern and for the most intensive efforts toward arms control and disarmament. We are making these efforts and we are making some progress in them, even if it is primarily in agreement that some systems of arms control and disarmament must be put into effect. We simply must see more substantial progress made in this area in the future.

But idealistic as it may seem in the light of the current world situation, let me go so far as to reverse the situation. Think for a moment what the world might accomplish if all this potentially destructive energy were turned over to peaceful, productive uses, and the nations of the world agreed to devote it to such. And I might add that such a conversion of nuclear fuel from military to peaceful uses is entirely feasible from a technical point of view.

It is mainly through energy that man is able to amplify his intelligence and creativity - his wisdom or folly. In view of this, what tremendous opportunities are possible, therefore, for the human race if it could somehow make patience, reason and understanding prevail.

Hopeful that such will eventually be the case, let me turn in the concluding minutes of this talk to some of the specific energy challenges we face.

A first and foremost energy problem in the world today is the production of enough food to feed the growing population. While agriculture is decidedly not my field - I do not even have a green thumb - I have heard few experts in this area who do not believe that it is possible, with considerable effort, to substantially raise world food production and keep it growing in line with a reasonably controlled rate of growth of world population. To do this, there are many associated energy requirements. They involve such things as the increased production of chemical fertilizers, the development of more arable land, better control of land

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and water resources, the development of new and improved crops - of more yield and more resistant to weather and disease - and better methods of planting, harvesting, processing and distributing food. In addition to these efforts to produce more food on land, we will probably see in the future a greater effort to harvest the enormous food resources of the sea and, as I indicated before, the possibility of someday producing synthetic food. All these efforts will require the consumption of increasing amounts of energy.

Returning to those forms of energy with which I am more familiar - those we use to give us process heat and power - we must consider some of the ways in which we are going to meet the growing demand ahead.

Conservative estimates predict that world-wide fossil fuel consumption in the year 2000 will be over five times our consumption today, and this is based on an average consumption far below the present high-energy level of the U.S. Similar estimates tell us that the total energy the world will consume between now and the end of the century - again I remind you that this is a mere 34 years away - total world energy consumption will be over <u>three times all the energy consumed from the beginning of human history to the present day</u>. In the light of this, and if we hope to raise living standards all over the world, I do not think we have arrived any too soon at our knowledge of nuclear energy.

In the past two decades I believe we have made remarkable progress in learning about the many aspects of this versatile new source of energy - nuclear fission - and in developing a range of technologies to put it to use.

While I do not have time to go into detail on the many applications of radioisotopes, I should point out that these compact sources of energy, capable of supplying both radiation and heat, and so ideally suited to work in combination with electronics, have become valuable assets to medicine, agriculture and industry, as well as scientific research. Radioisotopes, which are to a great extent the by-products of what is unfortunately called "atomic waste," have begun to play an important role in our space program, in the supplying of auxiliary electrical power, and also on earth for supplying power for many types of remote unmanned information-gathering and transmitting stations and devices.

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However, nuclear energy will probably make its greatest contribution to mankind in its role as a supplier of large amounts of electrical power. The nuclear power reactor is now beginning to take its place alongside the conventional power station as a major producer of electricity in the United States. While nuclear plants are currently producing only a small percentage of America's total electrical energy, they have recently become economically competitive with conventional plants in many areas of the country, and this fact, plus their proven reliability and safety, accounts for a growing interest in nuclear power.

Today we have 12 central station nuclear plants in operation in the U.S. producing enough electricity to supply the needs of more than a million families. Another dozen or so new plants are under construction or firmly planned - two of them to be adjacent to and supplementing the power of nuclear plants in operation for several years. It is also encouraging to note that there is hardly an electrical utility company in the country that is not seriously considering the possibility of using nuclear power to meet its growing demands.

But in nuclear power technology, as in the development of all technologies, there is no standing still. The nuclear power reactors in use today are primarily pressurized water and boiling water reactors of the type which "burn" only 1% or less of their atomic fuel. While these systems are efficient and apparently economic by today's nuclear standards, we must look ahead and consider the total nuclear energy picture, planning and working toward the maximum efficient use of our nuclear energy resources. Our ability today to gather information and make projections of future demands gives us great advantages in planning, and, we hope, will keep us from squandering many irreplaceable natural resources as we have unknowingly done in the past.

At present, the hope for our making maximum use of our uranium and thorium fuel reserves seems to be in the development of what we call advanced converter and breeder reactors. These reactors, in conjunction with fuel reprocessing systems, will allow us to use not a small percentage of our nuclear fuel, but essentially all of it. The reference I made earlier regarding the large amount of energy we could get from our nuclear fuels was based on the use of such reactor technologies. They are able to accomplish this because as they "burn" the fraction of the fissionable isotope uranium-235 in their initial fuel, they also transmute

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the abundant non-fissionable isotopes uranium-238 or thorium-232 in that fuel to fissionable plutonium-239 and uranium-233 respectively. Both these new fissionable isotopes, therefore, can be burned in place, as is done in some types of reactors, or they can be separated and reprocessed into new fuel elements for use in the same or other reactors. The difference between the advanced converters and the breeder reactors is essentially that, while the converter creates substantial quantities of new fissionable fuel by the method I have just described, the breeder actually produces more fissionable fuel than it consumes. Therefore, a nuclear fuel economy based on the use of these breeder reactors - producing power and their own fuel - offers us a way of stretching the world's supplies of uranium and thorium - supplies which are vast but which could still be used up too rapidly if we did not develop these new technologies. It is toward such a nuclear energy economy that the government, through the Atomic Energy Commission and in partnership with our growing nuclear industry, is working.

In addition to the role of nuclear power in conserving and making maximum use of our total energy resources, we see many other benefits. Abundant energy, economically produced, means cheaper energy. And in a world growing in population and needing to make better use of its land, cheaper energy makes more land liveable. It makes possible more heating in cold climates, air conditioning in hot climates (and do not underestimate the future growth of this), water for arid lands (we feel that nuclear desalting plants will someday play an important role in this area), improvements in agricultural production, and better transportation and communication, making the most remote areas of the globe accessible. In addition to this, we must remember that more energy - and cheaper energy - will be needed for the very process of extracting and using energy resources and materials from the earth as, of necessity, we have to go to deeper and to lower grade ores for all our vital mineral resources.

Since nuclear fuels are highly compact and easily transportable, they are relatively independent of geography and, therefore, will eventually be able to provide their energy at lower cost than conventional fuels anywhere in the world. This will become an important factor in the closing of the "energy gap" between nations and hopefully in raising the living standards of all people.

Aside from its use on land, nuclear power offers great promise on and under the sea and in space. The success of

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the Nuclear Ship Savannah, now in commercial service after 90,000 miles of trouble-free demonstration cruises to the world's leading ports, has stimulated interest in the building of more long-range nuclear-powered cargo and passenger ships.

The nuclear submarine has proved the superiority of nuclear propulsion under the sea, and this source of power, plus nuclear auxiliary power for supplying electricity for communications and undersea research equipment, will play a major role in our future exploration of "inner space" and the way in which we make use of the vast resources beneath the oceans of the world.

For the future of our exploration of outer space - and it will be in the not-too-distant future considering the fine progress we are making - we will require the use of nuclear rockets for space propulsion. Nuclear powered rockets with their high energy-to-weight ratio will be our best means of carrying large manned and unmanned payloads to and from the planets. Such rockets are being developed now with up to 250,000 pounds of thrust produced by hydrogen heated in a reactor only twice the size of a large garbage can. When we reach the moon and planets, and should we want to stay there for any length of time, I think it will be nuclear energy which will make long stays possible. The assembling and fueling of such nuclear power stations in orbit or on the moon or planets will provide some fascinating challenges.

Returning to our interests here on earth, there is another energy challenge I might call to your attention which merits some serious thought. Realizing the extent of the pollution of our environment these days, President Johnson last year requested a study of this matter by a special panel of his Science Advisory Committee. In the report the panel submitted to the President on November 6, 1965, one of the problems highlighted was stated as follows:

"Carbon dioxide is being added to the earth's atmosphere by the burning of coal, oil and natural gas at the rate of 6 billion tons a year. By the year 2000 there will be about 25 percent more carbon dioxide in our atmosphere than at present. This will modify the heat balance of the atmosphere to such an extent that marked changes in climate, not controllable through local or even national efforts, could occur. Clearly, we need to understand this problem and follow the details of change. Thus, it may be very important

to find means of preventing or counteracting the changes or to change our source of energy to one that produces less carbon dioxide."

This is one particular pollution problem as highlighted in the report to the President. And the reason I bring this problem to your attention is that I think the growing use of nuclear energy may provide one of a number of solutions to this problem. Since nuclear power does not involve combustion, it can cleanly produce electric power for industry, homes and transportation, and possibly provide space heating for all three, either directly, as is currently being done by the Swedish reactor at Farsta, or through electricity. The possibility of electrically powered automobiles, operating on batteries which could be charged at service stations receiving nuclear-generated electricity, might also help to solve air pollution problems. I believe that these are a few of the important contributions which the atom could make to man.

In all that I have covered concerning nuclear energy to this point, I have been speaking primarily about nuclear fission. We must remember that success in the work we are undertaking in the field of controlled thermonuclear fusion would lead to a vast new source of energy. When we have solved the tremendously perplexing problems involved in controlled fusion, we will be able to use as a most abundant and powerful fuel the heavy hydrogen atom - deuterium - found in common sea water. The harnessing of such energy through controlled fusion will provide the world with a virtually limitless source of energy. Such energy would be helpful in raising the world's living standards and maintaining them indefinitely at a level approaching our own with its high-energy demands.

As most of you know, it is the fusion energy of the Sun that is the basis for so much of the energy here on earth and which is responsible for life itself. Only a tiny fraction - one-two billionth - of the Sun's energy reaches the earth, but that energy is so enormous that every twenty seconds it equals more energy than that in all nuclear weapons currently in existence. The Sun's energy is also responsible for lifting 100,000 cubic miles of water from the earth every year, which returns in the form of rain. While we use a great amount of the Sun's energy indirectly through plant life and hydroelectric power, we are able to harness only a small portion of it directly. No doubt our methods of using solar energy will be improved in the future

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and, in addition to the other energy sources available to us, we will need to make more use of the Sun's great energy.

I have covered many aspects of the role of energy today and have tried to give you a broad picture of their relationship to our progress and their importance to our future. I hope I have given you some idea of the prospects and problems we face in dealing with energy.

As I have indicated, and hopefully impressed you with the facts, the challenges that are posed by energy - our need for it, our ways of using it, and our control of it - are challenges that can be met by men who fully realize, as did Alfred Nobel, not the importance of power alone, but the power of science and technology, of knowledge, and of peace. If the world can be convinced - and I believe it can - that the better, and quicker, path to abundance and the good life is through the sharing of energy resources and the technologies for using them, I think many of you can look forward to reviewing the role of energy in the year 2000 and once again marvelling at the progress we have made. I hope I will be around at that time if for no other reason than to say, "I told you so."

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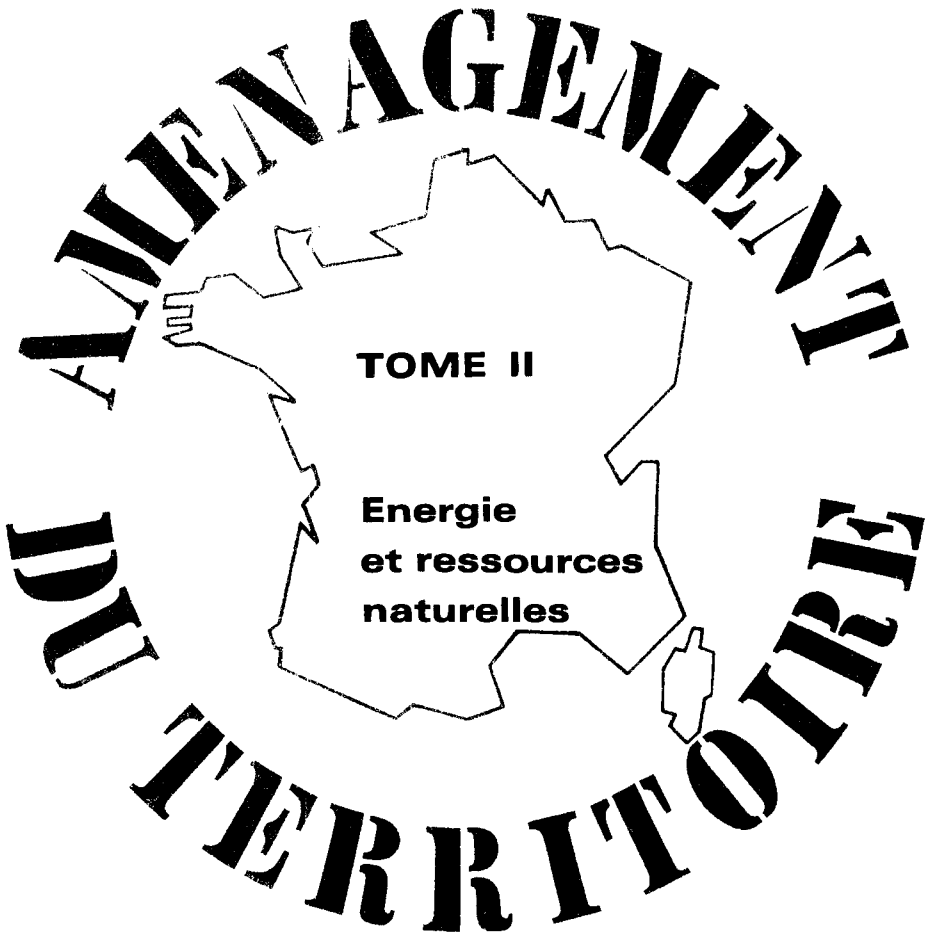
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Annex 557

"1er Colloque International sur l'Aménagement du Territoire et les Techniques Avancées", *Collège des techniques avancées et de l'aménagement du territoire*, March 1968, pages 50-55, 17-36

Collège des techniques avancées
et de l'aménagement du territoire

1er COLLOQUE INTERNATIONAL SUR L'AMENAGEMENT DU TERRITOIRE ET LES TECHNIQUES AVANCEES



mars 1968

LES PROBLEMES DE LA POLLUTION

Un autre point qui a été tout à l'heure mentionné par M. le Président, mérite d'être à nouveau indiqué, c'est l'aspect pollution. Je pense que cette considération jouera d'une façon très considérable à l'avenir, à côté des considérations strictement économiques et en faveur d'un développement croissant du nucléaire.

M. TUBIANA (F.). - Je suis d'accord avec M. Vendryes pour penser que les problèmes de pollution vont jouer un rôle fondamental dans le développement de l'utilisation de l'énergie, mais, en tout cas tant que l'on restera à la fission, les problèmes de déchets atomiques se poseront également de façon critique pour l'énergie nucléaire.

M. VENDRYES (F.). - Un mot à la suite de la remarque de M. Tubiana.

Je suis d'accord avec lui, à savoir que le problème des déchets peut devenir un problème tout à fait majeur vers la fin du siècle, compte tenu des productions et des consommations en question. C'est un problème inéluctable, que nous aurons à résoudre de toute manière. M. Tubiana a fait au passage une remarque en disant "au moins dans le cas de la fission" ; je voudrais souligner que dans le cas de la fusion également il y aura déchets. De toute manière c'est un problème très important auquel nous allons être confrontés.

Dans le rapport on mentionne cette solution futuriste d'expédier les déchets par des fusées sur une trajectoire de non retour. Je ne sais pas si on en arrivera à ces solutions extrêmes ; je pense qu'il existe d'autres solutions terrestres, mais incontestablement c'est un problème majeur lié au développement de l'énergie nucléaire.

M. BALACEANU (F.). - On a posé la question des combustibles solides par rapport aux liquides. Il faut bien voir que le combustible liquide a avant tout un avantage d'utilisation, qui a fait le succès actuel du pétrole. Il est certain que les schistes bitumineux et les gisements de charbon restent plus importants comme réserves géologiques que les hydrocarbures eux-mêmes, mais on a l'impression que la technique évolue d'une façon continue en utilisant d'abord les produits pétroliers, puis des produits plus lourds : schistes bitumineux, sables bitumineux, de sorte que l'on peut penser à une espèce d'évolution du raffinage des combustibles fossiles qui évoluent d'une façon continue depuis les gaz et les combustibles liquides jusqu'à des produits plus lourds qu'on rendra liquides par un raffinage sans doute plus coûteux de façon à les mettre à la disposition du consommateur.

Au point de vue pollution, lorsqu'on regarde la pollution urbaine, actuellement on s'aperçoit que la voiture électrique n'est pas justifiée. (On y reviendra sans doute dans les discussions) pour des raisons de simple pollution, et que l'on connaît d'autres sortes d'artifices techniques qui permettent de réduire d'une façon extrêmement importante la pollution urbaine.

Du reste, ces questions de pollution urbaine peuvent évoluer d'une façon extrêmement variable suivant que le réseau de circulation urbaine est composé d'autoroutes à circulation relativement rapide ou au contraire d'un réseau à large densité dans lequel la vitesse de circulation est lente.

Enfin, en ce qui concerne la pollution par le soufre, il est bien évident que lorsqu'on raisonne à cinquante ans, un certain nombre de techniques nouvelles peuvent être envisagées pour abaisser d'une façon importante la pollution.

En tous les cas il semble que l'automobile électrique ne doit pas s'imposer, dans l'immédiat, pour des raisons de simple pollution parce qu'il est possible de combattre cette pollution par des moteurs conventionnels à combustion interne.

M. BOITEUX (F.). - Dans le domaine de la pollution, nous avons à faire face effectivement au problème de la pollution relative au moins au niveau des gros centres de production. Ne parlons plus pour l'instant de la voiture électrique ; nous en parlerons tout à l'heure. Mais, si l'on considère une grosse centrale productrice d'énergie électrique, si elle marche au fuel, elle pollue par sa cheminée, et si elle est nucléaire elle a des déchets à éliminer. Je ne sais pas dans quelle mesure on peut comparer des mètres cubes de déchets solides et des milliers de mètres cubes de déchets gazeux et en conclure que, finalement le nucléaire est plus,ou moins,gênant à cet égard que l'hydrocarbure. En tout cas, il y a là un problème sérieux que nous ne pouvons pas éluder.

M. GANDILHON (F.). - Je reviens à ce qui a été dit en matière de pollution : devons-nous nous attacher systématiquement à ces micro-pollutions que sont les pollutions urbaines actuelles, ou, au contraire, ne devons-nous pas penser à la pollution de caractère mondial, c'est-à-dire l'augmentation du taux de gaz carbonique dans l'atmosphère tout entier qui pourrait peut-être, dans une décade ou un demi-siècle, commencer à poser des problèmes de modification globale du climat terrestre. J'ai lu certaines choses assez impressionnantes à ce titre : ce qui pourrait conduire l'humanité à ralentir la combustion des combustibles au bénéfice nucléaire, en attendant qu'il y ait une sorte de course de vitesse entre la chlorophyle et les forêts, et la combustion des combustibles.

M. BOITEUX (F.). - M. Gandilhon dégage un argument en faveur des déchets nucléaires, parce qu'ils sont solides, vitrifiés et n'encombrent pas l'atmosphère de gaz carbonique, sans même parler du soufre, que la chlorophyle n'arrive pas à combattre.

M. BALACEANU (F.). - Je crois qu'à l'époque carbonifère, l'assimilation chlorophylienne était forcée par une teneur en gaz carbonique plus importante. En tout cas, on connaît une série d'espèces végétales pour lesquelles, en fonction de la pression partielle de gaz carbonique l'assimilation chlorophylienne croît avec cette pression, en particulier certaines algues.

M. TUBIANA (F.). - Excusez-moi de revenir,encore, sur le problème de la pollution, mais il est fondamental, surtout si l'on se place dans une perspective un peu lointaine.

On faisait tout à l'heure, des prévisions un peu futuristes sur l'évolution de la consommation de l'énergie et de la population du globe. A échéance plus proche, d'ici l'an 2000 - 2020, il y aura environ 8 milliards d'habitants sur le globe et sur ces 8 milliards, il n'y en aura qu'un qui habitera dans les pays à niveau de civilisation élevée. Or, tous les pays consommeront des quantités massives d'énergie qui seront vraisemblablement d'origine nucléaire ou à base d'hydrocarbure. Est-ce que tous les pays auront le même respect que celui que nous avons à l'heure actuelle - et encore assez relatif - pour ne pas sacrifier les grandes réserves mondiales d'air et d'eau ?

C'est en tout cas un problème vital pour l'avenir de l'humanité car les mers ne sont pas du tout une réserve illimitée d'eau. Si on n'y prend pas garde, le potentiel que représentent les océans sera gaspillé et ce sera irréversible.

M. ROTHERHAM (Grande-Bretagne). - Il est bien connu que la plus grosse partie de la pollution qui existe dans les villes se limite aux niveaux les plus bas. C'est surtout ce qui sort des cheminées, notamment des usines. Mais, à l'heure actuellement beaucoup d'usines n'ont pas d'émissions de soufre car on utilise des produits ou des systèmes chimiques pour s'en débarrasser. Des recherches sont en cours en Europe et en Amérique pour éliminer la pollution, et l'on peut prévoir avec certitude qu'il n'y aura pas à l'avenir de sulfures émis au moment de la préparation d'électricité.

La question du gaz carbonique reste un problème plus complexe, et je n'ai pas l'intention de proposer des solutions, car je ne sais même pas s'il est nécessaire de réduire l'émission de gaz carbonique.

Si nous devions revenir au début de ces débats, c'était à l'origine une comparaison entre l'énergie à base, soit d'énergie nucléaire,soit de matériaux fissiles. Je crois que l'objectif doit être essentiellement de s'assurer que les décisions qui seront prises aujourd'hui et dans les dix ans à venir ne porteront pas préjudice à la situation qui existera à la fin du siècle. Nous n'avons pas besoin de savoir exactement quelles seront les conditions à la fin du siècle, en détail, et même si nous le voulions, nous ne pourrions pas le faire. En conséquence, nous pouvons seulement faire des généralisations extrêmement vagues comme celles qui ont été présentées dans le document qui nous a été soumis. Nous mêmes qui commençons à partir d'hypothèses tout à fait différentes, arrivons à des conclusions pour les actions à entreprendre dans les dix à quinze ans à venir, qui sont virtuellement identiques à celles qui nous sont soumises par M. Laigroz.

Ceci me paraît extrêmement important ; pour cette période qui est à nos portes, il importe de ne pas faire de mauvais investissements, aussi bien sur le plan humain que sur le plan des machines. Il y a de nombreuses façons de faire des prévisions, mais, quelle que soit la manière dont on essaie de les faire, il faut arriver à des décisions valables.

Sur la question de la comparaison de l'énergie nucléaire et des autres énergies, je crois que la décision immédiate est assez facile à prendre, car nous avons beaucoup d'uranium à notre disposition en Grande-Bretagne ; nous nous sommes rendus compte que nous pouvions construire des centrales nuléaires qui, pour les besoins que l'on peut envisager dans les années à venir, produiront de l'électricité à moindre coût que les centrales utilisant le charbon.

Dans ces conditions, la décision est relativement facile ; il est facile de dire que l'on construira plus de centrales nucléaires et moins de centrales utilisant le charbon, et nous ne pensons pas que l'on puisse contester le bien-fondé de cette décision.

M. BOITEUX (F.). - Je remercie M. Rotherham qui a eu la sagesse de nous rappeler à la raison en nous disant : il n'est pas question de prévoir de façon précise ce qui se passera dans cinquante ans, mais simplement de s'assurer que les décisions que nous allons prendre pour les dix prochaines années ne vont pas trop gravement obérer l'avenir à plus long terme. Et c'est bien là, effectivement, l'objet de nos soucis. Il ne s'agit pas de faire de la prophétie gratuite, mais simplement d'essayer de prévoir ce que nous devons prévoir pour ne pas faire d'erreur coupable à long terme.

Je ne pense pas que ce soit tellement sous l'angle du choix entre centrale thermique classique ou centrale nucléaire que le problème soit posé. Il s'agit plutôt de savoir dans quelle mesure la croissance de la demande d'énergie va obligatoirement exiger que l'on aille vers le nucléaire, et donc vers l'électricité,

ce qui obligera l'électricité à envahir un marché des usages thermiques que, jusqu'ici, elle occupe relativement peu. La question est donc avant tout de savoir quel est le domaine promis à l'expansion de l'électricité, et notamment si, par exemple, cette énorme consommation d'énergie que constitue le chauffage domestique est appelée, à terme, à lui revenir ou, au contraire, à rester dans le domaine des combustibles fossiles.

C'est là, je pense, une des grandes questions posées, parce qu'elle commande finalement à la fois le développement de la production d'énergie nucléaire et en même temps les problèmes de transport et distribution. Personnellement je crois que l'électricité est appelée à prendre une place très notable dans le chauffage domestique qui, autant que je sache, représente le quart de la consommation d'énergie en ordre de grandeur, ou le cinquième,en tous cas un marché considérable. L'électricité est appelée, je pense, à prendre ce marché. D'abord, bien sûr, pour des raisons de pollution parce que, malgré tout, lorsque l'on opère au niveau d'une centrale, qu'elle consomme du nucléaire ou des hydrocarbures, elle pollue beaucoup moins que la somme des chauffages domestiques alimentés individuellement ou au niveau des immeubles par des chaudières qui sont toujours, quoi qu'on fasse, mal réglées ; ensuite, pour des raisons quantitatives et de prix en même temps : je pense que l'énergie électrique d'origine nucléaire est appelée à supplanter progressivement, pour ce genre d'usage, les énergies classiques, parce que ces énergies classiques sont handicapées à la fois par des questions de de quantités et de prix.

Mais c'est là une opinion personnelle qui peut très bien ne pas être partagée par tous.

M. PATIN (F.). - Je voudrais attirer l'attention, à la suite de ce que vient de dire M. le Président, sur le fait que la localisation des grandes centrales dont nous allons parler tout à l'heure repose en grande partie sur les problèmes de refroidissement. Ceux-ci viennent du fait qu'on sait mal utiliser les calories de faible valeur énergétique. Or, précisément, ces calories de faible valeur énergétique, sont peut-être celles qui pourraient nous apporter la solution du problème du chauffage sous la forme du chauffage urbain, parce qu'il est bien connu que pour réaliser le chauffage on n'a pas besoin de calories de grande valeur. Or, ces calories, nous les gaspillons de plus en plus à réchauffer l'eau des rivières et l'air des campagnes.

Je crois que ce problème doit être posé puisqu'il entraîne celui de la localisation des grandes centrales et par conséquent, en même temps ,celui du transport de l'énergie sous ses différentes formes, qu'on la transporte sous forme de matière lorsque les centrales sont au voisinage de la consommation, ou sous forme de courant lorsque les centrales sont au voisinage des lieux où on apportera les matières premières ; pour les grandes centrales, l'avenir est peut-être au bord des mers.

M. GUILLAUMAT (F.). - Aussi bien lorsque j'étais président de l'Electricité de France que depuis que je préside des intérêts pétroliers de l'Etat français, mes conclusions personnelles rejoignent celles de M. Boiteux.

Bien qu'ici nous ne regardions pas les problèmes de financement, de commercialisation et d'achat des différentes ressources, il est certain que dans les cinquante prochaines années, ces problèmes seront considérables. Pour les pays industriels qui sont importateurs d'énergie, c'est-à-dire presque toute l'Europe occidentale, le Japon et peut-être demain les Etats-Unis, le problème de payer son importation d'énergie se posera de telle façon que le nucléaire, dans les nations industrielles, est la seule solution pour maintenir leurs ressources à hauteur de leurs besoins.

M. BOITEUX (F.). - C'est effectivement un point de vue qui n'avait pas encore été évoqué et qui est fondamental, à savoir l'indépendance de l'Europe et en même temps l'équilibre de ses échanges en devises, et je pense que, là encore, l'énergie nucléaire trouve des arguments qui pèsent lourdement en sa faveur.

La question qu'évoquait M. Patin tout à l'heure, nous la reverrons au moment où nous parlerons de la concentration, soit littoral soit ailleurs, liée au problème de l'eau, au réchauffage de l'eau et aux problèmes qu'il a évoqués.

Après avoir consacré un temps un peu plus long que prévu point de savoir dans quelle mesure l'énergie d'origine nucléaire est appelée à prendre une place de plus en plus importante dans notre approvisionnement en énergie, nous avons pu noter, d'abord, qu'il y avait un problème d'échéance. Il est évident que le problème se pose en termes différents suivant que l'on raisonne à 20 ans ou à 50 ans d'échéance.

Ensuite, nous avons noté que l'aspect pollution était un aspect très fondamental du problème, alors que les deux formes d'énergie suscitent à cet égard des inquiétudes, soit par l'évacuation des déchets radioactifs, soit pour l'évacuation, si ce n'est du soufre que l'on saura dominer dans dix,vingt ou je ne sais combien d'années, du moins celle du gaz carbonique, sauf secours chlorophylien.

Enfin, les aspects liés à l'approvisionnement de cette Europe qui manque de ressources fossiles et qui, par ailleurs, se doit de trouver un équilibre convenable pour ses devises.

Ceci me semble aller en faveur d'un développement très notable de l'énergie nucléaire, très notable ne voulant pas dire exclusif, et là dessus M. Laigroz, très sagement, avait prévu dans son rapport que, malgré tout, les hydrocarbures avaient encore un bel avenir devant eux.

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Jean BUSTARRET	Ingénieur Général du Génie Rural, Directeur Général de l'Institut National de la Recherche Agronomique
Julio CALLEJA	Directeur Général de l'Energie - Madrid - Espagne
Georges CANDILIS	Architecte, Professeur à l'Ecole Nationale Supérieure des Beaux Arts de Paris
Henri CANONGE	Directeur Général de la C.N.M.C.C.A.
Jean CARPENTIER	Ingénieur en chef de l'Air
Etienne CARRON de la CARRIERE	Directeur de la Fédération Routière Internationale - Genève - Suisse
Pierre CASPAR	Responsable du Groupe d'Etudes et d'Interventions CUCES
Paul CASTAIGNE	Vice-Doyen de la Faculté de Médecine de Paris
J. CAUSSE	Administrateur à la Direction des Synthèses Economiques de l'I.N.S.E.E.
Bernard CAZES	Chargé de Mission (Etudes à long terme), Commissariat Général du Plan

Yves CHATAIGNEAU	Ambassadeur de France, Membre de l'Institut
Rémy CHAUVIN	Professeur à la Faculté de Strasbourg
J. CHAZELLE	Chargé de Mission auprès du Commissaire Général du Plan d'Equipement et de la Productivité
Ivan CHERET	Chef du Secrétariat Permanent pour l'Etude des Problèmes de l'Eau
Françoise CHOAY	Chargée de cours à l'Ecole Nationale supérieure d'Architecture et d'Arts Visuels de Bruxelles
Jean CHOMBART de LAUWE	Professeur d'Economie Rurale à l'Ecole Nationale Supérieure Agronomique de Grignon
Alain-Pierre CLANET	Chargé d'un cours à la Faculté des Sciences de Toulouse, Assistant de Travaux Pratiques de Calcul Numérique à l'Ecole Polytechnique, Professeur associé à l'Institut Technologique Aeronautico-Brésil, Ingénieur en chef André VIDAL & Associés
Pierre COGNARD	Directeur du Centre Technique du Papier
Michel COLOT	Ingénieur des Ponts & Chaussées, Chargé de Mission à la D.A.T.A.R.
Olivier COSTA de BEAUREGARD	Maître de Recherches au Centre National de la Recherche Scientifique
Henri COURBOT	Président de la Chambre de Commerce et d'Industrie de Paris
Jean COURSAGET	Préfet, Directeur du Cabinet, Préfecture de la Région Parisienne
Jean CUISENIER	Maître de Recherches au Centre National de la Recherche Scientifique, Directeur du Groupe de Sociologie Economique au Centre de Sociologie Européenne
André DARLOT	Ingénieur Général du Génie Rural et des Eaux et Forêts, Directeur Général Adjoint de la Société d'Economie Mixte d'Aménagement et de Gestion du Marché d'intérêt National de la Région Parisienne (S.E.M.M.A.R.I.S.)

Pierre DARRIGRAND	Directeur de l'Aménagement Régional à la Chambre de Commerce et d'Industrie de Paris
Pierre DAVOUS	Directeur Général Adjoint Technique de la Compagnie Bull General Electric
Alexis DEJOU	Directeur des Etudes et Recherches à Electricité de France
Jacques DELAGE	Professeur de Zootechnie à l'Institut National Agronomique
Bernard DELAPALME	Directeur de la Recherche Scientifique et Technique ELF/ERAP, Directeur Général de la Société Rhône-Alpes
Paul DELOUVRIER	Préfet de la Région Parisienne
Jean-François DENISSE	Président du Centre National d'Etudes Spatiales
François DESOUCHES	Sous-Directeur du Centre National des Jeunes Agriculteurs
Charles DEUTSCH	Délégué général des Questions Scientifiques et Techniques de la Société Entrepose
Albert DIDON	Directeur Adjoint à la Direction des Etudes Economiques et du Plan au Ministère de l'Agriculture
Max DIETLIN	Secrétaire Général de la Fédération Nationale des Industries de l'Alimentation
Constantinos A. DOXIADIS	Président DOXIADIS Associés Int., Président du Conseil Institut Technologique d'Athènes, Président Centre d'Ekistique d'Athènes - Grèce
Joseph DUPIN de SAINT-CYR	Chef du Département Electronique et Automatisme du Crédit Lyonnais
Colette DURAND	Directeur d'Etudes au Service de Psychologie sociale à P.R.O.G.R.E.S. International
John William DYCKMAN	Professor and Chairman of the Department of City and Regional Planning - Berkeley - U.S.A.

Jacques EISENMAN	Ingénieur Général des Ponts & Chaussées, Administrateur de la Société Nationale des Chemins de Fer Français
René ELADARI	Conseiller Technique au Cabinet du Ministre d'Etat chargé de la Recherche Scientifique et des Questions Atomiques et Spatiales
Léopold ESCANDE	Professeur, Membre de l'Institut, Conseiller Scientifique de la Délégation Générale à la Recherche Scientifique et Technique, Directeur de l'Ecole Nationale Supérieure d'Electronique, d'Informatique et d'Hydraulique de Toulouse
Hugues de l'ESTOILE	Directeur du Centre de Prospective et d'Evaluations du Ministère des Armées
Marc EYROLLES	Directeur de l'Ecole Spéciale des Travaux Publics, du Bâtiment et de l'Industrie
Henri de FARCY	Directeur du Centre de Recherche et d'Action Sociales
Jean FAUGERON	Urbaniste, Grand Prix de Rome, Professeur, Chef d'Atelier à l'Ecole Nationale Supérieure des Beaux-Arts
Jean FERRANDON	Professeur à l'Ecole Nationale des Ponts & Chaussées
André Georges FERRE	Délégué Général du Syndicat des Industries de Matériels ProfessionnelsElectronique et Radioélectrique
Armando C. FERREIRA	Sous-Directeur Général de la Junto de Colonisation interne, Ministère de l'Economie - Portugal
J. FERRIER	Directeur du Commissariat de la Marine à Toulon
Raymond FEVRIER	Inspecteur Général de la Recherche Agronomique à l'Institut National de la Recherche Agronomique
Raymond FISCHESSER	Ingénieur Général des Mines, Directeur de l'Ecole Nationale Supérieure des Mines de Paris

Bernard de FONTGALLAND	Ingénieur Général, Chef du Service de la Recherche
Jean FOURASTIE	Professeur d'Economie et Statistiques Industrielles au Conservatoire National des Arts et Métiers
Charles FRAPPART	Directeur Général de Banque, Ancien Délégué Adjoint à l'Aménagement du Territoire
Jacques FREDET	Collaborateur de la Revue Atomes
Michel FRYBOURG	Ingénieur en chef des Ponts & Chaussées, Chef du Service des Etudes et Recherches sur la Circulation Routière (S.E.R.C.)
Robert GALLEY	Délégué à l'Informatique
Jean GANDILHON	Président Directeur Général de la Société GESPA
Paul GARDENT	Ingénieur en chef des Mines, Directeur Général des Houillères du Bassin du Nord et du Pas-de-Calais, Membre du Comité Consultatif de la C.E.C.A.
Michel GAUTIER	Directeur à la Division "Aménagement" de la S.E.M.A.
J. Midhat GAZALE	Directeur Technique S.P.E.R.A.C.
Pierre GEORGE	Professeur à la Sorbonne
Yves GEORGES	Directeur des Recherches et Développements à la Régie Nationale des Usines Renault
Robert GILLES	Directeur de la Circulation, des Transports et du Commerce à la Préfecture de Police
David GLASSBOROW	Head of Economic Research, Transport Holding Company - Grande-Bretagne
Georges GLASSER	Ingénieur en chef des Ponts & Chaussées, Président Directeur Général d'Alsthom
Edmund GOLDZAMT	Professeur Adjoint, Chef de la Section des Problèmes Sociaux d'Aménagement du Territoire près de l'Université Technique de Varsovie - Pologne
Patrick GORDON	Responsable de l'Informatique à la Direction de la Prévision au Ministère des Finances

Pierre GOSSELIN	Président de l'Union des Exploitations Electriques en Belgique, Vice-Président de la Société d'Energie Nucléaire franco-belge des Ardennes (S.E.N.A.) - Belgique
Gilbert GRANDVAL	Ancien Ministre, Président de la Compagnie des Messageries Maritimes
Pierre GREMION	Attaché de Recherches au C.N.R.S.
Sacha GUERONIK	Ingénieur en chef des Mines
Pierre GUILLAUMAT	Président de l'Entreprise de Recherches et d'Activités Pétrolières (E.R.A.P.)
R. GUITONNEAU	Directeur Général de l'Aéroport de Paris
Maurice HALFF	Président des Houillères de Lorraine
Stéphane HENIN	Chef du Département Agronomie, Institut National de la Recherche Agronomique
Bernard HIRSCH	Directeur de la Mission d'Aménagement de la Ville Nouvelle de Pontoise-Cergy
Philippe HUSSON	Sous-Directeur des Echanges Internationaux au Ministère des Affaires Etrangères
Erich JANTSCH	Consultant, Directorat des Affaires Scientifiques O.C.D.E. - Paris
Bernard JOSEPH	Conseiller Technique au Cabinet du Président du Conseil Economique et Social, Directeur à la Société d'Etudes et de Réalisations pour le Traitement de l'Information
Pierre JOUVEN	Ingénieur en chef des Mines, Président Directeur Général du Groupe Péchiney
Bertrand de JOUVENEL	Professeur à la Faculté de Droit de Paris
Léon KAPLAN	Président Directeur Général de la Société de l' "Aérotrain"
Bernard KAYSER	Professeur de Géographie à la Faculté des Lettres et Sciences Humaines de Toulouse

T.G. KHATCHATOUROV	Académicien, Section Economique de l'Académie des Sciences de l'U.R.S.S.
Joseph KLATZMANN	Professeur à l'Institut National Agronomique
Siegfried KLEIN	Ingénieur physicien au Centre d'Etudes Nucléaires de Saclay
Jean LABASSE	Professeur à l'Institut d'Etudes Politiques
Philippe LACARRIERE	Directeur des Transports Terrestres au Ministère des Transports
Jean LAGASSE	Professeur à la Faculté des Sciences de Toulouse
Jacques LAIGROZ	Chargé de Mission à la Direction de la Prévision de l'E.D.F.
Philippe LAMOUR	Président de la Commission Nationale de l'Aménagement du Territoire
Pierre LAROQUE	Président de la Section Sociale du Conseil d'Etat
Robert LATTES	Directeur Général de la Division d'Informatique du Groupe SEMA-SIA
Michel LAUDET	Professeur à la Faculté des Sciences de Toulouse, Directeur de l'I.R.I.A.
Teo LEARDINI	Directeur aux Etudes et Recherches ENEL - Rome - Italie
Didier LECERF	Directeur Adjoint de l'Office d'Analyse Economique
Yves LECERF	Chargé de Mission à la Délégation à l'Informatique
Jacques LECOMTE	Maître de Recherches à l'I.N.R.A.
Raymond LEDRUT	Professeur à la Faculté des Lettres et Sciences Humaines de Toulouse, Directeur du Centre de Recherches Sociologiques
Maurice LEGRAND	Ingénieur en Chef des Ponts & Chaussées, chargé de mission à la D.A.T.A.R.

François LE MENESTREL	Directeur à la Société Anonyme des Télécommunications
Paul LEMERLE	Directeur du Cabinet du Ministre d'Etat chargé de la Recherche Scientifique et des Questions Atomiques et Spatiales
Jack LEQUERTIER	Directeur Général Union Nationale des Coopératives Agricoles Céréales
Jacques LEROUGE	Ingénieur en chef des Ponts & Chaussées au B.C.E.O.M.
Gérard LEROY	Attaché à la Direction Générale de la C.I.I.
J. LESOURNE	Directeur Général de la S.E.M.A.
Hubert LEVY-LAMBERT	Ingénieur en chef des Mines, Direction de la Prévision (Ministère de l'Economie et des Finances)
Robert L'HERMITE	Directeur Général de la Recherche pour les Fédérations Nationales du Bâtiment et des Travaux Publics
François LHERMITTE	Professeur à la Faculté de Médecine, Chef de Service de Neurologie et Neuropsychologie à l'Hôpital de la Salpêtrière
Pierre LHERMITTE	Directeur à l'Electricité de France
J.L. LIONS	Professeur à la Faculté des Sciences de Paris, Directeur des Etudes de l'I.R.I.A.
Marcel LODS	Architecte en chef des Bâtiments Civils et Palais Nationaux, Président du Syndicat des Architectes de la Région Parisienne
Edward J. LOGUE	Professeur, Administrator New Haven Redevelopment Authority, New Haven, Connecticut, U.S.A. 1953-60, Administrator, Boston Redevelopment Authority, Boston, Massachusetts, U.S.A. 1960-67, presently Principal Development Consultant, Fort Lincoln Project, Washington, D.C., as well as Visiting Professor, Boston University - U.S.A.

Félix Dan MAAS	Directeur Agricultural Training and Extension Services, Ministère de l'Agriculture - Israël
Alexander Mc ARTHUR	Chief Technical Officer, Crofters Commission, Inverness - Scotland
John MADDOX	Collaborateur de la Revue "Nature" - Grande-Bretagne
Yves MAINGUY	Ingénieur Civil des Mines, Professeur Associé à la Faculté de Droit et des Sciences Economiques de Grenoble
Pierre MARZIN	Directeur Général des Télécommunications
Vladimir MATOUSEK	Architecte, Directeur de l'Institut de Recherches du Bâtiment et de l'Architecture à Brno - Tchécoslovaquie
Robert MAYER	Chef du Département "Amélioration des Plantes" de l'Institut National de la Recherche Agronomique (I.N.R.A.)
Pierre MAZZOLINI	Ingénieur des Ponts & Chaussées, Atelier Parisien d'Urbanisme
Jacques MELESE	Directeur de la Société pour l'Avancement et l'Utilisation de la Recherche Opérationnelle Civile
Henri MENDRAS	Maître de Recherches au C.N.R.S., Professeur à l'Institut d'Etudes Politiques
Guy du MERLE	Directeur Général Adjoint de la Société de l' "Aérotrain"
Pierre MERLIN	Sous-Directeur, Chargé de la Direction des Etudes Générales et Recherches à l'I.A.U.R.P., Chargé de cours à la Sorbonne
Monique de MEURON	Collaboratrice de la Revue Atomes
J. MONFOUGA	Chargé de Mission à la Direction Générale de la Régie Nationale des Usines Renault

Jérôme MONOD	Délégué Adjoint à l'Aménagement du Territoire et à l'Action Régionale
Bruno MONTIER	Responsable du Centre de Documentation et d'Information de la Compagnie des Agents de Change, Statisticien, Analyste financier, Membre de la Société Française des Analystes Financiers
René MONTJOIE	Commissaire Général du Plan d'Equipement et de la Productivité
Georges NAHON	Directeur Technique de SEMA-Aménagement
René NAVARRE	Président Directeur Général de l'Institut Français du Pétrole
Pierre NAVILLE	Directeur de Recherches au C.N.R.S., Sous-Directeur du Centre d'Etudes Sociologiques
I.I. NEKRASSOV	Membre correspondant de l'Académie des Sciences de l'U.R.S.S., Chef de la Délégation de l'Académie des Sciences de l'U.R.S.S. près du Conseil pour l'Etude des Forces Productrices du Gosplan de l'U.R.S.S.
Jean NITSCH	Directeur Scientifique au Phytotron (Physiologie Pluricellulaire), Chargé de la Chaire de Physiologie Végétale à l'Institut National Agronomique
Karl OETTLE	Ordentlicher Professor, Dr, Universität Mannheim, République Fédérale d'Allemagne
Erik Brand OLIMB	Director of the Institute of Transport Economy Norvège
Luis G. de OTEYZA	Subdirector General del Servicio Nacional de Concentracion parcelaria y Ordenacion rural - Madrid Espagne
R. PALLU de la BARRIERE	Professeur à la Faculté des Sciences de Caen, Directeur d'Etude à l'I.R.I.A.
Louis PANNIER	Chargé de Mission à la D.A.T.A.R.
Roger PARET	Chargé de Recherches au C.N.R.S., Chargé de conférences à l'Ecole Pratique des Hautes Etudes

Jean-Claude PARRIAUD	Ingénieur en chef des Ponts & Chaussées, Chef du Service Technique Central d'Aménagement et d'Urbanisme
Pierre PATIN	Directeur des Etudes Générales à la Régie Autonomes des Transports Parisiens
M.A. PAVLOVA	Agrégée ès Sciences, Collaboratrice scientifique à l'Institut de l'Economie Mondiale et des Relations Internationales de l'Académie des Sciences de l'U.R.S.S.
Georges PEAN	Ingénieur en Chef André VIDAL & Associés
Georges PEBEREAU	Ingénieur en Chef des Ponts & Chaussées, Directeur du Cabinet du Ministre de l'Equipement et du Logement, Directeur de l'Aménagement Foncier et de l'Urbanisme
Pavel PELIKAN	Chercheur, Institut de Recherche en Economie Industrielle de Prague - Tchécoslovaquie
Henri PEQUIGNOT	Professeur de Clinique Médicale à la Faculté de Médecine de Paris
Francis PERRIN	Membre de l'Institut, Professeur au Collège de France, Haut Commissaire à l'Energie Atomique, Administrateur au C.N.R.S.
Pierre PICHOT	Professeur de Psychologie Médicale à la Faculté de Médecine de Paris
Robert PIRON	Directeur à la Société Lorraine de Laminage Continu
André-Georges PLUCHARD	Ingénieur en Chef au Centre National d'Etudes et Télécommunications
Georg PRECHT	Lehrbeauftragter an der Universität Köln - République Fédérale d'Allemagne
Pietro QUARONI	Président de la R.A.I. (Radiotelevisione italiana) - Italie
Pierre RACINE	Conseiller d'Etat, Président de la Mission Interministérielle pour l'Aménagement du littoral Languedoc-Roussillon

Pierre RAINAUT	Ingénieur en Chef du G.R.E.F., Chef de la Section Technique du Service des Structures
Philip RAUP	Professor, Department of Agricultural Economics, University of Minnesota, St. Paul (specialization: land economics, land use planning - régime foncier) U.S.A.
Jean-Daniel REYNAUD	Professeur d'Histoire du Travail au Conservatoire National des Arts et Métiers
Pierre RICATEAU	Chef de Section au Commissariat à l'Energie Atomique - Centre d'Etudes Nucléaires de Saclay - Services de Physique Appliquée
Jacques RICHARDSON	Chief European Correspondent Science & Technology (revue mensuelle new-yorkaise)
Albert ROBIN	Directeur Délégué, Direction de la Production Transport E.D.F.
François ROBIN	Président de la F.N.P.A.
Lloyd RODWIN	Chairman, Faculty Committee Joint Center for Urban Studies - Prof. Department of City and Regional Planning, M.I.T. - U.S.A.
L. ROTHERHAM	DSc FRS Member for Research of Central Electricity Generating Board - Grande-Bretagne
Georges ROTTIER	Directeur Général du C.E.R.A.U.
Michel ROUSSELOT	Chef du Service des Affaires Economiques et Internationales au Ministère de l'Equipement
Sten RYUM	Chef de Section, Ministère de l'Agriculture - Commission d'Etat sur l'Aménagement des Exploitations, Lecteur au haut enseignement de l'Aménagement du Territoire - Danemark
Roncolo SACCOMANI	Directeur de la Revue "Sapere" - Italie
Jean SAUVY	Directeur Général des Etudes, Chambre Syndicale des Constructeurs d'Automobiles Paris
Ionel SCHEIN	Urbaniste - Architecte

Alain SCHLUMBERGER	Président de S.E.R.T.I.
Donald SCHON	Président O.S.T.I. - Cambridge - U.S.A.
Marcel SCHUTZENBERGER	Professeur à la Faculté des Sciences de Paris
Bertrand SCHWARTZ	Directeur du Centre Universitaire de Coopération Economique et Sociale, Directeur de l'Institut National pour la formation des adultes
François SEGUIER	Collaborateur de la Revue Atomes
William SEIFERT	Assistant Dean of Engineering and Director of Project Transport, Massachusetts Institute of Technology - U.S.A.
Serge SELETZKY	Collaborateur de la Revue Atomes
Alain SERIEYX	Conseiller Référendaire à la Cour des Comptes, Secrétaire Général de l'I.R.I.A.
Yvonne SERVILLE	Chargée de Recherches, Section de Nutrition, Institut National de la Santé et de la Recherche Médicale
Georges SEVERAC	Maître de Conférence à l'Institut Nation d'Agronomie
Georges SIMON	Directeur Général de la Société Nationale de la Petite Propriété Terrienne - Belgique
Claude SOUCY	Chargé de Recherches au Centre de Sociologie Urbaine et à l'Atelier Parisien d'Urbanisme
Max STERN	Chargé de Mission à la D.A.F.U., Ministère de l'Equipement et du Logement
René Charles SUEUR	Ingénieur Général des Télécommunications
Michel TARENNE	Président Directeur Général d'Essor-International
Georges TATTEVIN	Président Directeur Général du Groupe DROUOT
Igino TESSARI	Direttore dall'Istituto di Macchine dell'Universita di Trieste - Italie

André THIEBAULT	Directeur de l'Ecole Nationale des Ponts & Chaussées
Robert THIEBAULT	Directeur des Services Techniques de la Préfecture de Police
Jean-Claude THOENIG	Attaché de Recherches au C.N.R.S., Groupe de Sociologie des Organisations
Jean TREMOLIERES	Professeur de Biologie en vue des applications à l'Agriculture et à l'Industrie au Conservatoire National des Arts et Métiers
Jean-Paul TRYSTRAM	Professeur à la Faculté des Lettres et Sciences Humaines de Lille
M. TUBIANA	Chef du Département des Radiations à l'Institut Gustave Roussy
Yves TUGAULT	Chargé de Recherches à l'Institut National d'Etudes Démographiques
Jean VELITCHKOVITCH	Ingénieur en Chef des Ponts & Chaussées, Directeur des Ports Maritimes et des Voies Navigables au Ministère de l'Equipement et du Logement
Georges VENDRYES	Chef de Département au Commissariat à l'Energie Atomique
Pierre VIOT	Chef de Service au Commissariat Général du Plan
André WARUSFEL	Collaborateur de la Revue Atomes
Pierre WEIL	Directeur Général de la R.A.T.P. Président du Comité International des Métropolitains
Gérard WEILL	Chargé de Mission à la Délégation à l'Aménagement du Territoire et à l'Action Régionale
Henri WEISS	Directeur Honoraire de l'Ecole Nationale Supérieure du Pétrole
Gérard WORMS	Conseiller Technique au Cabinet du Ministre de l'Industrie

Marc ZAMANSKY	Doyen de la Faculté des Sciences de Paris
Pierre ZEMOR	Ingénieur Conseil en Organisation
Henri ZIEGLER	Ingénieur Général de l'Air, Directeur Général Honoraire d'Air France, Directeur Général Honoraire de Breguet Aviation, Président Directeur Général d'Air Alpes.

LISTE COMPLEMENTAIRE DES PARTICIPANTS

Clay ANDREWS	Director of Zurich Research Laboratories IBM
ATHANASSOPOULOS	Attaché de Direction à l'EURDA
BALACEANU	Institut Français du Pétrole
Maurice BARTHALON	Professeur à l'Ecole Centrale Lyonnaise, Président de la Compagnie d'Energétique Linéaire
Mme BEAUJEU-GARNIER	
Jean BEAUSSIER	Vice-Président d'André VIDAL & Associés
Dr W. BECKERMAN	Professeur à Balliol, Oxford, Conseiller Economique du Board of Trade, London
Erick BEIGBDER	Ingénieur Conseil KLEHE and Co
Bernard BODIN	Administrateur Civil de l'Economie Nationale et des Finances - Chef du Service de l'Action Régionale de Productivité, Commissariat Général du Plan
BOULANGER	
Jacques BRANGER	Administrateur de Groupements d'Intérêt Economique Professeur d'Economie et Technique Bancaire au Conservatoire National des Arts et Métiers
Colin D. BUCHANAN	Professeur à l'Imperial College of Science and Technology - Grande-Bretagne

Michel CEPEDE	Professeur de Sociologie à l'Institut National Agronomique
Pierre CHAVANCE	Directeur Technique du Groupe Electronique de C.F.T.H. H.B. (Thomson-Houston)
Paul-Henri CHOMBART DE LAUWE	Professeur à l'Ecole Pratique des Hautes Etudes Directeur du Centre d'Ethnologie Sociale et de Psychosociologie
Jean CLAUDIAN	Docteur en médecine - Expert de la F.A.O. Chargé de Recherches à l'I.N.S.E.R.M.
Henri DAVIAUD	Ingénieur Général à la Direction Général des Télécommunications
DELAPORTE	Délégué Général des Industries Télémécaniques
Jacques DONDOUX	Ingénieur en Chef des Télécommunications. Adjoint au Directeur du Centre National d'Etudes des Télécommunications
Charles DUFOUR	Cabinet de M. Marcellin
Jacques DURAND	Chargé de Mission à la D.A.T.A.R.
EGRE	Ingénieur agronome
FAURENS	SODETEG, remplaçant de M. Belpomme
FREY	Accompagnant M. le Professeur Laudet
Louis GLANGEAUD	Professeur à la Faculté des Sciences. Directeur du Centre de Recherche Géodynamique
E. GOROG	Technical advisor to the Vice-President and Chief Scientist of I.B.M. U.S.A.
Robert GOURSAUD	SODETEG, remplaçant M. Belpomme Directeur de la Division des Activités Civiles Industrielles
HEESEMANN	Directeur Général Adjoint pour les questions d'Energie au Ministère Fédéral de l'Economie - République Fédérale d'Allemagne

HERBERT	
HORVILLEUR	ALSTHOM, remplaçant M. Glasser
Robert JENNY	
JOLIVET	Remplaçant M. Mendras
J. LALLIER	O.R.T.F.
Jacques LAPLUME	SODETEG, Directeur de la Recherche et des Etudes
Louis-Joseph LIBOIS	Directeur du Centre National d'Etudes des Télécommunications
Arthur I. LLEWELLYN	Head of Computer Advisory Service, Ministry of Technology - Londres
René LOUE	Gérant de l'O.T.U. (Omnium des Techniques Urbaines)
Pierre MASSE	Président du Conseil d'Administration de l'Electricité de France
Peter MENKE-GLUCKERT	Directeur des Affaires Scientifiques à l'O.C.D.E.
MOLINIER	
Michel PERRIER	Secrétaire Général Adjoint de la Chambre Syndicale des Agents de Change, remplaçant de M. Bruno Montier
Alain PERLES	Ingénieur Conseil
PIECHAUT	
Alain PROFIT	Délégation à l'Informatique
Jean PROUVE	Industriel de la Construction
J. QUERNET	Chargé de Mission de M. Marcellin
J.F. QUILICT	Régie Nationale des Usines Renault
ROUGE	

SAJUS	Directeur du Service Méthode et Recherche à l'OTH
Jacques SANFOURCHE	Directeur Production des Matières Plastiques Rhône-Poulenc
Jacques de SURY d'ASPREMONT	Ingénieur en Chef du Génie Maritime, responsable de l'Informatique au Centre de Prospective et d'Evaluation au Ministère des Armées
R.A. TARPEY	Deputy Chief Inspector - Land Commission - Irlande
Gérard THURNAUER	Architecte
Denis VARLOOT	Ingénieur des Télécommunications, Chargé du département Télécommunications Spatiales au Centre National d'Etudes des Télécommunications
Jean VILGRAIN	Président-Directeur Général des Grands Moulins de Paris
Jean VOGE	Directeur de l'Ecole Nationale Supérieure des Télécommunications
Mme WADE	Correspondante de Presse de Paris-Match
François de WISSOCQ	Chargé de Mission à la D.A.T.A.R., Conseiller Technique au Cabinet du Ministre

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"A Study of Climatological Research as it Pertains to Intelligence Problems", *Central Intelligence Agency*, August 1974, pages 1-3

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A Study of Climatological Research as it Pertains to Intelligence Problems

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SUMMARY

The western world's leading climatologists have confirmed recent reports of a detrimental global climatic change. The stability of most nations is based upon a dependable source of food, but this stability will not be possible under the new climatic era. A forecast by the University of Wisconsin projects that the earth's climate is returning to that of the neo-boreal era (1600-1850)—an era of drought, famine, and political unrest in the western world.

A responsibility of the Intelligence Community is to assess a nation's capability and stability under varying internal or external pressures. The assessments normally include an analysis of the country's social, economic, political, and military sectors. The implied economic and political intelligence issues resulting from climatic change range far beyond the traditional concept of intelligence. The analysis of these issues is based upon two key questions:

- Can the Agency depend on climatology as a science to accurately project the future?

- What knowledge and understanding is available about world food production and can the consequences of a large climatic change be assessed?

Climate has not been a prime consideration of intelligence analysis because, until recently, it has not caused any significant perturbations to the status of major nations. This is so because during 50 of the last 60 years the Earth has, on the average, enjoyed the best agricultural climate since the eleventh century. An early twentieth century world food surplus hindered U.S. efforts to maintain and equalize farm production and incomes. Climate and its affect on world food production was considered to be only a minor factor not worth consideration in the complicated equation of country assessment. Food production, to meet the growing demands of a geometrically expanding world population, was always considered to be a question of matching technology and science to the problem.

The world is returning to the type of climate which has existed over the last 400 years. That is, the abnormal climate of agricultural-optimum is being replaced by a normal climate of the neo-boreal era.

The climate change began in 1960, but no one including the climatologists recognized it. Crop failures in the Soviet Union and India during the first part of the sixties

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were attributed to the natural fluctuation of the weather. India was supported by massive U.S. grain shipments that fed over 100 million people. To eat, the Soviets slaughtered their livestock, and Premier Nikita Khrushchev was quietly deposed.

Populations and the cost per hectare for technological investment grew exponentially. The world quietly ignored the warning provided by the 1964 crop failure and raced to keep ahead of a growing world population through massive investments in energy, technology, and biology. During the remainder of the 1960s, the climate change remained hidden in those back washes of the world where death through starvation and disease were already a common occurrence. The six West African countries south of the Sahara, known as the Sahel, including Mauretania, Senegal, Mali, Upper Volta, Niger, and Chad, became the first victims of the climate change. The failure of the African monsoon beginning in 1968 has driven these countries to the edge of economic and political ruin. They are now effectively wards of the United Nations and depend upon the United States for a majority of their food supply.

Later, in the 1970s one nation after another experienced the impact of the climatic change. The headlines from around the world told a story still not fully understood or one we don't want to face, such as:

- Burma (March 1973)–little rice for export due to drought
- North Korea (March 1973)–record high grain import reflected poor 1972 harvest
- Costa Rica and Honduras (1973)–worst drought in 50 years
- United States (April 1973)–"flood of the century along the Great Lakes"
- Japan (1973)–cold spell seriously damaged crops
- Pakistan (March 1973)–Islam planned import of U.S. grain to off-set crop failure due to drought
- Pakistan (August 1973)–worst flood in 20 years affected 2.8 million acres
- North Vietnam (September 1973)–important crop damaged by heavy rains
- Manila (March 1974)–millions in Asia face critical rice shortage
- Ecuador (April 1974)–shortage of rice reaching crisis proportion; political repercussions could threaten its stability

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- USSR (June 1974)–poor weather threatens to reduce grain yields in the USSR
- China (June 1974)–droughts and floods
- India (June 1974)–monsoons late
- United States (July 1974)–heavy rain and droughts cause record loss to potential bumper crop.

During the last year every prominent country has launched a major new climatic forecasting program.

- USSR reorganized their climatic forecasting groups and replaced the head of the Hydrometerological Service.
- Japan is planning to launch a major earth synchronous (U.S. manufactured) meterological satellite and has secured complete collection, processing, and analysis systems from the U.S.
- China has made major purchases of meterological collection and analysis equipment from western industrial sources.
- India is studying the application of climatic modification to secure a more homogeneous distribution of moisture from an erratic drought/flood monsoon.
- The U.S. National Academy of Sciences is preparing its recommendation for a National Climatic Research Program.
- The National Science Foundation (NSF) and the National Oceanographic and Atmospheric Agency (NOAA) have developed a National Climate Plan which will be presented to the Office of Mangement and Budget (OMB) for funding in FY 76.

Climate is now a critical factor. The politics of food will become the central issue of every government. On July 19, 1974, the Kiev Domestic Service reported massive rains and quoted an old proverb from Lvov Oblast, "The rains come not on the day for which we pray but only when we are making hay." The climate of the neo-boreal time period has arrived.

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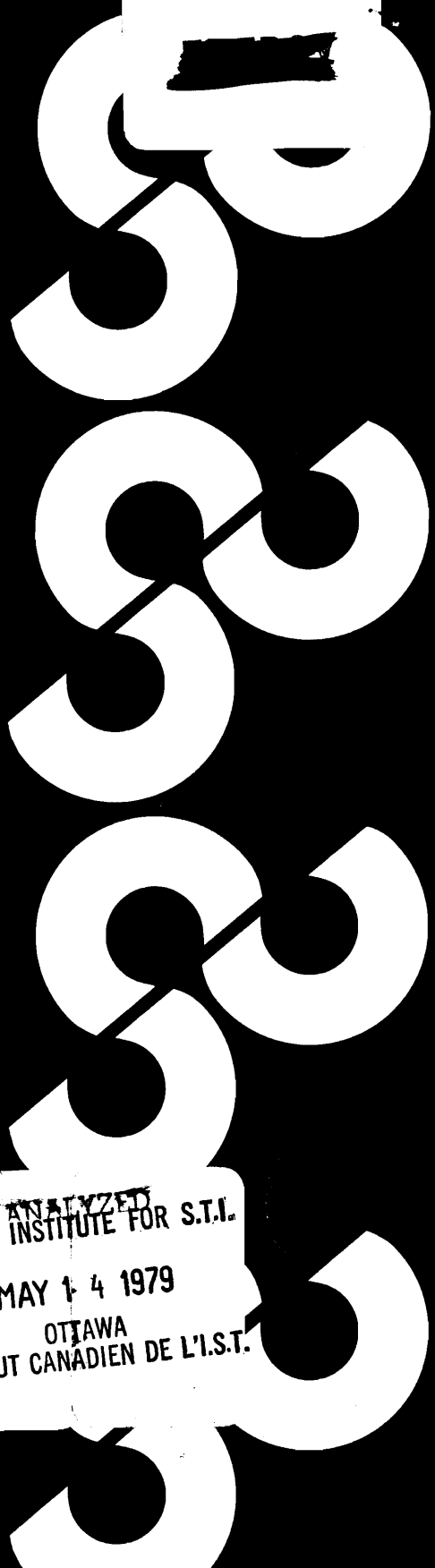
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"Report No.23: Canada's Energy Opportunities", *Science Council of Canada*, March 1975, pages 81-92

23 Science Council of Canada Report No. 23

March 1975

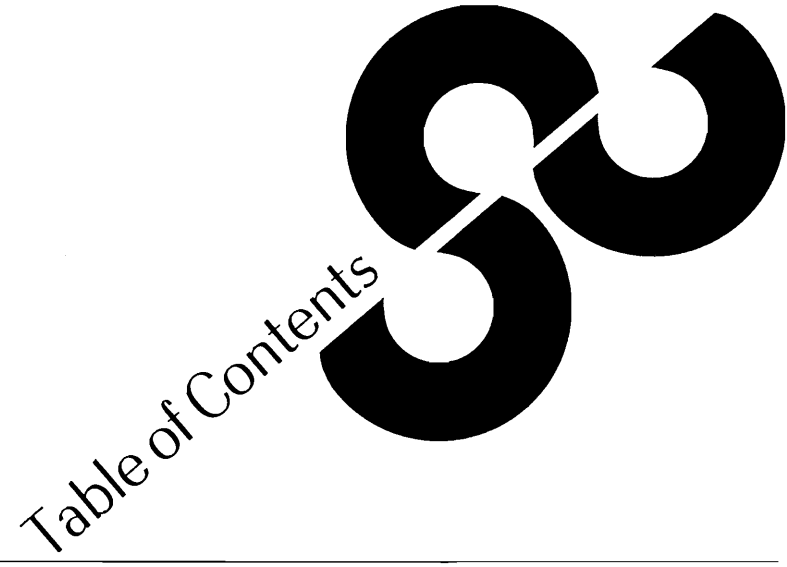
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OTTAWA
INSTITUT CANADIEN DE L'I.S.T.

Canada's Energy Opportunities

ANALYZED



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VII. Environment

" 'Power corrupts' was written of man's control over other men, but it applies also to his control of energy resources. The more power an industrial society disposes of, the more it wants. The more power we use, the more we shape our cities and mould our economic and social institutions to be dependent on the application of power and the consumption of energy."* This description of the modern industrial state underlines strikingly our growing dependence on energy.

There is no doubt that an increasing population in search of food, water, fibre, materials and energy will increase total global pollution.

Present trends are increasingly patterning our way of life to a style which relies heavily on a continuous energy subsidy. Because of incentives, regulations and externalities, the market mechanism is partly incapacitated, so that excessive energy demand and growth cannot be viewed as the expression of preference by a democratic society. Not only does this energy demand grow at an exponential rate, but it tends as well to foreclose other, less energy intensive development options by creating an all-encompassing life style from which it is becoming increasingly difficult to withdraw should one so decide. The extensive use of the private automobile, for example, has made urban sprawl possible; low density housing, in turn, has discouraged the expansion of mass transit and reinforces the automobile as the only viable transportation mode. Yet, it is necessary to consider life style in any examination of energy options.

The excessive use of energy, therefore, not only wastes resources by tending to encourage the inefficient utilization of energy, but also contributes to the emergence of a self-generating energy demand and the creation of a society which is totally dependent on the modern technological applications of energy and, moreover, quite helpless without them.

If such dependency is undesirable from an economic and a security point of view, in that it forces us to bank heavily on a "technological fix" to provide needed supplies in the future, it is also undesirable for a second, perhaps more fundamental, reason. The use of energy affects the environment in myriad ways. Energy use may either protect and enhance or degrade and endanger the environment. Although our knowledge of energy's impact is at present still rather elementary, we do know enough to worry whether, on balance, the continuation of our present ways will cause massive and irreversible environmental damage. Should further research reveal that we are indeed running the risk of permanently harming our environment – some would go so far as saying endangering our very life support systems – the implications for our style of life in general and our energy policy in particular would be immense. Let us therefore examine more closely the interface between energy use and environmental quality.

* E. Cook, "The Flow of Energy in an Industrial Society", *Scientific American*, September 1971, Vol. 229, No. 3, pp. 134-147.

Global Considerations

Although we use the term "energy consumption" frequently, energy cannot properly be said to be "consumed". It would be more accurate to say instead that it is transformed. The chemical energy contained in the gasoline that powers a car, for example, is partly transformed into kinetic energy, which moves the car, while the rest is lost as waste heat. Ultimately, all free energy is transformed into heat. This transformation is sometimes explained through the law of entropy, under which high grade energy forms are degraded into lower grade ones.

The world's growing energy demand is thus responsible for the injection of increasing amounts of heat into the ambient environment, both atmospheric and aquatic. The human contribution to the earth's energy budget remains relatively insignificant so far on a global scale.

On a local scale, of course, humans are already exerting an appreciable microclimatic effect through the creation of "heat islands" in large urban areas. Indeed, on a cold winter day in Montreal, society's energy input will often exceed that of solar radiation. Although humanity's activities are still too dispersed to exert a noticeable impact on climates of large regions, in the future the trend toward large urban aggregations (the Boston-Washington megalopolis, the Golden Horseshoe urban complex) means resulting energy release may soon be sufficiently significant to trigger climatic alterations regionally.

Our reliance on fossil fuels may accelerate this effect through the release of carbon dioxide (CO_2) into the atmosphere. Carbon dioxide is suspected of engendering a "greenhouse" effect: it is transparent to incoming solar radiation, but opaque to outgoing radiation and therefore tends to trap heat close to the earth's surface. Although evidence of the effect of the increasing CO_2 concentration in the atmosphere is inconclusive, some experts assert that this factor could become significant enough to lead to a general warming trend in the global climate, if fossil fuel consumption develops as forecast. Ironically, this warming trend may be counterbalanced by the cooling induced by the increasing albedo of the atmosphere, due to the growing emissions of particulate matters.

Although controversy still surrounds the arguments on both sides of the "warming against cooling" debate, it is becoming more widely recognized that man's activities on earth have reached a level where they have the potential of changing the world's climate. Despite the sobering implications of such a trend, humanity's tinkering with the global climatic equilibrium is proceeding unimpeded, although we still do not know what the ultimate result of our actions may be.

As one of the world's intensive users of energy, Canada is contributing in no small measure to humanity's overall energy activities. Furthermore, as Canada is located in northern latitudes, where the ecological web of life tends to be less complex and more susceptible to disruption, Canadian energy use may exert a relatively greater environmental impact than that in most other countries of the world.

Local Impacts

If the global aspects of the energy-environment interface are difficult to trace, the local impacts of energy use are much better known. The use of energy affects the environment at every step of the exploration - extraction - processing - transportation - conversion - consumption - waste product disposal cycle. The severity of the impact is, of course, a function of the technology used, local environmental conditions and the energy resource in question. A tripling of Canadian energy consumption within the next twenty-five years will thus exert an inevitable, although not necessarily proportional, impact on the environment. The cost of the environmental protection measures directly related to excessive energy use within the next decade is estimated conservatively at ½ of 1 per cent of GNP.

It would be an unnecessary exercise to review here the many ways in which our demand for energy has affected the Canadian environment. *An Energy Policy for Canada** fulfills that role well and lists numerous examples of the environmental impact of energy activities. Among the chief problem areas Canadians have already encountered and will continue to encounter in the future are: open pit mining operations to recover coal and bitumen; construction of pipelines in permafrost; marine oil spills; atmospheric pollution from the burning of fossil fuels; the effects of surface mining and our desire to return the land to its original productivity and scenic quality by careful segregation and disposal of the overburden; thermal enrichment of water bodies close to electricity generating plants; disposal of radioactive wastes; flooding of valleys by hydroelectric projects; aesthetic scars resulting from power lines; etc.

In a report of this kind, it is more useful to identify instead the main areas for research to develop technologies to alleviate the impact of energy use on the environment. An overview of the recommendations for R & D based on the findings in one of our background studies is reproduced in Table III.

Finally, it is important to remember that some energy activities tend to exert a cumulative and synergistic impact on the environment: this makes preliminary impact assessment difficult and usually understates the amount of environmental degradation. Moreover, we should expect the success of more stringent environmental standards to remain largely illusory since no amount of regulation could countervail indefinitely the environmental effects of an energy demand that continued to grow exponentially.

Environmental Quality: What are the Issues?

Knowing the effects of energy activities on the environment does not by itself, of course, allow us to judge environmental quality. While some standards of environmental quality are fairly easily determined (for

* *An Energy Policy for Canada,* Department of Energy, Mines and Resources, Information Canada, 1973.

Table III – Tabulated Environmental Overview

Technology	Environmental Requirement	Technology Status	Present or Potential Importance to Canada's Environment	Recommendations and Remarks (Based on Environmental Considerations)
Mining of coal and uranium	Restoration techniques. Neutralization techniques. Control of 'acid mine drainage' and siltation. Health improvements. Improvements in mine atmospheres.	Developing Available Not available	Increasing Medium	Restoration performance legislation recommended. Strict mining regulations necessary. Restoration performance bond not a strong enough incentive. Require return of land to its original or better productivity. Elliot Lake acid drainage is a continuing concern. Study by Environment Canada, 1974.
Athabasca Tar Sands	Reclamation Pond technology. Effluent treatment.	Undeveloped Under study Undeveloped	High High Medium	Affects life style and livelihood of natives. Affects life style and livelihood of natives. Possible major ecological impacts downstream. Low level SO_2 concentrations may be acceptable.
Arctic Pipeline	Construction techniques with minimized impact.	Incipient	High	Base line studies in progress are important. Multiple environmental impacts to be considered.
Marine Oil Tankers	Collision avoidance. Clean-up techniques. Ice-infested off-shore operation.	Needs application of available technology	Growing	Ecology of continental shelves, estuaries and oceans important to Canada. International legislation needed. Control of traffic in ice infested northern waters.
Hydro Electric Power	Impact Studies needed.	Incipient	High	Regional impacts can be severe. Careful consideration of all alternatives needed.

Technology	Environmental Requirement	Technology Status	Present or Potential Importance to Canada's Environment	Recommendations and Remarks (Based on Environmental Considerations)
Fossil Fuel Electric Power	Stack Gas Cleanup. Fuel Treatment.	Researched but unavailable	High	High regional importance, if low sulphur fuels unavailable.
	Particulate removal.	Unavailable but under development	High	Global climatic effects require intensive study now.
	Air Cooling.	Available but more costly	Growing	Possible beneficial uses of waste heat in Canada require pilot test.
Heavy Water Production	Control of H_2S releases. Waste heat disposal.	Under development	Growing	Search for alternative production techniques potentially important from environmental point of view. Use of cooling tower being tried.
Nuclear Fission Power Plants	Reactor accident prevention.	Highly developed	High	Increased research on pathways and health impact questions is needed.
	Routine release minimization.	Improving	High	
	Radioactive wastes control.	Inadequate	Growing	Development of improved techniques important.
Nuclear Fuel Reprocessing & Transport	Routine and accidental release control.	Inadequate	Potentially high	Important if plutonium recycling started. Much development needed. International and social factors involved.
Transmission of Electricity	Aesthetic improvements, undergrounding.	Being developed, costly	Low	Wire can be underground now in cities and sensitive areas. Development of undergrounding techniques and aesthetic treatment of transmission right-of-way should be encouraged.
Home and Industrial Heating	Combustion improvement.			Immediate benefits from improved home design and construction, improved building codes.
	Substitute heating methods. Improved construction standards.	Largely undeveloped	Growing	Solar heating and area heating pilot studies should be tried.

Technology	Environmental Requirement	Technology Status	Present or Potential Importance to Canada's Environment	Recommendations and Remarks (Based on Environmental Considerations)
Automotive Transport	Substitute modes of transport.	Developing	High	Primarily a social choice problem.
	Improved engine technology.	Under development.	High	Much improvement possible from advanced technologies.
	Improved engine, tire, roadway and road planning.	Slow improvements.	High	High impact for people in cities, wildlife in sensitive areas.
Fusion Power	Tritium containment. Cooling technology. Fast neutron flux absorption.	Undeveloped	Unknown yet, potentially high	Holds promise of reducing environmental concerns of large scale fission power or continued fossil fuel use. Possible benefits and problems in Canadian waters. Unlimited fusion power could make thermal effects on climate significant compared to dust, CO_2 and albedo effects.
Solar Energy Heating	Nil Basic technology is environmentally benign.		Undetermined, potentially high	Environment impacts would be very favourable if economically feasible. Varied pilot studies recommended on environmental grounds.
Solar Energy Biomass Concepts	Largely undetermined as yet.	Undeveloped	Potentially high	Requires careful systems studies and some pilot experiments in promising areas. Possibilities include isolated agricultural communities, coordination with forest product industries, municipal waste applications. Study impact on wildlife.
Tidal Power	Techniques to minimize tidal amplitude changes.	Undeveloped	Locally important	More propensity for environmental damage than benefit. Environmental studies very incomplete.
Geothermal	Minimize release of dissolved minerals, gases.	Partially developed	Possibly high	Potential in Canada undetermined. Could provide environmentally preferable power source. Requires careful environmental impact assessment as geothermal sources considered.

Technology	Environmental Requirement	Technology Status	Present or Potential Importance to Canada's Environment	Recommendations and Remarks (Based on Environmental Considerations)
Magneto-hydrodynamics	Basic technology improves thermodynamic efficiency, seed recovery removes sulphur.	Slowly developing	Moderate	Possible benefit in allowing higher sulphur content fuels to be used, more efficiently, with less thermal and SO_2 pollution.
Fuel Cells	Basic technology is environmentally benign.	Developing	Possibly high	Permits environmentally benign power and heat in isolated communities. Potential for allowing more dispersed population. Recommended for continued research, pilot studies.
Windmill Power	Basic technology is environmentally benign.	Developing	Could be locally important	Environmentally benign local power sources, possibilities in Arctic, Newfoundland, other isolated areas. Recommended for further research, pilot studies.
Hydrogen (or other synthetic) fuel	Basic technology environmentally benign.	Theoretical only	Could be very important	Major environmental gains possible through elimination of pollutant release in transportation, heating and other activities. Strongly recommended for research and pilot studies in Canada.

Source: Adapted and modified from, G.N. Patterson *et al.*, "Canada's Energy Corridors to the Future", Background Study prepared for the Science Council of Canada, 1974.

example, maximum concentration of sulphur dioxide in the air we breathe) others (like the maximum concentration of nitrogen dioxide in the stratosphere without damaging the ozone radiation shield) are more difficult to research and to set. Most difficult are the aesthetic questions, because they depend on perceptions and preferences which change from person to person, and for the same person over time, even though they tend to be the aspects of environmental quality to which people are most alert. Moreover, some questions, like noise, which may be aesthetic at low levels, become health issues at higher levels. And even when there is agreement as to what constitutes *desired* environmental quality there remain the differences of opinion about what is an *acceptable* point along the road to that goal, considering other trade-offs that may have to be made and considering differences about how fast and at what cost progress toward an environmental goal should be made. It would be desirable, therefore, that an appropriate government department, such as Environment Canada attempt to conduct a continuous analysis of the costs and benefits entailed by their recommendations for environmental management. Such an assessment would help to focus the debate on what constitutes acceptable environmental standards.

Issues of environmental quality are clearly not all to be answered with a "yes" or "no", nor can it be thought that the standards can all be determined "technically" without reference to public preferences and values. As environmental conditions and public perceptions differ so will some of the standards of environmental quality vary for the different areas of Canada. But the regional differences in formulating positive environmental goals should not obscure the need for minimum standards and regulations over all the country to prevent environmental damage. Nor should they hide the proper responsibility of governments in developing publicly-set environmental goals for planning operations within their jurisdictions – no other bodies represent the public interest in the quality of the environment.*

As industries, governments, and individuals in Canada decide and plan how much of what kind of energy is going to be produced where and used for what purposes, it will be important for them to develop and keep in mind a fairly clear set of environmental perspectives and goals which can suffuse the planning, not merely be tacked onto it. In this context environmental aspects of new forms of energy require early and systematic examination. The federal, provincial and municipal governments should avail themselves of the gamut of tools for environmental management – public consultation and education, laws, regulations, incentives, and appropriate research and development. They should also establish criteria and set standards for a cleaner environment, which are technically attainable and do not change frequently.

* For a longer discussion see, Lash, Maasland, Larkin and Filteau, "On Doing Things Differently, An Essay on Environmental Impact Assessment of Major Projects", *Issues in Canadian Science Policy*, Ottawa, Information Canada, 1974, vol. 1.

Industry can usually deal with such standards, but finds it difficult to cope with uncertainty.

Generally, R & D, regulations, and incentives in the short and medium term are needed to encourage beneficial shifts or modifications within existing technologies: the mandatory installation of pollution abatement equipment, as an illustration, or the requirements that fuel oil be desulphured before being burnt, or that plant operations be reduced on severe pollution days. Environmental implications of nuclear power developments and our concerns are reflected in special recommendations on a separate activity required to develop and maintain appropriate safeguards and regulations (Chapter IX, "Nuclear Power"). Long-term policy and R & D, on the other hand, are needed to encourage shifts from one technology to another environmentally preferred one: from homes heated individually by "dirty" fossil fuels to district heated communities with solar energy supplement, for example, or from airplanes to high speed rail for short intercity travel, or from fossil-fuelled cars to perhaps flywheel or hydrogen powered cars or electric mass transit.

The federal government, through the auspices of the Ministry of Urban Affairs and in association with the provinces, by funding demonstration projects, could do much more to test out mixed concepts of energy conservation and environmental protection. The planned new town of Carlsbad Springs near Ottawa constitutes an opportunity to build a community with environmental quality and energy efficiency as prime goals. Much is technically possible and economically feasible today, but is not used because the initial demonstration, which convinces the average developer, has not been forthcoming.

Environmental management, then, is an activity requiring clear notions and standards of environmental quality that may vary from place to place, in order to evaluate effects on the geosphere, biosphere, and sociosphere, so that activities may be planned and regulated accordingly and opportunities for improvement created.

In this section, rather than attempt an exhaustive list of recommendations about energy and the environment, we have tried to present a framework for considering the relationships between them, suggesting, for example, how standards and notions of environmental quality, once set, should be used to influence the planning and operation of energy policies and activities.

While the concrete outcomes of such environmental influences on planning and policy will of necessity vary from jurisdiction to jurisdiction, we applaud the beginnings that several governments have made in this direction, and we urge as strongly as possible that all energy policy makers and planners try to educate themselves in the application of environmental concerns.

Managing Energy and the Environment

The "actors" involved in energy and environment issues are the producers of energy, the producers of energy-using technology, consumers, affected third parties including the concerned public, who are often quite powerless to represent their involvement at present, and the government policy makers and regulators. There are a number of institutional instruments which should be used to encourage and ease the working of these actors toward the creation and maintenance of acceptable environmental quality.

Within the recommended Intergovernmental Planning Group (Chapter IV), there would be a strong section operating specifically with an environmental outlook on energy much broader than mere concern for pollution.

Since decisions about environmental quality involve public preferences on various trade-offs, public comment should be actively solicited in the setting and scheduling of acceptable standards for aspects of environmental quality. Work already done on standard setting should be put in the public domain without delay.

All energy production and transmission projects should receive a formal environmental impact assessment as a regular part of their planning and approval procedures. In special cases, like that of coastal oil developments, the environmental impact assessment could be broadened, with advantage, into a full technology assessment. All assessments must be initiated at the time of the preliminary economic and engineering studies and they must constitute an integral part of these studies, unlike many of the present token efforts, which seem to be intended more as a means of appeasing public pressure than as a meaningful component in the decision-making process. The assessments, too, must be made publicly available.

The adoption of a lifestyle in greater harmony with the goals of environmental quality implies a reduction in the overall growth of energy demand as well as the implementation of stricter environmental standards. To argue that we need still more energy to clean up an environment that has been polluted in no small measure through our careless use of energy constitutes a very narrow view which does not come to grips with the overall problem.

From the discussion in this chapter, it is clear that energy and environmental concerns represent two sides of the same coin. To treat each in isolation cannot succeed over the long term as energy and the environment interact in too many ways. Just as we are now learning to integrate environmental "externalities" in the planning and coordination process, we must ensure that, in the future, the energy variable is included in that process as well. A background study and a commentary

by the Chairman of the Science Council, already published,* describe and recommend a comprehensive approach to shaping the decision-making processes involved in major developments. They stress the need to identify all factors and to consult all groups affected. The Science Council recommends therefore that governments and industry strive to develop a comprehensive management framework that will successfully handle both environmental and energy planning and coordination.

* M. Gibbons and R. Voyer, *A Technology Assessment System: A Case Study of East Coast Offshore Petroleum Exploration,* Science Council of Canada Background Study No. 30, Ottawa, Information Canada, 1974. Also, R. Gaudry, "Introduction", *Issues in Canadian Science Policy,* Ottawa, Information Canada, 1974, vol. 1.

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I. P. Gerasimov et al., *Organization of Biosphere Preserves (Stations) in the USSR*, in SECOND JOINT U.S./USSR SYMPOSIUM ON THE COMPREHENSIVE ANALYSIS OF THE ENVIRONMENT (U.S. Environmental Protection Agency Washington, October 21-26, 1975), pages 89-91

SECOND JOINT U.S./USSR SYMPOSIUM ON THE COMPREHENSIVE ANALYSIS OF THE ENVIRONMENT



OCTOBER 21-26, 1975

SECOND JOINT U.S./USSR SYMPOSIUM ON THE COMPREHENSIVE ANALYSIS OF THE ENVIRONMENT

Honolulu, Hawaii, October 21-26, 1975

U.S. ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

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ORGANIZATION OF BIOSPHERE PRESERVES (STATIONS) IN THE USSR

I. P. GERASIMOV, YU. A. IZRAEL, and V. YE. SOKOLOV

The system of biosphere preserves (stations) is created to study, control and forecast the state of anthropogenic changes in the biosphere as the habitat of man. Biosphere preserves may become a component part of a global monitoring system (on a background level); they must, above all, ensure national interests. Therefore, the network of Soviet biosphere stations is a component part of a system of national monitoring, that is, an observation and control service for the natural environment of the USSR. The system is based on the national system of observation and control over the pollution levels of the air, water and land of the USSR Hydrometeorological Service and for monitoring the state of man's health, the appropriate service of the USSR Ministry of Health. In the first stage the system of biosphere stations will be an independent experimental subsystem within the framework of national monitoring.

TASKS OF THE BIOSPHERE STATIONS

—Conduct of permanent observations and determination of background indices (parameters) characterizing the current state of the biosphere and its anthropogenic changes.

—Conduct of permanent, periodic and irregular target studies of various ecosystems to develop scientifically based parameters for the control of the state of the environment and its significance to the health and well-being of man.

—Protection of natural ecosystems and the resources that support the life of plants and animals and the development of scientific bases of nature conservation measures (primarily for the system of natural preserves).

In connection with the first two tasks the system of biosphere preserves must more correctly be called the system of biosphere stations.

In addition to these basic tasks, the area of the biosphere stations will be employed for the conduct of various scientific studies for international projects, as well as for a study of the problems of the environment and the conservation of nature.

COMPOSITION OF THE WORK OF BIOSPHERE STATIONS

The fundamental direction of the scientific work of the biosphere stations must be the conduct of systematic observations over the elements of the current biosphere for the chemical, physical and biological indices for the purpose of a reliable establishment of periodic or controlled changes in it and the evaluation of the ecological values of these changes or their causes (particularly anthropogenic).

The composition of these indices must include the geophysical characteristics of solar radiation entering the atmosphere as well as the Earth's surface as the main energy base of all biosphere processes. They must also include the observations over the appearance of flows of radiation energy across the atmosphere. Apparently the main attention must be turned to the role of the growing pollution of the atmosphere as well as the direct effect of heat of man-made origin on the total energetics of the biosphere. An important value must be assigned in these studies to the effect of the man-made actions on the climate and particularly on the gas content of the atmosphere, the consideration of the use of oxygen and the excretion of CO_2 as a result of the consumption of fuel, a change in the process of its photosynthesis, and so forth.

A special section must be composed of observations of the global water balance and the humidity circulation. Here, just as important is the reliable base-line of the man-made changes, as well as the forecasts for the future. The subjects of the study and observation must also include the man-made transformations of the cycles of the most important chemical elements (N, P, K, and others) with an obligatory inclusion in the study of the soil cover.

The list of media and indices subject to measurement and study include primarily:

—Air — carbon dioxide (CO_2) (in the air point and column), carbon monoxide (CO), sulfur dioxide (SO_2), nitric oxide (NO_x), ozone (O_3), (at the source in the air, in the upper atmo-

sphere), dust, radioactivity, transparency of the atmosphere.

—Surface waters, precipitation, ocean water (the latter for ocean stations) — mineral composition, heavy metals, petroleum products, pesticides, polychlorbiphenyls.

—Soil, biota — microelements, pesticides, microbiological admixtures.

The scope of the basic tasks of the research studies at the biosphere stations must include a study of various ecosystems on land and in the oceans and those changes in the abiotic and biotic components of the ecosystem, brought on as a result of man-made changes.

Study of the biotic components (*biota*) must be conducted on an ecosystem basis (composition of the biota and its changes, functional vitality and biological productivity), dynamics of the populations of the indicator species, physiological form (photosynthesis respiration, growth, propagation) and molecular-genetic (mutagenesis, teratogenesis, and others) levels. It must be closely linked to a study of the abiotic factors (radiation balance, heat and water regimes) of the ecosystem and the nature of the anthropogenic factors affecting them (use of natural resources, pollution of the environment and others).

The conduct of geophysical, geochemical and biological studies and observations must be integrated by way of finding and describing the common balances of internal flows of energy and matter in the ecosystems under study, as well as their man-made transformation.

Thus, comprehensive studies both of external factors of the environment and the internal processes and phenomena occurring in the ecosystems must be carried out at the biosphere stations. Moreover, in order to find the man-made changes of these factors, processes and phenomena, studies must be carried out both of natural and to a greater or lesser degree of objects transformed under the influence of man, and appropriate experimental studies are also planned.

In addition to the basic tasks of determining the background indices describing the present state of the biosphere on a global scale, of great significance in accelerating the implementation of the results of these observations will be the close ties of the subsystem of biosphere stations with the national monitoring system and the scientific assessment of various types of economic activity from the point of view of their effect on the biosphere.

STRUCTURE OF THE BIOSPHERE STATIONS AND WORK METHODS

Proceeding from the above-mentioned data, each biosphere station must have a zoned structure for their territory with the allocation of the following basic zones — *central* (at the level of a global background)* showing the least changed natural ecosystems and where the strictest methods are employed for their protection; a *buffer* (transitory) where under scientific control various forms of land use are carried out and experimented with and comparisons are conducted on the state of the biosphere under the influence of the activity of man with the background state, and (possibly) *educational and demonstrational* where visitors would be allowed.

In the central zones of the biosphere stations the main purpose of the observations and studies must be the background characteristics and the natural bioproduction process (radiation energy, atmospheric and soil moisture, nutritive elements and others), trophic links (biological circuits and their disturbance); in the buffer zones the characteristics of the degree of utilization of natural resources in natural-technical ecosystems above all for the production of the biomass as well as the effectiveness of the methods for the control of the processes of the use of the natural environment and resources, from the point of view of the protection and improvement of the environment for the life and work of man.

In order to obtain general background characteristics of the biosphere use will also be made of sampling methods, including satellites, in addition to the above-mentioned observations.

APPROXIMATE DESIGN OF THE NETWORK OF SOVIET BIOSPHERE STATIONS

The total number of biosphere stations in the USSR need not be great. Initially their number will be limited to six with a subsequent increase. Of these five will be on land and one on the water. The following may be suggested as continental biosphere stations:

—Arctic — located on Franz Josef Land. This biosphere station can be set up on the base of the Observatory im. Krenkel' of the Hydrometeorological Service on Kheysa Island. Rocket soundings of the upper atmosphere for a study of its background composition can be carried out from this base.

—Central Forest Steppe — located in the geographic center of the European territory of the Soviet Union. This biosphere station must be formed on the area of the Kursk Field Base of the Institute of Geography of the USSR Academy of Sciences and the Central Black Earth Preserve. Scientific research has

*This zone must be no closer to sources of anthropogenic impact than 50 to 100 km.

been conducted on this territory over many years and they will, to a substantial degree, correspond to the above-mentioned program; in addition, this territory is used as an aerospace range for the study of the natural environment and its resources following a Soviet-American agreement.

—Central Asian Desert — located in the sands of the Karakum and set up on the base of the Repetekiskiy Station of the Institute of Deserts of the Turkmen Academy of Sciences. Scientific research has also been carried out for many years on the territory of this biosphere preserve partially corresponding to the above-presented program.

—South Siberian Tayga — located on the territory of the Baykal preserve and the areas adjacent to it where a variety of scientific studies are being carried out with the active participation of the Institute of Limnology and the Institute of the Geography of Siberia and the Far Eastern Siberian Branch of the USSR Academy of Sciences.

—East Siberian Tayga — located in central Yakutiya near the pole of cold for Eurasia. This biosphere preserve can be established with the active participation of the Institute of Geocryology of the Siberian Branch of the USSR Academy of Sciences.

—The Ocean biosphere preserve can be composed of the ocean station within the system of the North Atlantic meteorological stations serviced by the scientific research ships of the Hydrometeorological Service.

In order to compare the state of the biosphere against the background level and the level of the existing impact of man, it is necessary to select around each biosphere preserve a representative network of test sites where it will be possible to assess in a complex manner the man-made changes in the environment (taking into consideration the direction and intensity of the processes) and in a number of cases to conduct purposeful experiments.

The Central Forest Steppe biosphere preserve has a wealth of opportunities in the selection of such sites since it is in the proximity of the Kursk Magnetic Anomaly and the chemical enterprises of the city of Belgorod as well as vast agricultural complexes.

The Central Asian Desert biosphere preserve has within 80 km to the east the city of Chardzhou with a developing petrochemical industry, other enterprises and developed oasis agriculture with the intensive application of fertilizers and various pesticides.

The South Siberian Tayga biosphere preserve is situated near wood chemistry complexes and the Cheremkhovskiy Coal Basin the area of influence of which will provide extremely important data on the degree of man's impact on the environment.

The East Siberian Tayga biosphere is near the city of Yakutsk and a number of mining enterprises.

In addition to this initial system of Soviet biosphere preserves it is proposed to establish a scientific-methodological research-station on problems of biosphere monitoring near Moscow in the area of Pushchino and the Prioksk-terrace preserve. In organizing scientific studies this station can rely on the scientific institutes of the USSR Academy of Sciences located in Pushchino and specifically the Institute of Soil Science and Agrochemistry of the USSR Academy of Sciences.

Implementation of the proposed plan for the development of biosphere preserves will aid in the solution of a number of scientific-methodological problems facing the national and the planned global systems for monitoring the state of the biosphere, assess its existing global background state, and determine the tendencies in changes of this state in the future.

Annex 561

V. D. Fedorov, *The Problem of The Maximum Permissible Effects of the Anthropogenic Factor From The Ecologist's Viewpoint,* in SECOND JOINT U.S./USSR SYMPOSIUM ON THE COMPREHENSIVE ANALYSIS OF THE ENVIRONMENT (U.S. Environmental Protection Agency Washington, October 21-26, 1975), pages 98-108

SECOND JOINT U.S./USSR SYMPOSIUM ON THE COMPREHENSIVE ANALYSIS OF THE ENVIRONMENT



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THE PROBLEM OF THE MAXIMUM PERMISSIBLE EFFECTS OF THE ANTHROPOGENIC FACTOR FROM THE ECOLOGIST'S VIEWPOINT

V. D. FEDOROV

THE PROBLEM

" 'Here we have a firm rule,' the Little Prince later told me.

" 'I got up early in the morning, washed, got myself in order, and at once set about putting my planet in order' " (p. 20).*

But the planet of the Little Prince "was only a bit larger than himself" (ibid., p. 18) and to keep it in order, it was enough for him to root out the baobabs and to clean out the volcanoes so that they burned quietly, without any eruptions.

Of course, for us, the people of Earth, it is much more difficult to keep our planet in order than it was for the Little Prince. And this is explained not so much by the incomparably greater dimensions of the Earth as compared to asteroid B-612, as by the absence of a single view on the order of things among the numerous inhabitants of our planet. In the age of the social disorder, the world's people, for direct advantage, began to sacrifice the natural wealths which could not be replaced. Thereby people placed themselves "outside general ecology," so that the consequences of their actions began to threaten the existence of man as a biological species. At the same time, the forms and scopes of human activity became an important ecological factor that transformed the face of the biosphere, as a consequence of which further biological evolution became directly dependent on the uncontrollable consequences of technical progress.

It is practically impossible in a single address to examine, even superficially, the numerous aspects of the problem of the interaction of nature and man, the problem of the place and transforming role of man in the biosphere. Some of the questions connected with the sphere of inhabitation concern the sinister consequences of the reasonable actions which were undertaken in the biosphere by man without sufficient consideration of their indirect or distant consequences. One of these problems is the problem of waste products, the most important aspect of which is the determination of the effects which waste products have on the productivity and future of biosystems. All the subsequent parts of this article are devoted to the discussion of this major problem.

*Antoine de Saint-Exupery, *Le Petit Prince* (Russian translation by N. Tal'), Moscow, Izdatel'stvo Tsk VLKSM Molodaya gvardiya, 1963.

THE PRODUCTION OF "WASTE PRODUCTS" AS A BIOSPHERE PROCESS

In the biosphere, processes connected with life are constantly occurring, and, if the scope of these processes is sufficiently great to change "the face of the earth," they are called *biospheric.* It is possible to provide a sufficiently clear classification of biospheric processes by dividing them into two categories:

—*those connected with the evolution of life,* as a continuous series of successively more complex forms, which in the final analysis has led to the formation of man as a biological species

—*those connected with the evolution of man* as a social being leading an intelligent way of life, i.e., the social evolution of man.

If this classification proves acceptable, then the biosphere from the standpoint of a systems approach should be defined *not simply as the place where interdependent processes connected with the evolution of life are realized,* but more precisely as *the system of connections within a space of the planet between the evolution of nonintelligent and intelligent life,* i.e., between the natural and human populations which coexist in geological time. These connections may be very diverse in their essence — from resource and trophic to moral and aesthetic.

To the biospheric processes connected with man's existence may be ascribed:

—the production of food based on livestock breeding and agriculture,

—the production of energy — hydroelectric stations, atomic and thermal power stations,

—the production of housing (the construction of cities, or the so-called process of urbanization),
—the production of material wealth which facilitates the daily life of man, as a result of the development of light and heavy industry,
—the production of culture — the creation of spiritual values.

In the opinion of V. I. Vernadskiy [1] man's activity on the planet should lead to the conversion of the biosphere into a noosphere, of the sphere of activity of the human intellect. However, even given very great optimism — a feeling inherent to the physically and morally healthy man — we cannot today combine the evaluation of the state of the biosphere with the definition of a noosphere as "the triumph of the human intellect." Rather, more cautious and therefore more correct is the definition of the biosphere as the sphere of action of the processes of the production of food, energy, housing and culture, which are aimed at the creation of the conditions for the material and spiritual evolution of man, i.e., a technosphere. The existing loss of the metaphor in the definition of a "noosphere" is undoubtedly connected with one important circumstance — all the listed biospheric processes entail not only the production of a target net product, but also the production of a certain amount of associated products called "production wastes." In this, the elimination or reduction of "production wastes" would significantly increase the cost of the process of manufacturing an individual net product and, consequently, would raise its net price. At present no country is in a position to unilaterally agree to an increase in the net price of products, which would lead to a catastrophic decrease in the country's national income. Therefore, the problem of organizing "nonwaste-producing" production remains today an idea fashionable in intent and good in essence, which does not have a sufficient material basis.

On the contrary, the cheapening of the production of the net product inevitably exacerbates the problem of "production wastes." And when the nonspecific process of accumulation of "wastes," which accompanies directed production, reached biospheric scopes, human society began to worry, forcing national governments to put to scientists the question: what are the possible consequences for man and the biosphere of the accumulation of "production wastes"? "Bad!" the scientists of different continents answered unanimously. But since we have not succeeded in fundamentally changing the state of affairs with the production of wastes, inasmuch as the impelling reasons for decreasing the net price of output have not been eliminated, and it is all the same necessary to do something for the future of our children and grandchildren, the scientists were faced with a less clear cut problem, which may be formulated precisely enough in everyday language as follows:

"Well, fine . . . since there are, and will be wastes, nothing can be done. . . . But tell me then, how much waste can enter the biosphere without this, in the final analysis, having an effect on our health and the future of our children?"

The question is correctly posed and at the proper time. And even when we, scientists, give it an intelligible answer, it is still not at all evident that human society will draw the correct conclusions from it or, more precisely, will find in itself the strength to follow the advice, which is based on precise knowledge of things and the state of affairs.

"PRODUCTION WASTES" AS ANTIREPRESSORS OF BIOSPHERIC PROCESSES

Any process, regardless of its physical nature, can be described by the parameters "input," "processing speed" and "output." With respect to biospheric processes, the conditions of the "input" are determined by the concentration of basic components (C) — in the form of the basic raw material and its diversity, as well as their reactivity (K) — with consideration for their accessibility and with consideration of the time and difficulty of delivery to the point of production. The "processing speed" depends not only on C and K, but also on the organization of production with consideration for possible change (usually growth) in its scope. Finally, the conditions of the "output" are determined by the amount of the net product (P) and its quality (Q), as well as by the production of a certain amount of wastes (O), which reduce the net price p. With respect to biosystems, of primary significance is the "quality" of the wastes, in the sense that when the quality of wastes is better, the lower their toxic properties.

Let us note that the net product under the conditions of intensive production (more precisely, overproduction) may act as a repressor of the process, or repression will be slowed as a result of reducing the net price of the product owing to a change in the ratio of P and O in favor of the latter. Thus, "production wastes" at a specific stage of development of society act as antirepressors of biospheric processes, decreasing the net price of the net product. This should indicate that the exacerbation of the problem of wastes also has the value of a warning, since it precedes repression of the processes of production of the net product.

This short digression into reality should illustrate the obvious situation, that the problem of future

evolution of the biosphere in essence has already ceased to be a purely ecological problem. In it the economic, social, ecological, and other aspects are woven into one whole, into one system, making the problem biospheric. Hereafter we will not examine the general outlines of the entire biospheric system — at the center of attention will be, above all, ecological problems and the problem of the permissible influence of wastes on biosystems. However, some general principles going beyond the framework of ecology will nevertheless be formulated as concepts, which make it possible to better elucidate the features of the biospheric model.

MODEL OF THE BIOSPHERE

Figure 1 schematically depicts the biospheric model. The features of the model are:

—The model envisages the consumption of the energy of the sun and the resources of the biosphere — the former is negligible, the latter is approaching the level which will limit the scope of biospheric processes.

—The model concerns the historical aspect of the development of the biosphere, as a developing, self-organizing system striving for equilibrium.

The biospheric model has many features in common with the model of ecological succession:

—*The prevalent importance of "input" at the early stages of development of the biosphere,* when the system develops *"as if"* there are unlimited resources in an unlimited space, i.e., under the conditions of exponential growth. Such a system is essentially nonequilibrious and upon rough approximation may be regarded as an open exposed system, see Figure 1A. Natural ecosystems can easily handle a small amount of wastes, mostly household wastes, without appreciable disturbances in the biosphere.

—*The "equal importance" of input and output in a balanced equilibrious system,* when factors limiting development come into force. Exponential growth in this case is replaced by growth dependent upon the repressing (the increasing role of the products of output as repressors of biospheric processes), limiting (the exhaustion of irreplaceable resources) and injurious (the harmful effect of wastes) mechanisms of the system. Feedback, which envisages a slowing of reaction, makes it possible upon a rough approximation to regard the sequence of the processes being realized in the biosphere as a closed loop of transformations in an essentially equilibrious isolated system (Figure 1B). In order that such a system might stably exist for a long period of time, there should be envisaged the possibility of replenishing the source of resources (most reasonably, through the connection of S and R), as well as of the appearance of regulatory connections between P and O, E-I and E-II, as well as P and E-II (Figure 1C).

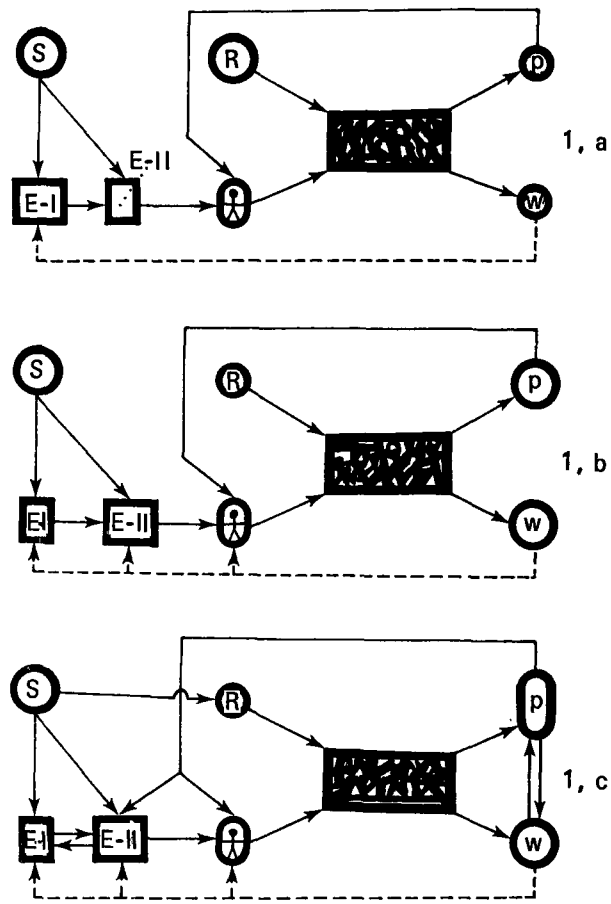


Figure 1. Schematic of biospheric model.

Both stages of the "biospheric succession" reflect only the most vivid features of the states of the developing system, when there passes through the system a flow of energy that substantially changes the entropy of the components forming it [2]. Finally, it would be interesting and might be even important to establish the location of the biosphere of 1975 on the path of its conversion into an equilibrious system. Of course, we are still far from a solution to the questions of replenishing resources through solar energy, and enormous organizational difficulties are preventing the establishment of connections between P and O, E-I and E-II. However, we can state that tendencies to "close" the proces-

ses in the biosphere are at hand. Indeed, local crises of overproduction of individual types of net products, the problem of the negative effect of wastes on man and natural ecosystems irrefutably attest that the general contours of a closed system are appearing very distinctly. True, the currents of transformation in such a system are still not balanced, and one might believe that the appearance of a closed loop of transformations makes it possible to define the present state of the biosphere as intermediate between the two extreme, above-described, states.

The biosphereic model makes it possible to determine the sphere of questions belonging to the competence of ecologists and, in particular, the participants of this conference. The central issue is the question of the maximum permissible loads of "wastes" (in the broad sense of this term), which can be borne by man as well as by natural and artificial ecosystems, without the risk of *collapse* of the basic biological structures determining the appearance of biosystems. It is important to emphasize that at issue, are irreversible and unbalanceable changes of biosystems, as a result of which, either the biosystem collapses and ceases to be a system, or its structural changes are so substantial and stable that we have the right to speak of the "rebirth" of the old system into a new one, with its inherent new totality of values that determine its new appearance. Here, it is easy to see that the possibility of "rebirth" pertains exclusively to ecological systems, while the irreversible degradation of systems, which is caused by the effect of wastes, concerns all biosystems without exception, including the human organism. Thus, the potentially dangerous effect of wastes threatens above all the health of man. This influence may be direct, if the "wastes" directly cause different functional disturbances in the human organism, being the cause of illnesses. The study of this type of influence of wastes goes beyond general ecological research and belongs to the competence of public health services. The effect of wastes may be caused by their entrance into an organism along with food of plant and animal origin. In this case, the field of activity remains outside ecology, since the pollutants pass from the environment into ecosystems being utilized by man, accumulate in the bodies of organisms, migrating along the trophic chain all the way to the finished product in the form of a biomass of organisms used by man for food. The latter act not simply as passive carriers of pollutants from the environment to man. By accumulating and transforming pollutants, animal and plant organisms, in turn, experience the effect of pollutants, which in the final analysis influences the dynamics of the sizes of populations of natural ecosystems, i.e., changes their structure. In this case, of especially great importance is, within the ecosystems utilized by man, the separation of the species on which "man is supported" (i.e., uses for food), from the other species which coexist with the former. Here, strictly practical considerations stimulate the interest of ecologists not in studying the structure of communities in general, but in studying the fate of individual populations that are valuable for food. Thus, the paths of the effect of wastes, which "lead" to man, in essence are ecosystemic, and we should substantiate some new concepts of the approach in the study of the biospheric model, and of its "ecological unit."

TWO USEFUL CONCEPTS IN THE STUDY OF BIOSYSTEMS

The *first* concept — the concept of "alternative mechanisms" — is based on the postulate which can be formulated in the following way: *any final formation in biosystems is capable of emerging in more than one way*. This tenet implies the existence in a living thing of alternative mechanisms of formations (emergences). The concept "formation" sounds somewhat abstract and should be made specific with respect to different types of systems in a different way. Thus, for a-type biological systems [3], a "formation" should be considered any intermediate or final product of the processes (substance, compound) which participates in forming the structural components of the "biological spectrum" — gene, cell, organ, etc. Indeed, of the several hundred induced biochemical reactions in an organism, it is hardly possible to name an example of the sequence of "conversions" of intermediate products, which result in a synthesis of any component, a sequence that would not be duplicated by another sequence, with the component synthesizing the same component. For r-type biological systems, we can regard as the final formation the climactic state of a community that is in equilibrium with a complex of factors, which determines the living conditions of each specific biotope. Here the "serial stages" on the path to the climax can differ substantially for the biotope of one type. With respect to the biospheric model it is also possible to postulate the existence of alternative means which regulate the rate of the processes of interaction between the elements of the system.

As is evident from Figure 1, the wastes from biospheric processes are capable of having a negative effect (dotted lines) directly on man's health through the food chain, entering man's organism along with food (I); on the productivity of exploited natural ecosystems, i.e., a reduction in man's food base (II); as well as on the fate of natural

ecosystems which are little or not at all exploited by man, i.e., on biospheric processes connected with the evolution of nonintelligent life on the planet (III).

Figure 2 depicts in conformity with the concepts of alternative mechanisms the elementary unit of the interacting elements of the system.

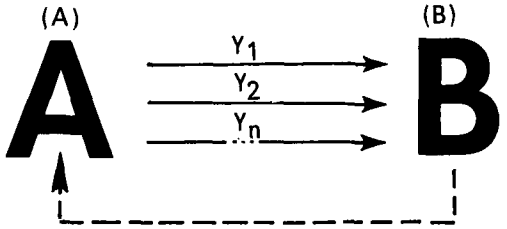


Figure 2. Individual units of the interacting elements.

From the laws of chemical kinetics, it follows that the observable rate of the process of formation, which depends on the concepts of the initial product (A) and the product being formed (B), in reality will be some additive resultant magnitude $\bar{v}=v_1+v_2+\ldots+v_n$. Therefore in some domain of the values, given $\bar{v}=f(A,B)=\text{const.}$, the change in v_1 will be offset by a change in v_2, and vice versa. The existence of alternative mechanisms which maintain the constancy of the characteristics of the final output of the process make it possible to apply to the work of the individual unit of the interacting elements (Figure 2) the generalized concept of homeostasis [4]. If we accept that the concept of homeostasis extends to the mechanisms of maintenance of the constancy of some characteristics ($\bar{v}$) owing to the inconstancy of others (v_1 and v_2), then the homeostasis of the system is "a mechanism of regulation, which orders in time a change of the features of the system in the direction of the stability of the group of characteristics pertaining either to the processes (r-system—for example, all ecological systems), or to their results (a-system—for example, the organism of man)" [3].

The *second* concept — *the concept of the "statistical norm"* — is based on the postulate which is formulated in the following manner: *the totality of values characterizing the "output" of the processes regulated in the system by homeostatic mechanisms, in the norm are subject to Gaussian distribution.* This tenet implies the possibility of control over the processes being realized in individual sectors of the biospheric model. With the aid of the criterion of correspondence (χ^2) or approximate methods of verification, which are connected with the calculation of the index of asymmetry $g_s=M_3/s^3$ and excess $E=M_4/s^4-3$, where M_3 and M_4 are the empirical central moments, and s is the standard deviation, one is easily convinced of or has doubts about the adoption of the hypothesis of normality. If the magnitudes of g_s and E are small and the hypothesis "passes," it can be assumed that the totality of values characterizes the state of the "norm." Then the negative influence of the existing level of "wastes" can be considered offset by other processes of the system and, consequently, within the framework of the maximum permissible effect. On the other hand, if the hypothesis of normality "does not pass," then the magnitudes of the values $g_s>0$ and $E>0$ may be regarded as indices of the deviation from the norm, i.e., be a measure of "pathology." Such sectors in the system require man's operational interference, since they should be considered to be outside the limits of the permissible effect of wastes.

Finally, for the case when the factors distorting the result of the measurement cause an effect proportional to the very result of the measurement for example, in the case of a *sudden* one: (a) of a massed effect according to the "old" connection of the contour — the so-called "emergency overloading of the connection," (b) the emergence of a "new" connection in the contour — for example, a direct negative influence of a "waste" on some biospheric process, the totality of values is usually subject to the log-normal distribution, when not the results themselves of the measurement, but their logarithms follow the Gaussian distribution. In this case it is not the absolute, but the relative errors of measurement that are stable on the average, and, as an evaluation of the average value, the most representative is not the mean arithmetical (v_a), but the mean geometrical value (v_g). Then a convenient index of the "deviation from the norm" might be the ratio of the mean arithmetical value to the mean geometrical value, i.e. [5],

$$v_a / v_g = \frac{\frac{1}{n}\sum_{i=1}^{n} x_i}{\sqrt[n]{\prod_{i=1}^{n} x_i}}$$

Both concepts — alternative mechanisms and statistical norm — are especially suitable for the case of the equilibrious model of the biosphere, see Figure 1B, when the currents of substances are balances, which increases the homeostasis of the system as a whole. This makes it possible to introduce into the evaluation of the state of the biosphere, certain integral system characteristics such as reliability, stability and others, for whose analysis

there are developed approaches and appropriate mathematical apparatuses. However, for the "intermediate" state of the biosphere of 1975, see Figure 1B, the above-formulated concepts are more useful, not so much when studying the biospheric model as a whole, as when analyzing its individual parts, which pertain to the processes regulated by homeostatic mechanisms. Among the nodal sectors we should place the natural ecosystems that are exploited and unexploited by man (E-I and E-II). Here the central problem, whose resolution rests on the shoulders of ecologists, is connected with the task of examining the force of resistance which can be exerted by ecosystems (owing to the homeostatic mechanisms) against the effect of wastes with consideration for the toxicity of the latter (the problem of the "ecological" quality of wastes). The ability of ecosystems to resist the effect of wastes has the goal of establishing the maximum permissible level of their introduction into the ecosystem, i.e., the level at which the main indicators characterizing the state of the ecosystems (above all their productivity and stability) remain within the limits of the norm. In the final analysis the solution of this basic strategic task of applied ecology is inevitably reflected in the truly scientific determination of the permissible scale of "production" of wastes in the biosphere, i.e., the formulation of ecological conditions of the maintenance of the equilibrium of the biosphere.

THE STRATEGIC AND TACTICAL TASKS OF APPLIED ECOLOGY WITHIN THE FRAMEWORK OF THE BIOSPHERIC MODEL

In formulating the strategic task it can be said that within the framework of the biospheric model it reduces to the need to study the consequences for the biosphere as a whole of the changes caused by wastes in its ecological unit (E-I and E-II). In spite of the obvious simplicity of the formulation, the solution of this task apart from a purely practical interest also has a philosophical aspect, concerning the problem of "the whole" and "the parts." There are two alternative views of the features of the interrelation of "the whole" and "the parts."

The *first* asserts that the *whole* does not represent anything that is not in the parts. The *second* asserts that the whole is nothing more than the sum of the parts. The systems approach, which is so popular and constructive in science today, unequivocally speaks in favor of the latter point of view, placing an equal sign between the concepts "the whole" and "the system." Indeed, if we regard a system as a totality of the orderly interacting and interdependent components (elements), then it is easy to realize that it is precisely the *connections* between them that give rise to new features, and these "new" features are formed into new characteristics inherent to the system as a whole, and then the entirety of the interacting elements (parts) forms a single whole, i.e., a system. Therefore:

—The study of the connections in the system in a definite sense is more interesting and promising for comprehending the whole than the study of the features of the elements (parts) forming the system.

—The analysis of the system, which is preceded by a breakdown of the connections between the elements (i.e., the breakdown of the whole into its parts), does not make it possible to effectively study the integral feature of the system and, consequently, modeling — as a methodological device — is a most important device for studying systems.

—With respect to ecological systems, a third consequence could be formulated, which follows from the postulate "the whole = the system." Any biological study belongs to ecology only insofar *as it helps to understand the phenomenon being studied* in the ecosystem. Study undertaken in another connection — of the same feature of living beings or of the same biological phenomenon — ceases to be ecological and pertains in each individual case to other appropriate sections of the biological sciences.

In particular, the latter consequence clearly outlines the sphere of phenomena pertaining to the department of ecology as the science of ecosystems or, more precisely, the science of the systems of the superorganism level of organization, within whose limits the society of organisms and the environment function together as a single whole.

It is interesting that the basic tactical task of applied ecology so to speak "in the ecological context" also concerns questions of the interrelationship of "the whole and the parts," and can be formulated by analogy with the strategic task as

—*The need to study the consequences* for *the ecosystem* as a whole *of the changes caused by wastes in its individual sections.*

In other words, the task reduces to the determination of the "tenacity" of ecosystems as a whole, given local damages — of individual functions within the entire society being examined or the complete "mortification" of a part of the society within some space. Diverse wastes are the damaging factors. They function as a measure of the "tenacity" of ecosystems, as the diverse indicators of

stability, which pertain to the ecosystem as a whole or to its parts.

The tactical task of applied ecology can be easily formulated, which facilitates the subsequent analysis of the situation and development of regulatory and preventive measures for protection of ecosystems from harm. Let the state of the ecosystem be defined by the total combination of values pertaining to the processes with homeostatic mechanisms of regulation. "In the norm," the magnitude of the values are subject to Gaussian distribution and, as dependent variables — $Y_1, Y_2, \ldots, Y_m$ — they characterize some set function from the arguments $X_1, X_2, \ldots, X_n$, which are independent variables. The latter characterize the total combination of disturbance characteristics for specific types of pollution. Thus, the task reduces to finding the equations of $X_1, X_2, \ldots, X_n$, for which the values of $Y_1, Y_2, \ldots, Y_m$ remain distributed normally, see Figure 3.

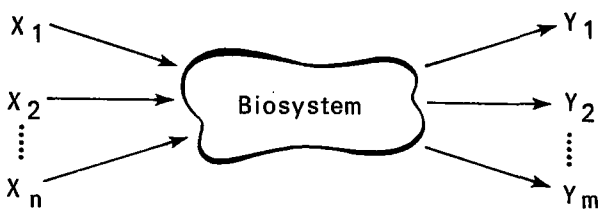


Figure 3. Specific characteristics pertaining to individual disturbance sources (x_n) and individual responses (y_m) in the system.

Useful in this case is the study of dependencies of the type:

—$y_m = f(x_n)$, where y_m and x_n are specific characteristics pertaining to individual disturbance sources and individual responses in the system respectively;

—$a_n = f(\Delta x_n)$, where a_n is the index of the asymmetry of the values of the function, and Δx_n is the change in the level of the disturbance factor;

—$a_n = f(A_n)$, where A_n is the index of the asymmetry of the disturbance factor, if a priori it is known or can, with a sufficient degree of reliability, be assumed that "in the norm" the disturbed factor is also distributed normally.

When resolving the formalized task in general form we should pay attention to the features of the study of dependent and independent variables in ecosystems.

FEATURES OF THE EFFECT OF THE DISTURBANCE FACTOR

We can single out two extreme cases pertaining to the features of the effect of disturbance factors of the environment on ecosystems.

The *first* pertains to an increase in the background level of individual types of the application (the section) of the disturbance source in the biospheric model, and even in that part of it which pertains to ecological systems. The increase in the overall background of individual types of production wastes within the connections foreseen by the model makes ecologists quite helpless in the matter of predicting the expected consequences in the fate of ecosystems. For example, the discovered tendency for a rapid increase in CO_2 in the atmosphere of our planet is capable of resulting in the most unforeseen and, perhaps, unpleasant consequences. The latter are so diverse in their nature and direction, that to make a reliable prediction does not seem possible.

Only within model experiments is the ecologist capable of studying individual details as, for example, will the increase in CO_2 concentration intensify the process of photosynthesis? Another useful method might be the creation of so-called "preliminary" models, i.e., extremely simplified copies of the real world, which make it possible to find the "nodal points" in the control of the behavior of systems.

If given the background effect we succeed in finding gradients for the individual disturbance factors, then the possibility arises of making, in accordance with the gradient, a biological analysis of the changes in the structure of ecosystems through the selected indices — $Y_1, Y_2, \ldots, Y_m$. The main emphasis here should be made on the change in the relative abundance of populations and, of course, on the change in the species composition of the ecosystem, which is connected with the disappearance of individual species. With this approach the finding of the correlations between the level of the disturbance factor x_i and the change in the biological indicators y_j is the main method of finding the connection between the dose of the influence and the observable response (dose-effect).

The *second case* concerns the local damage to connections or sectors in ecosystems by specific types of wastes. Usually the magnitude of the emission is clearly insufficient to cause background changes within a large ecosystem (biome) or even a biosphere. Mercury and its compounds, which are used as a fungicide in disinfection of seeds and are later discharged into bodies of water with waste water, may serve as an example of such a

pollutant. The mercury compound is transformed in the environment into highly toxic methyl mercury, which accumulates in living organisms and, entering man's food together with a product (usually fish) can serve as a source of poisoning of the population.

It is methodologically simpler to study the effect of local pollutants than that of background pollutants, since the organization of the experiment affords effective opportunities for the study of the connection of x_i with the diverse responses of the system — $Y_1, Y_2, \ldots, Y_m$.

During this study in the experiment of the selected indicators of the state (i.e., Y_m), one should consider the *simultaneous* effect on ecosystems of many disturbance variables, some of which may pertain to background, some to local and, finally, some to attendant factors of the environment (changes not caused by the negative influence of disturbances such as the seasonal changes in light and temperature).

For predicting the "fates" of the behavior of ecosystems it is absolutely necessary to consider and quantitatively evaluate the interaction of the disturbance sources frequently even of a different physical nature. Thus, the strategic base of the study of ecosystems, in which the effect X_n and the response Y_m should be connected by a quantitative dependence, can be formed by a multifactor experiment, which is planned on the basis of economical and mathematically substantiated patterns of experience. The latter envisages the possibility of studying the simultaneous and independent influence of a large set of variables on biological systems of a different degree of complexity [6]. Such an experiment has the goal of studying the probable, expected situation which may be forecast on the basis of the tendencies of changes in the environment, which are found when registering the changes in time and space of the individual disturbance factors of the environment [7]. As a result of the arrangement of the experiment there can easily be obtained polynomial models of the description, which contain quantitative evaluations of the effect of the variables [8]. These evaluations in the future may be useful for obtaining approximate evaluations of the coefficients in differential equations when constructing dynamic models.

CRITERIA OF THE BIOLOGICAL RESPONSE

In the preceding section, when discussing the features of disturbance factors, it seemed to be implied that ecologists are capable of differentiating quite simply:

On the one hand, the response Y_1, which is caused by a pollutant (the harmful source, indicated in Figure 1A by the line of dashes), from any other changes in the ecosystem, which are not connected with pollution (for example, seasonal changes, successions); and, on the other hand, are able to differentiate a response-caused pollution and leading to irreversible changes in the system (collapse or rebirth into a new ecosystem) from a response caused by the effect of a pollutant, with which the system is capable in the end of dealing. In this case we are in a position to study the question: what reserve of durability does an ecosystem have in respect to the *harmful* effect of disturbance factors? An answer may be obtained if the indicators selected for study and control (i.e., the dependent variables) are sufficiently representative for a determination of the state of the ecosystem. Unfortunately, the establishment of the priority of responses in a series presents many difficulties. Thus, it is possible to state that if the number of independent variables, whose effect is studied in the experiment, can be sufficiently large, but unquestionably limited, then the number of registered responses in the series $Y_1, Y_2, \ldots, Y_m$ presents many difficulties. Thus, if the number of independent variables, whose effect is studied in the experiment, can be sufficiently large, but unquestionably limited, then the number of registered responses in biological systems can be practically endless, since any feature of a living thing can serve as the object of control. Therefore, when selecting from the infinite series Y_m a limited number of indicators, one should rely on some specific principle of selection, i.e., a necessary discriminating criterion.

Let us examine two approaches and their appropriate criteria.

The *first approach* is the professional-specialized approach, when specialists in a narrow field (for example, botanists, biophysicists, hydrobiologists) have specialized knowledge that encompasses all existing aspects or features of the object of study. Corresponding to this approach is the *intuitive criterion* of discrimination in ranking according to the importance of the features being studied. This criterion reflects in vague form the accumulated (at times even unrecognized) experience of the specialist in resolving what is more and what is less important in the normal object of study. As an example we can cite the point of view of a hydrobiologist who makes an a priori ranking of dependent variables. Thus, when regulating water ecosystems there is, above all, suggested the idea of using as a response the most ordinary and traditional indicators of hydrobiology: growth (productivity), expenditure (respiration, life-long rejection of organic material), state (consumption and assimilation of food, rate of accumulation in hydrobiotas of indi-

vidual pollutants) and others. It is completely evident that the creation of regulatory systems based on traditional indicators is in principle of little effect, since any biologist specializing in a narrow field is capable of developing a substantiated scheme of control over "his own" object. Such studies are intended for long periods of time by specialists with a high level of training and, having entered on this path we would in essence have to admit to the need for reforming (reorienting) in the direction of solutions of the tactical task of applied ecology of all the biological sciences and disciplines cooperating with ecology.

The *second approach* can be called the systems approach. It is this approach that determines the content of modern ecology. The concept of levels should unquestionably be recognized as the main concept of the systems approach. To solve the tactical task of applied ecology it is useful to slightly expand the "ecological spectrum" of levels of organization, which is limited by populations and communities. Thus, for the needs of regulation it is useful to single out the following five levels of biological organization:

—subcellular — Y_I
—cellular (organism) — Y_{II}
—population — Y_{III}
—trophic grouping (associative) — Y_{IV} (simple community)—Y_{IV}
—community—Y_V—(complex community).

The first two levels are outside the sphere of ecological study, yet the information about subcellular and organism disturbances, evidently, can be useful not so much for evaluating the state of ecosystem according to the selected Y_i, as for establishing the "harmfulness" of the factor disturbing the system, since the information from Y_I and Y_{II} is often necessary for obtaining evaluations characterizing the environmental quality, i.e., the "toxicity" of individual independent variables.

It is easy to see, however, that the introduction of the concept of levels of organization is capable of somewhat narrowing the spectrum of biological levels, owing to the discrimination of a series of levels — gene, tissue, organ and others. However, within each level the number of possible indicators is excessively great. In order to significantly reduce the number of selected variables, we should use in addition the above-formulated concepts of "alternative mechanisms" and "statistical norm," which make it possible to introduce the discriminating criterion of the selection of dependent variables. In fact, being based on the concept of hypostasis, this criterion may be called *conceptual.* By using the conceptual criterion it is possible to formulate the following requirements of discrimination, which are made on the dependent variables within each level of organization.

The *first requirement* — to control the state of biosystems one should select indicators which pertain only (!) to processes with homeostatic mechanisms of regulation.

The *second requirement* — given that the first requirement is observed, preference would be given to the Y_i that characterize the *nonspecific response* with respect to various factors that disturb the biosystems (for example, elevation of the body temperature of an animal with various "diseases" of the organism, or a decrease in species diversity within a trophic grouping under the influence of pollutants that are diverse in their nature).

The *third requirement* — given that the first two are observed, preference should be given to the integral indicators Y_i and first of all to those which can be quickly and reliably measured by instruments. Thus, an example of such integral indicators in a living biomass would be the content of ATP (adenosine triphosphate) and chlorophyll, which characterize respectively the amount of living material and the amount of energy going into the system.

It should be noted that work on the selection of indicators is being actively conducted in laboratories of the department of hydrobiology of Moscow State University. Preliminarily it can be reported that a suitable indicator that satisfied the above-formulated requirements for levels I-V could be:

—for Y_I—the membrane potential of cells, which can be measured with microelectrode equipment,
—for Y_{II}—an increase in intensity of respiration,
—for Y_{III}—the evaluation among individuals of the population of the bilateral symmetry in the distribution of features, the time of generation, the ratio of sexes, the ratio of age groups,
—for Y_{IV}—species diversity, chlorophyll content,
—for Y_V—ATP content, ratio of the products of different trophic groupings.

The listed indicators should be regarded as illustrative examples. The selection of indicators substantiated by the conceptual criterion is continuing, and their priority is being discussed. But even now it is becoming evident that their number can be substantially limited. Thus, the formulated concepts and requirements make it possible to transfer the subsequent discussion to the question: in what way is it possible to interpret the evaluation of the ranked series of indicators, Y_i, with respect to the evaluation of the state of the entire ecosystem?

HORIZONS OF APPLIED ECOLOGY

Vladimir Vladimirovich Mayakovskiy had one childhood, well-known poem, "What Is Good, What Is Bad."

The poet dealt with the problem, using specific examples of bad and good human deeds. It is easy to follow the parallels between the poet's solution of the problem and the position of ecologists. Ecologists can also cite examples of what is "bad" for the ecosystem — both from observable tendencies of the change in indicators (for example, a decrease in productivity or diversity) and from the features of the dispersion of the evaluations of the selected indicators, Y_i, which "in the norm" should be distributed normally. This means that the ecosystem as a whole is "healthy," or at least is successfully resisting the negative effect of disturbance factors. In this case it is possible to consider it stable, and therefore all the values of the evaluations of stability, derived by "any means," outline the domain of the values of the "norm" of the ecosystem. This, if you please, is a type of "ecological zero," the source of reference of the health of the ecosystem. Much more likely is the situation when a part of the indicators Y_i within levels I-V, attest to a "pathology," while the remainder of the indicators attest to the "norm."

What is to be done in this case? What judgment does the ecologist have the right to pronounce?

Today this question is entirely unelaborated, and we have the right to consider it as one of the most difficult, most vital and most important for the solution of the tactical task of applied ecology.

"Pathology" of some indicators and the "norm" of others place before the ecologist a strictly medical task, which is resolved by the therapist — this is the task of "diagnosing" the disease. It can be postulated that definite regular combinations of "norms" and "pathologies" of individual indicators are specific for different types of "diseases" of ecosystems, or even are specific with respect to the different physical nature of the disturbance factors or pollutants (i.e., to the specific nature of "wastes" in the broad sense of this word). Then the set of features in the responses Y_i for all levels I-V, under the influence of one pollutant (for example, organotin compounds) will differ significantly from the features of the "behavior" of the responses, under the influence of another pollutant (for example, chlorinated phenols). If this is correct—and in my opinion it should be correct—then a list of the symptoms of each disease can be compiled. And then the establishment of a diagnosis of a disease is equivalent to the establishment of the nature of the "pathogen" of the disease, i.e., the nature of the disturbing influence. Therefore, the study by ecologists of the specific effect of specific wastes according to the selected indicators will make it possible to make a classification of diseases according to the type of changes occurring in ecosystems. In turn, the establishment of the origins of the negative influence of wastes on the ecological unit will make it possible to regulate the rates and scopes of the industrial, agricultural and domestic wastes being admitted into the biosphere.

If we succeed in making a "classification" of the disease of the ecosystems according to the selected indicators, then the next stage of the ecological study of ecosystems within the framework of solving the tasks of applied ecology would be the "clinical" study of the individual illnesses, i.e.,

—observation of the development of the disease, i.e., of the deterioration of the state of ecosystems, and

—observation of recuperation, i.e., improvement of their state.

Undoubtedly, this would require the organization of a broad range of experimental studies on different types of ecosystems, so that the "clinic" of the individual illnesses would be studied thoroughly and comprehensively.

This "medical" stage of the ecological studies is today still in an embryonic state, but given the present rate of development of science and, primarily, the interest of society in the problems of applied ecology, we can hope for its relatively speedy completion. For time does not wait, and mankind must reduce to a minimum, the inconveniences caused by the conversion of the biosphere from the "intermediate" stage of 1975 to an equilibrious state, when the technosphere of today will be transformed into a noosphere, the advent of which was heralded by V. I. Vernadskiy [1]. However, today the state of the biosphere and the position of man in it seem serious enough to cause the people on earth to be wary. Therefore, in ending this report I will permit myself once more to recall the delightful children's book, which was written for adults:

> "And here on the planet of the Little Prince there are terrible, vicious seeds.... These are the seeds of the baobabs. The soil of the planet is completely infested with them. And if the baobab is not recognized in time, you will never get rid of it. It will take over the entire planet. It penetrates it to the core with its roots. And if the planet is very small, and there are many baobabs, they will tear it to pieces" (ibid., p. 20).

Our planet — the planet of people — like the planet of the Little Prince, is also choked with "terrible, vicious seeds." But these are not baobab

seeds, these are the "wastes" of economic processes. It is impossible to permit these seeds to sprout and tear the biopshere "into pieces," as it happened with one planet, on which lived a lazy-bones. Once he did not weed out three little bushes in time . . . .

Although the people of the planet Earth are by no means lazy, I would like to end my presentation with the words of Antoine de Saint-Exupery (ibid., p. 22):

> "I can bear to preach to people. Yet few know the threat of the baobabs . . . . that is why this time I have made up my mind to betray my self-control.
>
> " 'Children.' I say, 'Beware of the baobabs.' "

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Annex 562

"Report No.27: Canada as a Conserver Society: Resource Uncertainties and the Need for New Technologies", *Science Council of Canada*, September 1977, pages 9-15

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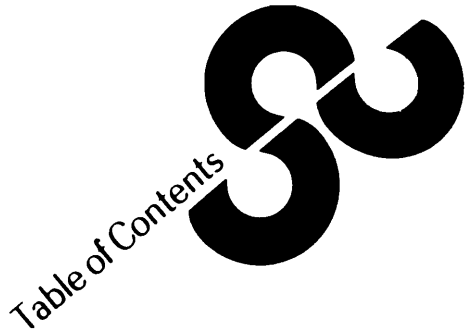
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Canada as a Conserver Society

Resource Uncertainties and the Need for New Technologies



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I. Background of the Study

Over the past decade we have been rapidly changing our images of the future. Space-ships there still may be, but probably only for a very small minority. Our science-fiction visions of limitless energy and luxurious life-styles must be tempered by realism. The continuation of growth trends of the recent past in the industrialized countries, plus growth in the rest of the world toward comparable levels, would imply a doubling of total energy use every 16 years. Present known reserves of petroleum will be virtually exhausted by the turn of the century.[1] More will be discovered, but even if additional supplies are found, equal to twice all those discovered up to now, the time to exhaustion would be extended a mere 16 years. For that time to be 32 years, an *additional four* times as much would be needed. It is hardly a sustainable future.

Burning such large amounts of fossil fuels could raise the carbon dioxide level in the atmosphere and raise the average temperature of the earth's climate – such unassessable and drastic changes are now a matter of real concern for the next century. Similarly, even if nuclear fission and fusion were to supply vast quantities of energy, we can now foresee the possibility that the generation of such quantities, approaching 1 per cent of the total solar input over significant areas of the earth, could seriously affect global weather patterns within one or two hundred years. Whether in the long range future the human race will find ways to manage the global system to compensate for these effects – as, for example, by deliberately distributing dust in orbit around the earth to marginally reduce solar input – can only be speculated at this time. What is clear is that we have reached a point on some exponential growth curves where we suddenly sense the approach of the 29th day.[2]

More subtle, but perhaps even more important than the appreciation of approaching direct physical constraints (energy, materials, pollution) are two other levels of perception that have been developing. One is the sense of human beings as biological creatures, immersed in vital ecological relationships within the earth's biosphere. We do not yet understand many of these relationships – for instance, the multiple predator-prey interactions in a complex insect-bird-bacterium-plant ecosystem. Some of our interventions may be going too far too fast, and setting in train deleterious changes that cannot be reversed. This perception suggests that we proceed with greater respect for the earth as an ecological system of finite capacity, with system equilibria that have evolved over millions of years. There is a growing feeling that we must temper some of our "bulldozer" enthusiasms while we devote much more effort to improving our scientific understanding of living ecosystems. We can then better foresee the consequences of what we do, the impacts of which can be global in scale.

The second level is of the impact of technology on the human being as a social and economic creature. The process of industrialization, the drive to high productivity and a high material standard of living are having some worrisome side effects. The diagnosis is uncertain: we do not know how much of our social malaise, or our economic anxieties, are contingent on high, perhaps unnecessarily high, throughput, high rate of change, or – like the case of the biological ecosystem – are the result of pursuing particular purposes and expectations without

understanding their indirect consequences. We do not, at this point, know how many of our societal problems can be attributed to the way technologies are designed and organized, and how many will require changes in attitudes, expectations or social structures.

Suffice it to say that present indications are that we face a period of exceptionally rapid change and transition, the extent and depth of which are not yet clear. The future will not be simply an extrapolation of the past. Some of the changes that we foresee as inevitable – in energy use, in materials, in ecology, and in social behaviour – are embodied in a concept we have termed the *conserver* society. The meaning of a conserver society and some of its implications are developed in the following pages. The concept of *a conserver society* has not come upon the Science Council suddenly. Most of the principles involved have been developing steadily over a considerable time. While the concept is often linked with discussions following the report, *Limits to Growth,* done for the Club of Rome (1972), or with the considerable public notice of the term "conserver society" that seems to have arisen almost spontaneously over the last two years,[3] its roots really go back to the growing awareness of problems of the environment characteristic of the 1960s. Science Council reports as long as nine years ago raised concerns that can be identified as having a "conserver" orientation.

Report No. 3, *Major Program of Water Resources Research in Canada,* (September 1968), drew attention to the ecological role of water systems and the needs for sound management of our resources (p. 29). In Report No. 4, *Towards a National Science Policy for Canada* (October 1968), a number of conserver-oriented recommendations can be found, *viz.*, (p. 14), the call for the "development of sound programs for the use, conservation and replenishing of resources," and the need for "control of existing and threatened health hazards already created by the misuse of science and technology, e.g., pollution." (p. 15)

In Report No. 7, *Earth Sciences Serving the Nation* (April 1970), it was noted that (p. 34): "the great majority of Canadians have scarcely a rudimentary knowledge of the earth on which they live. The fast-growing interest in our physical environment, the mounting pressures concerning landscape preservation and anti-pollution, the need for improved urban planning, and the importance of natural resource development in Canada highlight the relevance of earth sciences for Canadians."

Other conserver oriented references can be found in Report No. 8, *Seeing the Forest and the Trees* (1970) (pp. 10, 14, 19). In Report No. 9, *This Land is Their Land* (1970), came the call for making environmental improvement a new national goal. Elsewhere in the same report was discussed (p. 9) the need to create an Environmental Council, the desirability (p. 9) of creating a Department of Renewable Resources, the need to increase research on chemicals and biocides (p. 19), the importance of developing long-term ecosystem studies (p. 19) and, finally, the need to more fully develop the environmental sciences.[4]

Report No. 11, *A Canadian STOL Air Transport System – A Major Program* (December 1970), contained a comprehensive discussion of external costs and technological impacts on environmental quality (p. 17). The report noted that:

> "The noise, pollution, congestion, questionable land usage and ugliness associated with the expansion of the automobile-highway system, and similar problems associated with larger and faster conventional aircraft systems, are sometimes referred to as "external costs", and they raise questions of the validity of extrapolating these types of technological growth into the future. It is questionable whether the benefits provided by supersonic flight, high-capacity jumbo-jets and multi-lane superhighways sufficiently justify the degradation of the environment and the problems of congestion which they create. Alternatives are being sought, and the dedicated promotion of technology for its own sake is being halted."

Thus was expressed a concern, not only for environmental effects but for other consequences of choosing one technological path over another.

Report No. 14, *Cities for Tomorrow* (September 1971), moved from predominantly natural environments to the urban environment, to social effects, and problems of waste. An entire chapter was devoted to recycling (pp. 48–56). The broad context in which recycling is discussed anticipates some of the concerns regarding economic growth, its measurement, and its relationship to the quality of life that are raised in the Conserver study.

Concern for the environment and a discussion of the relationship between societal activities and the health of the environment can be found again in Report No. 16, *It is Not Too Late – Yet: A look at some pollution problems in Canada's natural environment; an identification of some major concerns* (June 1972).

The term *Conserver Society* itself was used for the first time in Report No. 19, *Natural Resource Policy Issues in Canada* (January, 1973). This report contained a wide variety of recommendations regarding both policy and the need for new institutions specifically designed to protect and control resources development. For example (p. 32):

> "At an appropriate federal-provincial meeting, the Secretariat of the Canadian Council of Resource and Environment Ministers should be strengthened and renamed a National Resource Management Authority. The structure of the Authority should permit the concern of all levels of government, industry, labour, professional organization and citizens' action groups to be expressed and considered during analysis by the Authority of policy alternatives which are later to be considered by the CCREM.
>
> This National Resource Management Authority should develop and coordinate long-range policies for integrated management of resources and the environment, and should be concerned with the development of policies for the prudent and efficient use of both renewable and non-renewable resources. These proposed policies and their background studies should be published and freely available to the public.
>
> Further, this National Resource Management Authority should increase support for programs to heighten public awareness, and encourage mechanisms for community involvement in decisions affecting resources and the environment."

The Report re-stated the need for recycling cited in the earlier Urban Report and recommended that (p. 38): "industrial institutions incorporate the concepts of durability and recycling in process and product design and, in cooperation with all levels of government, establish

effective programs for the recycling of municipal, industrial and agricultural wastes."

Finally, the term "conserver society" occurs in the recommendation (p. 39): "that Canadians as individuals, and their governments, institutions, and industries, begin the transition from a consumer society preoccupied with resource exploitation to a conserver society engaged in more constructive endeavours. Ideally, Canada could provide the leadership necessary to work toward more equitable distribution of the benefits of natural resources to all mankind."

Recommendations and policy discussions with a "conserver" orientation can be found in other reports following No. 19. In particular, *Strategies of Development for the Canadian Computer Industry* (No. 21, September 1973) raised fundamental questions regarding the impact of powerful new technologies.

In Report No. 23: *Canada's Energy Opportunities* (March 1975), Council made the following statement on shaping energy demand (p. 46): "Faced as we are with a different and expensive supply problem we should ensure henceforth that supply projections strongly influence policies for the shaping and moderation of demand and we should promote an energy conservation ethic throughout Canadian life."

On page 47 of that same report, the following was stated (The Conserver study was by now in progress): "A strategy to eliminate waste and to promote efficiency of use in our energy system would be an integral part of any attempt to create a conserver society."

In Report No. 25, *Population, Technology and Resources* (July 1976), the following statement appeared: "We see Canada in the longer term becoming a conserver society using food, energy and resources frugally and using transportation and communications technology to permit a very wide choice of lifestyle, often in smaller communities."

The proposal for a specific study on "The Implications of a Conserver Society" was adopted at the 42nd meeting of the Science Council in June 1973. In the meantime the Club of Rome study on *Limits to Growth* had appeared and was being widely and heatedly discussed. In the fall of 1973 the Arab-Israeli war, the Arab oil boycott, and subsequent coordinated action by the OPEC nations to raise the price of oil roused the world to awareness that the period of relatively inexpensive and apparently unlimited fuel resources was rapidly coming to an end.

The study was set back in getting under way by the untimely death of the Chairman-designate of the Committee, Mr. W. J. Cheesman. The first formal meeting of the new Committee was held in March 1975. One of its first tasks was to define more exactly what was meant by "conserver society". A provisional definition was developed:

> The concept of a Conserver Society arises from a deep concern for the future, and the realization that decisions taken today, in such areas as energy and resources, may have irreversible and possibly destructive impacts in the medium to long term.
>
> The necessity for a Conserver Society follows from our perception of the world as a finite host to humanity, and from our recognition of increasing global interdependence.

A Conserver Society is on principle against waste and pollution. Therefore it is a society which

- promotes economy of design of all systems, i.e., "doing more with less";
- favours re-use or recycling and, wherever possible, reduction at source;
- questions the ever-growing per capita demand for consumer goods, artificially encouraged by modern marketing techniques, and
- recognizes that a diversity of solutions in many systems, such as energy and transportation, might in effect increase their overall economy, stability, and resiliency.

In a Conserver Society, the pricing mechanism should reflect, not just the private cost, but as much as possible the total cost to society, including energy and materials used, ecological impact and social considerations. This will permit the market system to allocate resources in a manner that more closely reflects societal needs, both immediate and long term.

The scope of the study presented difficulties. Not only would it represent a synthesis of many related ideas that had been developing through previous studies, but it would aim to probe deeply into the inter-relations of technology, industry, commerce and human psychology, their implications for the quality of Canadian society and for the future. The thrust of events tended to move energy conservation to centre stage, but these other fundamental concerns, relating to certain structural and inflationary features of our high-consumption throw-away culture, poised against the need to come to terms with our biosphere, remained important.

Their roots run deep. Recent writers have expressed great concern for the economic, political, and social tensions developing in the Western political systems, and between them and the less-developed world, under the pressures for growing affluence. Some writers go so far as to claim that a high level of affluence (in a limited world) is incompatible with democracy. For example, some of the images that shape our aspirations may be derived from minority lifestyles that intrinsically cannot be enjoyed by a majority. To the extent that "being rich" depends on being able to command relatively cheaply the personal services of others, everybody cannot be rich.[5] The more recent reports commissioned by the Club of Rome have taken the direction of emphasizing that the "limits" creating problems for the world today may not be so much physical or environmental, as social.[6]

These are apocalyptic times, full of prophets. Whether they speak truth, or false opinion, is difficult to judge. But these kinds of questions are beyond the scope or competence of the Science Council to answer. We have tried to stick to practical matters, with an incremental approach, to identify some of the technological paths that lead in the right direction, toward sustainable relationships with material resources and the biosphere. Whether those paths, about which in our view we do not have much choice, imply other changes can only be decided by Canadians through democratic discussion. That is why we have emphasized public interactive processes in the course of the study.

Several background studies on such topics as renewable energy supplies, recycling, rising costs of minerals, and effects of advertising

were commissioned when the Committee felt the need for specific information or reviews. Generally, the flood of information and the ferment of ideas related to these problems and issues have been so prolific worldwide, over the last three years, that the greater task has been to bring them into the orbit of our thinking and place them in perspective. Mention should be given to relevant work in federal and provincial government agencies, such as the Office of Energy Conservation in Energy, Mines and Resources, Environment Canada, Central Mortgage and Housing Corp., National Research Council, the Ontario Department of Environment, the Man & Resources Institute in P.E.I., and others too numerous to mention. A useful study was done on "The Selective Conserver Society" by the GAMMA group at the Universities of Montreal and McGill,[7] contracted from the federal Department of Supply & Services, with the involvement of several departments and the Science Council.

As part of the Science Council study, many of these activities were brought together and reviewed, with bibliographic material, in an informal journal, *Conserver Society Notes/Carnets d'Epargne,* distributed approximately quarterly by the Science Council to a mailing list of over 1500 interested respondents. The first issue was published in October 1975. "Notes" became an important instrument in the public dialogue initiated by the Committee and its staff. A position paper, "Toward a Conserver Society – a Statement of Concern" was put out by the Committee in February 1976. It was published in *Science Forum* (June 1976), *Québec Science* (June 1976) and, in an edited version, in *Canadian Consumer* (June 1976), the magazine of the Consumer's Association of Canada. The statement was, in large part, well received. In March 1977 it was, in its entirety, read into the U.S. Congressional Record. The statement outlined the need for a transition to a Conserver Society and some of the characteristics of such a society in general terms. The intent of the present Report is to be more specific.

However, it is important to emphasize that we are not attempting to set out a complete blueprint for a new society, nor to specify the exact modes of transition or how long they may take. The Report should be seen as our view of some new directions related to science and technology that the conserver principles imply, and some actions in those directions that agencies at all levels – government, business, labour, and private citizens – can take.

It should not be construed, as it sometimes has been, that these prescriptions for re-directing and modifying Canadian patterns of growth are aimed at slowing, or freezing in the *status quo,* the productive system in which large number of Canadians have done well, and in which large numbers of less well-off Canadians still hope to realize their aspirations. To the contrary, within finite resources and limited environmental regenerative capacity, it is only by being more efficient, more intelligent, more far-sighted, and by changing the style of some technologies, that we shall all find room for continuing growth and distributive justice. What applies within Canada applies also to Canada as one of the more developed countries, in relation to other parts of the world.

Annex 563

"Proposal for a multiannual research programme in the field of climatology (Indirect action - 1979-83)", *Commission of the European Communities*, 11 September 1978, pages 2-7, 10-18

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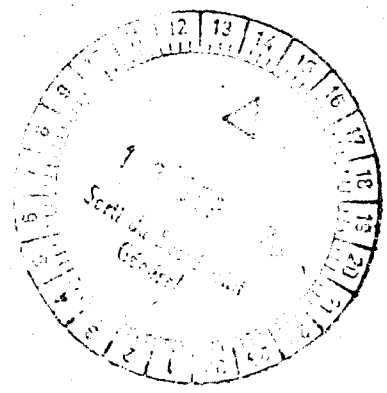
COMMISSION OF THE EUROPEAN COMMUNITIES

COM(78) 408 final

Brussels, 11 September 1978

Proposal for a
multiannual research programme in the
field of climatology (Indirect action -
1979-83)

(submitted by the Commission to the Council)



COM(78) 408 final

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It should be emphasised that the gaps that exist in our present knowledge do not concern facts, but rather their causes and times of occurrence. Thus no scientist could possibly prove today that such and such disaster is awaiting us at a given date in the future. But science has gathered proofs enough that climate can cause disasters. It is therefore imperative that on one side we refine our means of investigation into the causes of climatic changes so as to reach a point where we can get early warnings of them ; on the other side we should improve our concept of "likelihood of occurrence" by giving it a precise and an as high as possible probability value for specified times and places.

In other words, we have to decide whether we can afford to remain unprepared for likely, serious climatic changes in a possibly near future, or whether we can go on polluting chemically and thermally our atmosphere without minding of the possible consequences on climate. Growing needs may be met by technological progress, but the latter involves a greater use of energy, meaning a greater chemical and thermal pollution of our environment. Should climate be adversely affected by those by-products of technological expansion, we might have to face a kind of climatic barrier to long-term energy growth.

2. PRESENT STATE OF THE ART

The present "state of the art" concerning climate and its relevance to human life may be conveniently treated under two headings :

1. Research activities underway, both world-wide and in Europe.

2. Present state of knowledge about climate and problems raised thereby.

2.1. RESEARCH ACTIVITIES WORLDWIDE AND IN EUROPE

2.1.1. International Projects

During the last decade there has been a significant increase in research on climate on a worldwide basis. The problems connected with the understanding of the present and past climates

and the possibilities for predicting future climatic states have not only resulted in significant individual efforts but have also inspired national and international programmes dealing with various aspects of the climate problem.

A truly international programme, the Global Atmospheric Research Programme (GARP), sponsored jointly by the International Council of Scientific Unions (ICSU) and the World Meteorological Organisation (WMO), has among its objectives the study of those physical processes in the troposphere and stratosphere that are essential for an understanding of the factors that determine the statistical properties of the general circulation of the atmosphere which would lead to better understanding of the physical basis of climate.

A number of other climate programmes exist. These have to a large extent been created because of the renewed interest in climate modelling during the last decade induced partly by the possibility of man's impact on climate and partly by the implications of some of the early primitive climate models. A programme especially devoted to the assessment of man-climate interactive impacts is being organized by the WMO.

2.1.2. U.S.A. Projects

The scientific community in the USA has expressed its recognition of the need for climatic research by a well formulated plan for climatic studies during the next decades. The plan is summarised in the book "Understanding Climatic Change, A Program for Action", published by the U.S. National Academy of Sciences (1975).

This plan contains a wide spectrum of projects dealing with a Climatic Data Analysis Programme (CDAP), a Climatic Index Monitoring Programme (CIMP), and a Climatic Modelling and Applications Programme (CMAP). It is further recognised that these essentially national programmes must be seen in an international setting. To further the aims of the climatic part of the GARP programme, it was also recommended to create an International Climatic Research Programme (ICRP).

Another "U.S. Climate Program Plan" has been prepared by a Drafting Group of the Interdepartmental Committee for Atmospheric Sciences. It largely overlaps the former one by covering such topics as Climate Variability and National Activities, Diagnoses and Projections of Short-Term Climate Variability, Climate Data Management, Observations for Climate Research, etc.

An important plan for a Carbon Dioxide Effects Research and Assessment Program has been drawn by the Department of Energy. It aims at removing uncertainties from predicted future carbon dioxide concentration and at assessing its possible consequences, not only climatic, but also biological, social and economical.

There are in addition a number of more specialized programmes which are all closely related to some aspects of climatic research. Because the oceans dominate the climatic behaviour on a long time scale, it is important that the oceanographic community is engaged in those aspects of oceanography which are relevant to climate

problems. Examples of such field studies are the Mid-ocean Dynamics Experiment (MODE), the North Pacific Experiment (NORPAX), and a POLYMODE experiment, jointly sponsored by the U.S.A. and the U.S.S.R. Other examples are the Climatic Impact Assessment Programme (CIAP) which was concerned with the impact on the climate by various air pollutants, and the Climate Dynamics Programme of the Advanced Research Programme (Department of Defence, U.S.A.).

2.1.3. U.S.S.R. Projects

Less detailed information is available from the U.S.S.R. about their programme for climatic research but it is known through the GARP planning meetings, that the U.S.S.R. scientists are keenly interested in climatic problems. Indeed, one of the first climatic models was presented by a Russian scientist (Budyko).

2.1.4. Projects in the EC Countries

(a) Climate modelling

It is convenient to separately consider the efforts in the modelling of climate which are made by use of general circulation models (GCMs) and those carried on with models where the weather systems are treated on a statistical basis.

At present, the only GCMs in Europe which can be used for climatic studies are those of the British Meteorological Office (BMO) and the ECMWF*. The BMO models have been applied to long-range prediction, and have been used for analyses of specific circulation anomalies and also for studies of man-made climatic changes. The GCMs at the ECMWF are closely related to and based on models developed in the U.S.A. and are used for medium-range predictions.

There are GCMs under development at the Deutscher Wetterdienst (Offenbach) and in France (Etablissement d'Etudes et de Recherches Météorologiques, Boulogne ; Laboratoire de Météorologie Dynamique, Palaiseau). The Joint Universities Group in Reading has made particular efforts in analysing the behaviour of GCMs which may prove fruitful for an assessment of the reliability of results obtained with GCMs. Ocean circulation models are under development in France (Laboratoire d'Océanographie Physique, Paris) England (DAMPT, Cambridge ; Joint Universities Modelling Group, Reading) and in Germany (Max-Planck Institute, Hamburg).

Some of the parametrized models presented so far in Europe exhibit a certain skill in the simulation and analysis of the present mean state of the atmosphere (Wiin-Nielsen, ECMWF). Some are concerned with the testing of a specific scheme for the parametrization of weather systems (e.g. Imperial College, London). The work at the Max-Planck Institute in Hamburg concentrates on studying the slowly varying parts of the climate system. Simplified models are in the stage of development in France and Belgium (e.g. Laboratoire de Météorologie Dynamique, Paris)

Some of these models concentrate on the study of selected mechanisms in the general circulation and the problem of seasonal prediction has been attacked.

* European Centre for Medium-range Weather Forecast, Bracknell, UK

(b) Reconstruction of Past Climates

Sporadic studies of climate in the historic past have been made in a number of European academic institutions and national meteorological services, and the results have been published in various scientific periodicals and weather service publications. Because the data and techniques for reconstruction of the past climatic record involve many branches of learning, this kind of research appears best done in the full interdisciplinary setting of academic institutions. The advanced computational facilities and expert staff in the laboratories of leading meteorological services, on the other hand, are ideally suited to pursue research of a theoretical nature, such as climate modelling, numerical predictions and the exploration of the potential effects of man's activities on the climate regime.

There is an obvious need for a large amount of co-operation between these two angles of climatic research which is at present (except in the United States) not fully met. Also, disproportionately less work and support has so far gone into the reconstruction of the climatic record : a record that shall be long enough to cover many times the evolution of long-term processes that may be important to prediction over the coming decades.

At present only a few groups and institutes exist in Europe where the observed record of climate beyond 100 years back is worked on by meteorologists. Small groups or individual scientists in the national Meteorological Services and Universities in Europe have recently published papers that indicate activity in this field. One European research unit, the Climatic Research Unit at the University of East Anglia, is almost totally committed to the reconstruction of past climates. The foremost objective of the work in this Unit is the reconstruction of past climates on a global scale with specific attention to the Atlantic/European sectors. The work is largely carried out by a team of atmospheric scientists in collaboration with other scientists at a full multi-interdisciplinary level.

2.2. PRESENT STATE OF KNOWLEDGE ABOUT CLIMATE AND PROBLEMS RAISED THEREBY

The following considerations apply in general to all climatological research throughout the world.

2.2.1. General Research on Climate

Climate is at present understood in its broad characteristics, but we have relatively little knowledge about the major processes of climatic change. In other words, the mechanism of climate is not

understood in any detail sufficient for instance to allow climatologists to forecast climatic conditions.

It is therefore essential that the scientific community be allowed to increase substantially the amount of data available about the various components of the climatic system. Without these data, theories would remain largely unchecked and even the best model would be of little use.

Overall available data are so far only fragmentary and do not allow us to decide for example which are the most important causes of climatic variations, or which are the most sensitive of the many processes involved in the interactions of various components of the climatic system.

We also ignore how much of the long-term variations, so far known to have occurred, depends on cyclic regularities (of which the causes should be ascertained), and how much on purely random processes.

All these questions must clearly be answered before we even attempt to consider the ultimate question of climate predictability. This last and all-important problem will be solved only after :

(a) both theory and dynamical models have been further developed and applied ;

(b) the data bases now available have been greatly extended, both in space and in time.

2.2.2. Research on Man-Climate Interactions

When we come to consider the vast and hitherto largely inexplored field of man-climate interactions, the same situation of a poor or insufficient knowledge is encountered. In this case however it is not only a question of a lack of scientific evidence : climatic variability, either natural or man-indiced, may create serious problems for our present economic and social structure.

Our economic and social stability is strongly climate-dependent. The climates of our planet have always been changing, and without any doubt they will continue to do so in the future. What we do not know is how large these future changes will be, and how rapidly they will occur.

A major climatic change would bring about worldwide economic and social readjustments, since the evolution of the global patterns of food production and population has been so far largely controlled by climatic conditions.

At present, world grain reserves are only a few percent of annual consumption ; the occurrence of an unfavourable climatic period, coupled with the increasing food demands of an exploding population, could play havoc. We do not have therefore to wait for a new ice age in order to see our agricultural system devastated. A major social or economical disaster could be brought about by a relatively minor climatic change, such as one of those that have so often occurred, even in the recent past.

Similar considerations apply to water resources, whether we consider them from the standpoint of domestic use, or irrigation, or electric power generation, or industrial use. Here too population growth, the expansion of towns and industrial development are putting an increasing strain on a resource which is already becoming scarce. Thus while unfavourable climatic conditions could make that scarcity greater, one might on the contrary wish that they were favourable in order to cope with demands and build up reserves.

Although we know that water and food resources depend on climate, we ignore the precise relationships defining that dependence in a quantitative way. Hence an urgent need for well-planned scientific research.

The problem is made more serious by the possibility that climate changes may be the consequence of human activities. Man is steadily modifying many of the factors which are known to determine climate. Such modifications may be small, but for climate, in general, there is no a priori way of deciding the magnitude of the effect from that of the cause, since positive feedback mechanisms could act as amplifiers of seemingly small initial perturbations.

Man is for instance changing the chemical composition of the atmosphere by all kinds of pollutants, and in particular by burning fossil fuels that steadily increase the concentration of carbon dioxide. Man is destroying forests, which also increases the atmospheric carbon dioxide content while altering the surface albedo and thus affecting the earth's radiation balance. Man is also pouring large quantities of heat into the atmosphere, thus perturbing the planet's energy budget.

2.2.3. Summing up

All this points to a situation which in general terms can be briefly described as follows :

(a) We know that climate is essentially changeable ; we do not know the precise causes of its changes.

(b) We know that climatic changes may occur at any time ; we also know that man might have a role in determining them ; we do not know when or where they could occur.

(c) We know that even relatively small changes might produce important effects ; we do not know the quantitative relationships linking climatic changes to the possible changes in the variables important to man's life and well-being.

(d) We need therefore to concentrate our efforts towards the aim of eliminating as many as possible of our present uncertainties, so as to avoid as many as possible of the threats that climatic variability may have in store for us.

4. DETAILED DESCRIPTION OF THE PROGRAMME

4.1. GENERAL REMARKS

Climate may be considered both (i) by itself as one of the many facets of the natural world and (ii) as a part of man's environment, and as such in interactive relationships with man's activities.

On these grounds two research areas have been naturally considered for the present programme, the first having its main emphasis on climate's mechanism, the second on the interactions between man and climate.

In dealing with climate mechanism, under Research Area 1, explicit mention has been made of mathematical models as an obvious means of dealing with the problem. Elsewhere more experimental methods may have been stressed.

It should be understood however that no constraint is put in general on the means whereby a given problem could be solved. Various methodological approaches are in principle applicable to the several research items described later on. They include for instance :

(a) Experimental research ; measurements and monitoring activities ;

(b) Statistical evaluations of climatological records ;

(c) Simulation, diagnosis and projection studies, as regards both long- and short-term climatic variability and impacts.

To properly implement the programme, it has be found advisable to also suggest the establishment of :

(i) a group of climatic experts especially appointed to study the possible impacts due to the interactive relationships between man and climate ;

(ii) a system of data storage, enrichment and management, whereby up-to-date climatic data may be freely and rapidly accessible to all researchworkers concerned

4.2. RESEARCH AREAS

4.2.1. Research Area I : "Understanding Climate"

4.2.1.1. Objectives

The general objective of this research area is that of gaining a deeper insight into the mechanism and therefore the behaviour of climate, the ultimate goal being climate prediction, especially on a usefully short-term (weeks to decades) scale. To achieve that goal it is necessary :

(i) To reconstruct the past record of climate in as much detail, over as much of the Earth and as far back in time as data and interpretative techniques permit ;

(ii) To analyse that record so as to be able to determine the causes of the changes observed ;

(iii) To improve theoretical understanding and knowledge of the development of climate, the circulation processes in the atmosphere and oceans and the interactions involved, and the nature of the impact of external influences.

Clearly these observational and theoretical attacks are closely interlinked and need to be pursued hand in hand, by also taking advantage of data obtainable through research work in Research Area II.

4.2.1.2. Research Themes under Research Area I

I.1. Reconstruction of Past Climates

The past variability of climate on long time scales can provide valuable information on the dynamics of the climate system. Furthermore, in order to obtain reliable statistics, the sampling period of a continuous statistical process should be considerably longer than the fluctuation periods of interest. There is a convincing evidence that climatic changes and variability have been significantly better in the past than in the short period of instrumental observation on a global scale (ca. 100 years). There is also a growing evidence of quite abrupt climatic changes which would be really catastrophic to mankind if they would repeat. For these reasons the analysis of past climates should be an important contribution to the present Programme.

There exists a wealth of unexplored historical information on climate in Europe which should be collected and organized. These include both (a) Natural Records and (b) Observational and other Historical Records.

(a) includes for example fossil types of data such as tree-rings ; year-layers in lake sediments, river estuaries and ice-sheets ; concentrations of stable isotopes of oxygen, carbon, nitrogen etc. in the wood substance of tree-rings and in the ice of ice-sheets ; pollen analysis ; analysis of insects and marine microfaunes in the sedimentary records, etc.

(b) includes for example records of measurements made in the past about meteorological parameters, as well as reported data about floods, frosts, harvests, disastres caused by weather, etc.

Such records should be explored and analysed in such a way as to bring to light the circulation processes in the atmosphere and the oceans, and any external influences (solar, tidal, volcanic or other) which underlied the changes made evident by the records themselves.

I.2. Climate modelling and prediction

The ultimate goal of climate modelling is climate prediction, and it is obvious that society is interested in climatic predictions of time scales from the limit of detailed weather predictions (say, two weeks) to many years. Apart from the immediate relevance to society, this time scale interval is also more promising for theoretical studies than the longer time scales because of the better availability of data.

Studies aimed more specifically at the problem of forecasting climate should therefore be encouraged, and in this context three main possible growth points can be identified :

(a) A System-Analysis Approach

The techniques of system analysis should be used in order to provide extrapolation techniques useful for periods of the order of magnitude of one month.
A technique currently used at present consists in selecting a so-called "historical antecedent" to a present situation from climatic archives.
Assuming the two situations to be identical, they should have an identical evolution. The problem is here to identify and correctly select those parameters that can act as useful predictors of climatic change. The technique of system analysis should be used for the selection of such predictors, with the advantage that the choice would be guided by synoptic as well as by dynamical criteria.

(b) Atmospheric Circulation Models

An attempt should be made at developing numerical models of the atmospheric circulation directed specifically at the problem of climate prediction. Appropriate simplifications of the detailed general circulation models could be guided by the use of special analyses of global atmospheric data and by the existing General Circulation Models. One would in this way develop and test numerical models with relatively few degrees of freedom compared to the detailed GCMs, and perform analyses of atmospheric data relevant to the design of such models. Test cases should include not only "normal" climatic conditions, but also spectacular excursions like the drought in north-western Europe during 1976. Care should be taken to include in such models a proper treatment of the physical processes at the air-land and air-ocean interfaces, a hydrological cycle and a treatment of the upper mixed layer of the ocean.

(c) Slowly varying elements

As the periods of the prediction of the atmosphere become longer, it is almost certain that the detailed atmospheric description will play a lesser role, while the oceans and the other slow-response parts of the climatic system will play a greater role. It has thus been realised recently that prediction models for the longest time scale must concentrate on the evolution of the slowest-response parts. Models of this nature are in their infancy, but give great promise for further development.

One should therefore try to develop models for climate predictions concentrating on the parts of the climatic system with the slowest response (continental ice sheet, deep circulations of the oceans, changes in vegetation and snow cover over land and of drifting sea ice). It will be required to include the physics of the slowly-varying components, their interactions and the specification of the statistical representations of the faster-response components of the system. The models should be tested and attempts should made to make experimental forecasts for 100 years.

4.2.2. Research Area II : "Research on Man-Climate Interactions"

4.2.2.1. Objectives

If one considers short-term needs and impacts, the present one is probably the most important field of research. Recent problems concerning the availability and distribution of food, water and energy have raised the general level of concern about the impacts of climate on man's resources, as well as about the possible impacts of human activities on climate.

The objective of the research work to be performed in this area should therefore be that of assessing in an as precise and quantitative way as possible (1) the relationships between climate variability and the availability, spacewise and timewise, of important resources, and (2) the impacts that certain human activities could have on climate.

The assessment of such relationships and impacts will be typically the result of an interdisciplinary study. For this reason, besides the implementation of specific research projects within the present Research Area, the establishment of an Interdisciplinary Group is proposed (see below under "Special Activities").

4.2.2.2. Research Themes under Research Area II

Since man-climate interactions can be considered both ways, Research Area II includes naturally the following two research themes.

II.1. Climatic Variability and European Resources

(a) Impacts on Land and Water Resources

Climatic variability affects land and water resources in manyfold ways. This clearly applies to such natural hazards a droughts and floods, as well as to surface and ground water demands for energy, domestic and agricultural purposes.

Proper land and water resources management, especially in view of hazard reduction, requires therefore that one is able to obtain a knowledge of the frequency and magnitudes of past and present climatic changes.

Water resource planning is based at present on statistical and probability predictions. Therefore the extension of the historical records concerning run off should allow improved estimates of the probability of future streamflow magnitudes. This kind of information is important in forecasting the availability of domestic water, irrigation water and hydroelectric power.

Research should therefore be focussed on the quantitative relationships between specific changes in climatic variables and the occurrence and availability of surface and ground water. Recharge processes, which are known to be sensitive to climatic conditions, should be investigated in this respect.

Soil moisture and vegetation are mutually linked : the effects of changes in either of these should be studied in relationship to specified climatic conditions.

Rainfall outlooks, limited at present to one month ahead, should also be improved upon and cast in terms of probability or ranges of expected values in order to be properly used. Spatial and temporal correlations, known as teleconnections, should be systematically explored to these purposes.

The agricultural community needs monthly or seasonal rainfall and temperature predictions for the growing season several months in advance, in order to plan crop types, seed varieties and fertilizer needs. Suppliers may need longer times, and government planners and policy makers may want even longer periods, possibly one year in advance.

Extensive new observations of the relevant parameters should be gathered and diagnostically analysed in order to help the construction of new statistical prediction formulas and the generation of further hypotheses for testing with proper models. The highest priority should be given to research aimed at developing yearly projection techniques.

(b) Climatic Hazards Evaluation

A special field of endeavour is the evaluation of the probability of occurrence of such extraordinary yet economically and socially important events as disasters, like floods and droughts, caused by climatic conditions.

Flood hazard planning could be improved by the extension of our knowledge about past flood recurrence, using evidence from the geological records, coupled with the evaluation of changes in the surface run off characteristics.

Similar considerations apply to snow hazards, such as snow avalanches in mountain regions and snow hazards to buildings and communications in regions where snowfalls are normally light or infrequent.

Droughts are also a kind of hazard that properly oriented climatic research could help predicting and being prepared against, especially in view of a proper management of water resources.

(c) Impacts on Energy Requirements, Use and Production

Climate has a profound influence on the amount of power required, and even on the means whereby power is generated (for instance electrical energy from water reservoirs, solar energy in sunny regions). Conversely, power generation and use may affect climate, through thermal or chemical pollution of the atmosphere.

Apart from general climatic effects, a knowledge of the climatic conditions likely to be experienced by any given region is necessary for planning both site selection and plant design and operation. Especially needed is a better capability of relating the dispersion of airborne pollutants, especially those of a toxic kind, with ambient climate conditions. Such information is particularly lacking for irregular zones such as mountain-valley complexes, coastal regions and forest areas.

Besides their relevance to hydroelectric power production, water flow forecasts and precipitation outlooks are important for cooling plants necessary to nuclear and fossil power plants, since about 60% of the energy produced is dissipated as heat. For this reason the rainfall and run off prospects of any given region have a marked influence on energy production.

Finally, climatic forecasts or outlooks have an obvious relevance to the planning of energy production in view of heating and cooling needs.

II.2. Man's Impacts on Climate

It has been recognized that man's activities can affect the climate of the earth, possibly in an unfavourable way. Inadvertent climate modifications are here meant, and among the various possible research fields the following have been selected.

(a) Atmospheric Chemical Pollution, with a special emphasis on Carbon Dioxide release

Direct contamination of the atmosphere is one of the most obvious of man's influences on his environment, one moreover that can have direct effects on climate.

Particles and certain trace gases influence the heat balance of the atmosphere by changing the flux of solar and infrared radiation. Particles are also involved in the initiation of condensation and freezing in clouds.

Among gaseous products, by far the most important for its possible impacts on climate is carbon dioxide, which man has been pouring into the atmosphere since the beginning of the industrial era. Thus CO_2 concentration has increased from about 290 ppm by the year 1860 to about 320 ppm by 1970, that is about a 10% increase in 110 years. But since CO_2 concentration is growing exponentially, the next 10% increase would only take 20 years, and a 100% increase would occur after 50 years, that is by 2020.

Such a doubling of the CO_2 global concentration could effect an increase of the temperature near the earth's surface by about 2°C. Such a warming would constitute a serious climatic modification which could lead to irreversible effects, such as the destruction of the Arctic Sea ice with a drastic shift of all climatic belts northwards. While a disappearance of the floating Arctic sea ice would have no immediate effect on sea level, the possibility of a large-scale surge of Antarctic shelf-ice has been suggested, which would cause a danger of inundations over low coastal regions.

Various hypotheses have to be tested in this connection ; for instance, the earlier assumption of a permanent 50% storage in the ocean and the biosphere of the released fossil CO_2 may be untenable. Increased deforestation may prevent the biological storage of important quantities of CO_2, while the storage in the oceanic upper mixing layer could only last a few decades, because of the low mixing rate with the cold layers below the thermocline. Large amounts of CO_2 could therefore be released by the oceans sooner or later and this process would be intensified by a slow acidification (due to pollution) and warming (due to the "greenhouse effect" of CO_2 itself) of the upper mixing layer. On this basis a fivefold increase in the CO_2 concentration after 100 years cannot be excluded if the use of fossil fuels were to continue unchecked at the present growth rate.

On the other hand, scientists are not unanimous as regards the temperature impact of such an increase. Estimates of the mean temperature rise due to CO_2 vary, and the net temperature change which could result against the observed cooling trend since 1940 is not certain.

It appears therefore that one of the highest priorities in the present Programme should be assigned to the CO_2 accumulation problem in order to assess precisely :

(i) past and present CO_2 concentrations ;

(ii) sources and sinks of CO_2, and their evolution in time ;

(iii) exchange rates between the various compartments of the climatic system ;

(iv) climatic and other environmental impacts.

The assessment of such factors should be arrived at through both applied research and proper modelling. Monitoring should be provided by a number of stations suitably chosen or possibly established to the present purpose.

(b) Release of Energy

Thermal pollution is also a cause for concern, since man is thereby significantly contributing to the energy budget of the earth by burning fossil fuels : coal, gas and petroleum products. The rapidly increasing contribution from nuclear power plants must also to be included in any future projections. For 1970 the global energy production has been estimated at about 6×10^{19} cal/year. Distributed evenly over all continents this energy amount corresponds to a small fraction of the net solar radiation at the earth's surface ; but the annual growth rate of energy production has been gradually rising, with an average global increase of about 4-5% annually, according to UN data. This is equivalent to a rise by a factor of 3 to 4 in 30 years. There will be therefore many areas in the world in which the additional energy input will approach the order of magnitude of the natural net radiation. The EC energy output for 1976 can be calculated from EC data (1) to have been 7.5×10^{15} Kcal, which corresponds to about 0.6 Wm^{-2}. An assumed growth of 3% per year would bring the average energy output to about 1.2 Wm^{-2} by the year 2000 and to about 5.2 Wm^{-2} by the year 2050, the solar radiation at the earth's surface being about 100 Wm^{-2}. Those being average values, clearly urban and industrial areas would add much more to the natural radiation input. For instance, the value for West Berlin has been about 21 Wm^{-2} during the years 1965 to 1968, and it was already 19 Wm^{-2} for Sheffield in 1952 (2)

The effects of urban and regional heat sources on continental and global climate are however uncertain ; we can speculate that there is a possibility that such areas may sooner or later trigger some changes in the local or large-scale weather patterns. A certain amount of research work should be directed towards the assessment of the possibility and the magnitude of such changes.

4.3. SPECIAL ACTIVITIES

4.3.1. Objectives

The objectives of the work to be performed under "Special Activities" correspond to four basic needs, namely :

(i) to correlate in a panoramic and synthetic view the data collected under Research Areas I and II ;

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(1) Overall Energy Balance Sheets (1963-1976), Statistical Office of the European Communities, Luxembourg, December 1977.

(2) Inadvertent Climate Modifications, SMIC Report, MIT (1971)

(ii) to provide suitable diagnoses and projections concerning climatic variability and impacts ;

(iii) to provide suitable instruments and services for climatological research.

4.3.2. Specific Instruments and Services

(a) A European Interdisciplinary Group for the Study of Climatic Impacts

Scientific disciplines applied to climatological research may be or become so highly specialized that the necessary comprehensive view of the whole may be lost in individual efforts. Yet, due to the highly interactive nature of all climatic or climate-related factors, climatological research is typically one where a panoramic view has to be maintained at all costs. Hence the necessity of establishing an Interdisciplinary Group whose task should be to take care of needs (i) and (ii) stated above. The Group should include a number of European Experts in various disciplines selected on the basis of their relevance to and complementarity in climatological research.

(b) Inventory, coordination and enrichment of European Climatic Data Sets

Climatological research in general and projection studies in particular will require extensive data collections. Various centres in Europe possess or are building up such data collections either from modern observations or from natural or historical records. To make the best possible use of such a work in the frame of the present Programme, it appears essential

(i) that an inventory of the existing European data sets, sources and formats be established and regularly updated ;

(ii) that practical means be devised to favour the exchange of data between the various centres, and their general availability to the scientific community ;

(iii) that new, useful data sets from outside the EEC Member States be acquired.

Annex 564

"Summary of the Carbon Dioxide Effects Research and Assessment Program", *United States Department of Energy, Office of Health and Environmental Research*, July 1980, cover slide, "Effects on Climate", "Implications of CO_2 Induced Climate Change"

DOE/EV--T0002/1

Summary of the Carbon Dioxide Effects Research and Assessment Program

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United States
Department of Energy
The Carbon Dioxide Effects
Research and Assessment Program

CO2

MASTER

Effects on Climate

Carbon dioxide, although virtually transparent to short wave solar radiation (visible light) strongly absorbs long wave radiation (heat) at certain wave lengths in which other atmospheric gases are transparent. Thus, when carbon dioxide increases, more long wave radiation is trapped in the earth atmosphere system than would otherwise be the case. Some of this radiant energy increases evaporation. The increase of atmospheric water vapor resulting from the increased evaporation amplifies the "greenhouse" effect because water vapor also strongly traps long wave radiation. Because of differences in incoming solar radiation with latitude and because of the complex nature of the earth's surface (water, land, ice), the CO_2 induced warming is not uniform over the globe.

The accompanying diagram shows the results of a numerical simulation (a computer model) of the effects on global temperature of a doubling of atmospheric CO_2. It shows the temperature differences, averaged longitudinally, between a "run" with current values of atmospheric CO_2 and a "run" with twice that amount. Note particularly the larger than average increases of temperature in the polar regions and the decreased temperatures in the stratosphere. Other, more recent models suggest that, in addition to the temperature changes, a doubling of atmospheric concentration values may result in decreased soil moisture in the mid-latitudes, increased precipitation in the Arctic, and changes in atmospheric circulation.

Source: S. Manabe and R. Wetherald, "The effects of Doubling the CO_2 Concentration on the Climate of a General Circulation Model," *Journal of the Atmospheric Sciences,* Volume 32, 1975, p. 3

Implications of CO_2 Induced Climatic Change

Carbon Dioxide Effects Research and Assessment Program



United States Department of Energy

- Should carbon dioxide increase and climate change to the degree now thought possible, the hydrosphere, biosphere, lithosphere, and cryosphere would all be affected.

- Some of these effects, such as the melting of the Arctic Ocean's icepacks or increases in evaporation and cloudiness, would constitute geophysical "feedbacks" to the climatic system thus increasing or decreasing the magnitude of the climatic change.

- Other environmental changes might not affect the geophysical processes but would be important in themselves. Examples of these changes are changes in the viability of crops, in the species composition of the "wild" biosphere or in the chemistry of the upper layers of the oceans.

- It is thought that these changes in climate and the environment would not be globally uniform.

- The impact of unprecedentedly large, regionally uneven environmental changes would almost certainly affect all aspects of the global economic, political, and social systems in an unknown but potentially profound manner.

Annex 565

Bonneuil et al., "Early warnings and emerging accountability: Total's responses to global warming, 1971-2021", *Global Environmental Change*, 2021, pp. 1-10

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Early warnings and emerging accountability: Total's responses to global warming, 1971–2021

Christophe Bonneuil [a,1,*], Pierre-Louis Choquet [b,1], Benjamin Franta [c,1]

[a] Centre de Recherches Historiques, CNRS & EHESS, Paris Sciences et Lettres, Paris, France
[b] Centre de Sociologie des Organisations, SciencesPo, Paris, France
[c] Department of History, Stanford University, Stanford, CA, United States

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ABSTRACT

Building upon recent work on other major fossil fuel companies, we report new archival research and primary source interviews describing how Total responded to evolving climate science and policy in the last 50 years. We show that Total personnel received warnings of the potential for catastrophic global warming from its products by 1971, became more fully informed of the issue in the 1980s, began promoting doubt regarding the scientific basis for global warming by the late 1980s, and ultimately settled on a position in the late 1990s of publicly accepting climate science while promoting policy delay or policies peripheral to fossil fuel control. Additionally, we find that Exxon, through the International Petroleum Industry Environmental Conservation Association (IPIECA), coordinated an international campaign to dispute climate science and weaken international climate policy, beginning in the 1980s. This represents one of the first longitudinal studies of a major fossil fuel company's responses to global warming to the present, describing historical stages of awareness, preparation, denial, and delay.

1. Introduction

Since World War Two, the Anthropocene has witnessed an intensification of humans' alterations of the Earth system, as well as an increase in environmental alerts and concern (McNeill and Engelke, 2016; Krausmann et al., 2017). Key to this "Great acceleration", annual fossil fuel extraction has increased sevenfold in the last 70 years resulting in the top 20 fossil fuel firms producing more than one-third of all greenhouse gas emissions since 1965 (Heede, 2014; Institute, 2020). Since 1945, few industries have been exposed to the intensity of environmental scrutiny and public criticism that the oil industry has faced, relating to pollution from refineries, smog, leaded gasoline, oil spills, and poor monitoring of extraction sites. When climate change emerged as a policy issue in the 1960s, oil and gas majors were already practiced in managing environmental perceptions by the public, risk research, and regulatory action by governments (Markowitz and Rosner, 2002; Jenkins, 1954).

Much has been documented in recent years on how major fossil fuel companies such as ExxonMobil (Banerjee et al., 2015; Supran and Oreskes, 2017) and Royal Dutch Shell (Mommers, 2018) have navigated climate alerts and controversies via a mixture of internal knowledge development and external public relations activities, with industry associations and coalitions such as the American Petroleum Institute and the Global Climate Coalition playing major roles (Brulle, 2018; Franta, 2018, 2021). These studies have met with great interest due to their analysis of varying strategies among oil majors (Skjærseth and Skodvin, 2003), importance for understanding the history of climate action and inaction, and usefulness for informing current and planned efforts to address climate change. Relatively little, however, has been documented on Total, a company established in the 1920s that a century later has become the world's fourth largest dedicated oil and gas company by market capitalization behind ExxonMobil, Chevron, and Royal Dutch Shell. Although the company's current climate strategy has been scrutinized (Choquet, 2019), its historical response to global warming and to evolving climate science and policy remains an unaddressed topic.

In this paper, we address this research gap by reporting new archival research and primary source interviews documenting Total's long exposure to climate warming research and subsequent industry coordination, public communication, and lobbying activities regarding climate change. While filling this empirical gap, we also aim to contribute to the

* Corresponding author.
E-mail address: christophe.bonneuil@cnrs.fr (C. Bonneuil).
[1] The authors contributed equally to this study and share primary authorship.

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literature on the global effort deployed in the past fifty years by the fossil fuel industry to produce ignorance, sow doubts on the legitimacy of climate science, struggle against regulations, and maintain legitimacy within the global energy transition. We do so by shedding light on the early exchanges of knowledge and incipient strategies that were articulated within IPIECA (International Petroleum Industry Environmental Conservation Association), an industry association in which Total was actively involved and which has received less attention than the American Petroleum Institute (API) or the Global Climate Coalition (GCC).

Scholarly research on the history of major fossil fuel companies is often limited by restrictions on access to company archives. In contrast, Total's archives, located at the company's headquarters in Courbevoie, France, are partially accessible to researchers and provide an unprecedented look at the history of the company. In addition to these archives, we also interviewed former Total executives, who shared with us their recollections of the company's history with regard to climate change. As a result, we report detailed information that may be obtained regarding other fossil fuel majors should they also provide access to scholars.

Environmental historians have shed light on the history of the Anthropocene, revealing that environmental warnings and awareness predate the late-20th-century discursive turn toward sustainability. In this context, the Anthropocene can be understood as a history of evolving mechanisms of willful blindness and rationalizations that normalized socio-ecological trajectories and business strategies that accelerated alterations of the planet (Bonneuil and Fressoz, 2016). The history of oil majors' engagement with climate science (Boon, 2019) offers an empirical ground to understand such diverse and evolving mechanisms.

In science and technology studies, the social and cultural "study of the production of ignorance" has helped to understand ignorance as resulting from the organized work of social actors ("agnogenesis") rather than a mere absence of knowledge (Proctor, 2008). In the climate context, the concept of agnotology has mostly been harnessed in order to describe cases in which industrial actors have attacked the scientific consensus and organized lobbying campaigns (Oreskes and Conway, 2010), as well as to highlight strategic rhetorical framing techniques (Supran and Oreskes, 2021) and disparities between internal knowledge and external communication (Supran and Oreskes, 2017). But an exclusive focus upon the most aggressive ways of producing ignorance may leave understudied other forms of agnogenesis that may be less overt, strategic, intentional, or more banal, such as "willful blindness" that may become normalized within firms (Bovensiepen and Pelkmans, 2020). Furthermore, in addition to overt climate science denial, public relations activities such as pronouncements of corporate stewardship and endorsements of climate science have been documented by scholars as instrumental to corporate efforts to avoid responsibility and resist regulations (Rajak, 2020). The case of Total's multiple and changing stances toward climate science and policy in the last half century helps illustrate these diverse and multifaceted mechanisms. While we show for the first time that overt denial of climate science was endorsed by Total from at least 1989 to 1994 (for an opposite finding, though lacking internal company sources, see van den Hove et al., 2002), we also document a temporal sequence of multiple and subtler forms of agnogenesis, such as willful ignorance, responsibility-shifting, strategic philanthropy, promotion of peripheral solutions, and corporate controversy management. Thus, this paper contributes to interdisciplinary efforts to understand the evolving approaches oil majors have taken to climate change, climate science, and mitigation policies.

2. Climate warnings in an era of growing environmental awareness, 1965–1986

Prior research has shown that segments of the petroleum industry, including major companies (Mommers, 2018; Andersson, 2020; Aronowsky, 2021) and the American Petroleum Institute, the primary trade association for the industry in the United States, received warnings about global warming as early as the 1950s and commissioned research on the topic by the end of the 1960s, which indicated that a continued expansion of fossil fuels would cause significant global warming by the end of the century with adverse consequences for the world's societies (Franta, 2018; Robinson and Robbins, 1968). Total (est. 1924) was a member of the API in the late 1960s through its North American subsidiary and therefore may have had access to this information[(1)].

Our current research was sparked by our discovery of direct proof of Total's awareness of climate science in 1971. In that year, the company's magazine, *Total Information*, contained an article entitled "Atmospheric pollution and climate" (Durand-Dastès, 1971). The article stated:

> "Since the 19th century, humans have been burning increasing amounts of fossil fuels. This results in the release of enormous quantities of carbon dioxide […] The overall amount of carbon dioxide present in the atmosphere, therefore, has increased significantly. […] The increase has been around 15% over the last 150 years, which is not negligible. And […] if the consumption of coal and oil keeps the same rhythm in the years to come, the concentration of carbon dioxide will reach 400 parts per million around 2010 […]".
>
> "This increase in concentration is quite worrying […] carbon dioxide plays a large role in the thermal balance of the atmosphere […] air richer in carbon dioxide absorbs more radiation and heats up. It is possible, therefore, that an increase in the average temperature of the atmosphere is to be feared. The calculated orders of magnitude are obviously small (from 1—1.5 °C) but could have important impacts. Atmospheric circulation could be modified, and it is not impossible, according to some, to foresee at least a partial melting of the polar ice caps, which would certainly result in significant sea level rise. The catastrophic consequences are easy to imagine." (Durand-Dastès, 1971, p. 18)

The article's predictions were quite accurate: carbon dioxide concentrations reached 400 parts per million in 2015. Printed at about 6000 copies, the magazine, *Total Information*, was the company's internal and external communication outlet, read by executives, employees, and commercial partners and was available to the public at the French National Library. The above mentioned article was part of a special issue on the environment with a foreword signed by the company's CEO, which noted that "the defense of the environment is often accompanied by rather strong criticism of large industries including oil companies" (Granier de Liliac, 1971[(2)]).

2.1. Putting early climate warnings in context

The significance of this early warning becomes clearer if placed in its international scientific and political context. The involvement of carbon dioxide in the greenhouse effect had been known to some scientists and discussed in media since the 19th century, but in the context of the Cold War, when the entire globe from the sea-bed to the upper atmosphere was studied as a potential strategic theater, research on the Earth system accelerated (Doel, 2003; for a detailed chronology including press clippings, see Johnson, 2016). From 1950 to 1971, at least five lines of research solidified the hypothesis of anthropogenic global warming (Weart, 2003; Edwards, 2010; Howe, 2014; Somerville et al., 2007). First, a reconstruction of the Earth's global temperature since 1800, collected since the 1920s and digitized in the 1960s, highlighted an overall warming trend since the end of the 19th century and a slight cooling trend from 1945 to 1970. Second, a continuous annual increase in atmospheric carbon dioxide was measured at Mauna Loa Observatory starting in 1958. Third, observations and estimates from the US Geological Survey concluded in the late 1950s that the Arctic ice cap had shrunk by 12% in area and 40% in thickness since 1945, with sea level

rising 30–60 cm per century, and that the eventual abandonment of some coastal towns may be necessary (Fleming, 1998, p. 132). Fourth, "general circulation" models were developed in the 1960s, using the first supercomputers to model the Earth's climate in three dimensions, which estimated in 1967 that a doubling of atmospheric carbon dioxide from 280 to 560 ppm would produce an average global warming of 2 °C (Manabe, 1967, discussed in Weart, 2003, pp. 107-113). Finally, a fifth line of work documented positive feedback between warming and melting ice and snow through changes in Earth's albedo (Budyko, 1969, discussed in Weart, 2003, p. 86).

These lines of inquiry occurred in a context of growing environmental alerts and movements, and global environmental issues steadily gained prominence in the public sphere (Mahrane et al., 2012). The Earth, which could now be seen from space as a fragile and finite blue ball, had to be managed accordingly. A variety of scientific assessments performed in the 1960s and 1970s helped to bring global warming to US and international attention. In the United States, a report submitted in 1965 to the White House by the President's Scientific Advisory Committee on the state of the environment warned that:

> "By the year 2000 the increase in atmospheric CO_2 will be close to 25%. This may be sufficient to produce measurable and perhaps marked changes in climate, and will almost certainly cause significant changes in temperature". (President's Science Advisory Committee, 1965, p. 126-127)

Shortly after its release, the President of the American Petroleum Institute mentioned the report in a speech at the organization's annual meeting (Franta, 2018) and President Johnson wrote to Congress that "This generation has altered the composition of the atmosphere on a global scale through […] a steady increase in carbon dioxide from the burning of fossil fuels" (Johnson, 1965 quoted by Oreskes and Conway, 2010, p. 171). Additionally, a synthesis carried out at MIT in 1970, *Man's Impact on the Global Environment* (known as the SCEP Report), affirmed the Earth could warm by 0.5 °C by the year 2000 and by 2 °C in the 21st century (SCEP, 1970, p. 12). In the wake of this study, MIT brought together 30 global atmospheric and climate specialists for two weeks in Stockholm in the summer of 1971, yielding the *Inadvertent Climate Modification Report: Report of the Study of Man's Impact on Climate* (known as the SMIC Report). The report, which also examined the potential for global cooling from aerosol pollutants, stated:

> "We know enough of the theory of climate and the construction of climatic models to recognize the possibility of man-made climate change and to have some confidence in our ability to compute its magnitude (…). We have a conviction that mankind can influence the climate (…). We hope that the rate of progress in our understanding can match the growing urgency of taking action before some devastating forces are set in motion." (SMIC, 1971, p. 15 and 27)

Climate change also arose as an international concern at the 1972 UN Conference on the Human Environment in Stockholm, where two of the 109 final recommendations called for research and vigilance regarding anthropogenic climate change (Ward and Dubos, 1972, 191-195; United Nations, 1972, recommendations no. 70 and 79).

In the French scientific community and public space, the climate issue was less prominent than in the United States. Yet the word was spreading in French decision-making circles. In 1968, a high level symposium on technological forecasts and economic planning held discussions comparing the problem of nuclear waste with "the increase of carbonic gas in the whole atmosphere which might, in a decade or half a century, start to pose problems of global modifications in terrestrial climate" (Collège des techniques avancées et de l'aménagement du territoire (CTAAT), 1968, p. 51). In the face of this dilemma, top scientists, senior public administrators and heads of major French companies including the CEO of Elf-ERAP (then a state-owned French oil company, absorbed by Total in 1999) agreed on the need to develop nuclear energy both for economic and climatic reasons (id.). In 1970 and 1972, two articles on global warming appeared in the journal of the French land planning administration DATAR, the driving force behind the creation of the French Ministry of Environment. The second of these articles reported the findings of the SMIC Report and noted that

> "We know enough today about climate theory and the construction of climate models to see that humans can very well cause climate change. […] In the final analysis, therefore, we can only predict what might happen if humanity continued to act in a certain way, much as it is doing now." (anon., 1972, p. 35)

Around the same time, a variety of popular environmental works in English were translated into French, including *The Closing Circle* by Barry Commoner (translated 1971), *Only One Earth* by Barbara Ward and René Dubos (translated 1972), and the *Limits to Growth* report (translated 1972), all of which mentioned the alteration of the global atmosphere and its possible impacts on climate. Additionally, *L'Utopie ou la Mort* ("Utopia or Death"), a French environmental best-seller warning of "irreversible climate changes" and sea level rise, was published by Dumont (2020), [1st ed. 1973],p. 78), who represented the green movement in the 1974 French presidential election.

Often, these warnings of global warming were accompanied by discussions of potential global cooling. By the early 1970s, scientific articles had noted the potential for aerosol particles, especially industrial pollutants such as sulfur dioxide, to block a fraction of incoming solar radiation. Additionally, since past interglacial periods of around ten millennia were followed by relatively rapid glaciation, the slight cooling trend observed between 1940 and 1970 could lend itself to extrapolations of an imminent ice age, a scenario promoted by various popular magazines in the 1960s and 1970s and included in a CIA report in 1974. Yet a meta-analysis of the scientific literature from 1965—1979 shows that most studies predicted warming, with discussion of the cooling hypothesis dwindling by 1973 (Peterson et al., 2008). By 1979, the scientific consensus regarding the existence and magnitude of future warming as a function of greenhouse gas emissions was reflected in the authoritative assessment directed by MIT's Jule Charney, which reviewed prior work and estimated a doubling of carbon dioxide concentrations would produce a global warming of about 3 °C (Charney et al., 1979).

2.2. Total facing climate warning in the 1970s

The discussion above indicates that the 1971 article published in *Total Information* was not an isolated warning but rather a moment in which the French oil company's top executives were exposed to a growing body of scientific work on global warming. In an interview for this article, Durand-Dastès, a specialist of the climate-monsoon nexus in India and one of the French academics then most familiar with climate research, recalled the time when he wrote for *Total Information* and noted the importance of the growing body of transnational scholarship:

> "I remember having the SMIC report in my hands. […] I read a lot of meteorology, one of the key areas for climatology, and a lot of American scientific literature[…] The assertion of global warming of 1–1.5 °C in coming decades if emissions followed their trajectory was more or less common in all scientific journals. I was reading the *Quarterly Journal of the* Royal *Meteorological Society*, *Tellus*, and so on." (Interview with François Durand-Dastès, August 6, 2020)

When asked to elaborate on what he meant by "catastrophic consequences" of a climatic warming, he added:

> "The deltas are always the sites of disasters. We all knew that increasing the greenhouse effect could not fail to produce major consequences, but I never imagined it would develop so quickly. In 1971, it was foreseeable that the rising oceans would cause problems in the deltas, and I was familiar with those of South Asia. […] Cyclone Bhola in 1970 had hundreds of thousands of victims, the Andhra Pradesh cyclone in 1977 had 10,000 dead […] there were catastrophic cyclones hitting hundreds of thousands of people at the time I was writing this article. The great floods were episodes of conjunction between a typhoon and a high tidal coefficient, but it seemed obvious to me that against a background of global warming, it was going to get worse." (id.)

Confronted with multiple warning signals in France, the US, the international arena, and its own magazine, how did Total and Elf (the two major French oil companies which merged in 1999) react? At that time, the French petroleum industry was exposed to growing public criticism following the Feyzin refinery accident in 1966 (in which 18 people died) and the *Torrey Canyon* oil spill in 1967. Total responded by portraying environmentalists as "caught in the trap of nostalgia for a past that was not as pristine as it is assumed" and asserting that "it is technology and not outdated regrets that will ensure or restore a certain quality to the living environment" (Truchot, 1975, p. 20).

With the creation of a French ministry for environment in 1971, French oil companies also feared new regulations on air pollution. This critical scientific, social, and policy context led Total and Elf to establish new structures for managing environmental affairs. In 1971, Elf created its Information and Research Center on Nuisances (CIRN) (Elf, 1974) while Total created a division that would later become its Department for Environment[3]. A former staff member in the early years of that division recalls:

> "At that time […] oil companies were frowned upon […] we had to make it known that we were doing something, that we were not just terrible polluters […] so we put the label 'environment' or 'fight against pollution' to what we were already doing." (Interview with former Total employee, 23 Sept. 2020)

French oil companies also developed collective business strategies: in 1971, UCSIP, the French oil industry business council, published a booklet responding to environmental alerts and criticism. This booklet acknowledged a "slow increase in the average CO2 content of the atmosphere" that

> "should normally lead to a slight warming effect on the Earth's climate by the end of the century, although not as great as that needed to bring about the apocalyptic effects predicted by some futurologists (melting of polar ice, vast regions submerged…). However, the impact of human activity in the direction of a warming of the climate is very controversial, because of the opposite effects caused in particular by the increase in dust content and the possible increase in the cloudiness of areas of intense aerial activity." (Union des Chambres Syndicales de l'Industrie du Pétrole (UCSIP), 1971, p. 24–25)

At an international level, executives from Elf and Total participated in meetings of petroleum industry groups such as CONCAWE (Conservation of Clean Air and Water in Europe, which since 1963 had coordinated the response of the refinery sector to pollution regulations) and IPIECA (established in 1974 as stakeholder to the UN Environment Program).

While French environmentalists advocated for a move toward renewable energies, Total, like most other oil majors, strongly invested in coal following the oil shock of 1973. The company joined forces with BP to develop the rich Ermelo coal mine in South Africa in 1976, created Anthracorp Inc. in 1979 to mine coal in the U.S.[4], and invested in expanding the coal import capacity at the French port of Le Havre (Ramoisy, 1987, p. 39 and 90–91).

Although scientific research on climate change intensified throughout the 1970s, French oil companies exhibited public silence on the issue. Magazines from Total and Elf, which we reviewed from 1965—2010, did not address climatic change a single time from 1972—1988, even following the 1979 World Climate Conference in Geneva, which was covered in *Le Monde*, or the US National Research Council Report of the same year, which led the journal *Nature* to describe global warming as "the most important environmental issue in the world today"[5]. Whether Elf and Total's external silence was reflected internally among R&D staff and executives remains for future research[6]. The API (which included European oil majors) and Exxon, in comparison, both established internal research programs on climate in the late 1970s, and Shell commissioned private research on climate by 1981, despite also exhibiting relative silence in public (Banerjee et al., 2015; Franta, 2021)[7].

In any event, by 1984, discussion spread throughout the global petroleum industry of the business threat posed by global warming. Bernard Tramier, Environmental Director of Elf from 1983 to 1999 (and later of TotalFinaElf from 2000 to 2003), remembers how Exxon alerted the industry:

> "The moment I remember really being alerted to the seriousness of global warming was at an IPIECA meeting in Houston in 1984. There were representatives from most of the big companies in the world there, and the people from Exxon got us up to speed. […] They had remained very discreet about their own research [on global warming] […] Then in 1984, perhaps because the stakes seemed to have become too great and a collective response from the profession required, they shared their concerns with the other companies." (Interview with Bernard Tramier, Nov. 5, 2020)

In early 1986, Tramier sent an annual report to Elf's executive committee. In it, he described global warming as certain to occur and a key issue requiring a defensive strategy by the industry:

> "The problems related to the interactions of various pollutants in the upper atmosphere will become of concern in the coming years. The case of ozone is already known, but the accumulation of CO_2 and CH_4 in the atmosphere and the resulting greenhouse effect will inevitably modify our environment. All models are unanimous in predicting global warming, but the magnitude of the phenomenon remains undetermined. The first reactions have been, of course, to 'tax fossil fuels', so it is obvious that the oil industry will once again have to prepare to defend itself." [8]

The meeting of Elf's executive committee on March 4th, 1986 appears to have marked a turning point in the firm's awareness of anthropogenic global warming. While the topic may have been discussed previously among Elf's executives, it was now present in the minutes of a meeting attended by its top managers, informed through official channels that continued extraction of fossil fuels would "inevitably modify our environment."

3. International coordination to delay fossil fuel controls, 1987–1996

For a coordinated, international defense, the French petroleum industry turned to IPIECA. In 1987, the organization held a symposium in Baltimore to review the state of climate science and potential policies. The following year, while meeting at Total's headquarters in Paris, it created the "Ad Hoc Group on the Greenhouse Effect," soon renamed the "Working Group on Global Climate Change" (Interview with Brian P. Flannery, Feb 1, 2021). The group was chaired by Duane LeVine, Exxon's manager for science and strategy development, and also included Elf's Tramier, Brian Flannery from Exxon, Leonard Bernstein

from Mobil, Terry Yosie from the API, and other representatives from the world's major oil companies. It had three lines of work: 1) "to draw up the state of the science of climate change induced by the possible accentuation of the greenhouse effect, including the main areas of uncertainty," 2) to study "no regrets" response strategies that would benefit the industry, and 3) to consider efficiency improvements and substitutions between different fossil fuels (*e.g.*, coal to gas) as industry-friendly responses to global warming (LeVine, 1990). The group, including Tramier from Elf, sent a dossier on climate to the IPIECA member companies, which included a strategy paper from LeVine, stating:

> "Although some declare that science has demonstrated the existence of PEG [potential enhanced greenhouse] climate change today… I do not believe such is the case. We will require substantial additional scientific investigation to determine how its effects might be experienced in the future." (LeVine, 1989, p. 1)

For the industry to defeat public policies that could "shift … the energy resource mix" away from fossil fuels, "reduce CO2 emissions by 20%," or "even [require] abandoning resources" (LeVine, 1989, p. 16), LeVine recommended emphasizing uncertainties in climate science, the need for further research, the costs of policy action, and alternative environmental policies that would not threaten the industry's core business. IPIECA's 1990 "briefing document" to its members also included a paper from the API, "Position on Global Climate Change," which echoed LeVine's conclusions (in LeVine, 1990; see Rich, 2019, p. 246). Another part of IPIECA's agenda was to postpone any significant controls on CO_2 emissions until detection research could provide what the group called a clear "verification of climate change" (Flannery, 1992, p. 20), even though a 1982 internal Exxon document had noted that the statistical detection of global warming might take decades and then come too late ("once the effects are measurable, they might not be reversible," the document observed) (Exxon, 1982). When such detection was finally reported in the IPCC's second assessment report in 1996, the industry attacked both the IPCC and individual scientists connected to the work (see Oreskes and Conway, 2010, p. 200-210).

IPIECA organized a symposium in Rome in April 1992 to push its agenda before the upcoming UN conference in Rio de Janeiro. After Bernard Tramier (Elf) opened the conference as IPIECA's new chair, the industry representatives, policy makers, and scientists in attendance were told:

> "it is unlikely that we will be able to detect or to refute predictions of climate change from an enhanced greenhouse effect for at least a decade. Also, it is unlikely that we will have confidence in predictive capabilities for many years. […] model-based projections are controversial, uncertain, and without confirmation." (Flannery, 1992, p. 2)

Tramier recalls this period:

> "Exxon had taken hold of the issue, and that suited us, because we [French companies such as Elf and Total] did not have the knowledge or the means to have weight in the scientific community, the Intergovernmental Panel on Climate Change [IPCC], or the UN process. […] We were a follower of Exxon […] we agreed that we didn't know enough [scientifically] for emission reductions or [carbon] taxes to be enacted, and we let Exxon do the rest […] What we did not want was for drastic decisions to be taken before being certain of the reality and the extent of anthropogenic warming. For us, the idea of a 20% reduction in emissions [called for at a June, 1988 intergovernmental conference in Toronto, Canada] was premature and should not be codified in Rio [the UN conference in 1992]. […] What we feared was that in this kind of conference, for reasons of diplomacy and communication, the world would take measures harmful to the industry." (Second interview with Bernard Tramier, Nov. 24, 2020)

Hence, the French petroleum industry endorsed the strategy spearheaded by Exxon, which was implemented not only by the API and the Global Climate Coalition (Brulle, 2018, Banerjee et al. 2015, Rich, 2019), but also by IPIECA member companies. Tramier was president of IPIECA from 1991 to 1994 and approved funding of scientific research that could sharpen the industry's ability to emphasize climate model limitations and potentially make global warming appear less alarming, such as work on aerosols and clouds at the Hadley Center in the UK and studies on carbon uptake by oceans at Columbia University in the US (IPIECA, 1992, p. 9). Additionally, in the early 1990s, Elf began placing young, freshly graduated engineers within climatology laboratories in Hamburg and the United States, including UCLA, MIT, and NCAR in order to monitor the latest developments of climate science (Interview with Jean-Paul Boch (Elf), Nov. 20, 2020). Jean-Paul Boch, the company's representative in the IPCC and climate negotiations explained, "I placed VSNs [volontaires du service national à l'étranger, national volunteer service researchers] where I needed information and access." (*id.*)

While endorsing Exxon and IPIECA's strategic production of doubt, the French petroleum companies also promoted uncertainty in their own communication and public relations. In 1992, as the Rio conference approached, Total's environmental director, Jean-Philippe Caruette, emphasized doubt in Total's corporate magazine, now called *Énergies*:

> "Certainly, there is a relationship between the temperature and the carbon dioxide content of the atmosphere, but this relationship does not allow an extrapolation leading to more or less catastrophic scenarios on global warming of the planet […]. And above all, there is no certainty about the impact of human activities, including the combustion of fossil fuels." (Caruette, 1992, p. 13-14)

During the Rio conference, Total distributed a booklet lamenting that "warming of the Earth […] polarizes all the attention and gives rise to apocalyptic descriptions of the future," while asserting that "the considerable progress made in climatology since the beginning of the century has not allowed us to dispel the uncertainties regarding the greenhouse effect" and insisting that energy policies should "ensure the growth of [developing] countries, even if it means increasing greenhouse gas emissions to start."[(9)]

Elf followed suit, declaring the day after the summit:

> "Thus, to the still-unknown question of the greenhouse effect, we cannot answer hastily by taxing only European industrialists because we think, without being sure, that carbon dioxide emissions could lead to warming of the planet in the years to come." (Elf, 1992, p.1)

Two months later, François-Xavier Ortoli, Honorary President of Total, spoke at the Congress of the World Energy Council in Madrid, saying scenarios predicting 2-5° C of global warming in the 21st century were dubious because:

> "natural sources are much greater than man-made emissions […] we still have much work to do to understand the complete carbon dioxide cycle, the role of the ocean depths and the biosphere. Scholars are divided on this. Hippocrates says yes, Galen says no. There is some doubt."[(10)]

In March 1993, Francis Girault, director of foresight, economics and strategy at Elf and close advisor to the company's CEOs (first Loïk Le Floch-Prigent and later Philippe Jaffré), wrote an internal report addressed to the company's board called "Greenhouse effect (proposal for an action plan)"[(11)] in which he explicitly advocated for an aggressive strategy of doubt. In order to resist "hasty decisions" regarding fossil fuels, Girault proposed in his plan that the company promote the notion

that "there are scientific doubts about the greenhouse effect," as well as identify and support "renowned scientists who can intervene positively in the debate".[12] Tramier recalls, "Girault feared the climate issue would result in a tax for us, and he was anti-tax […] We had to rely on arguments, so he relied on those that said the climate problem was not serious" (Second interview with Bernard Tramier, Nov. 24, 2020). Another Elf engineer from the Environment Division remembers more simply, "Francis Girault was on an Exxon-style track" (Interview with Jean-Paul Boch, Nov 20, 2020).

This campaign to oppose fossil fuel reductions by strategically promoting scientific uncertainty takes on fuller significance when placed in context of the enormous battle waged by both Total and Elf against energy or carbon taxation in the early 1990s. In 1989, an "eco-tax" was proposed by the European Commissioner for the Environment and in October 1991 was put on the table by the European Commission (Aykut and Dahan, 2014, p. 235-243). At the same time, French Prime Minister Rocard wrote to his environment minister that "Climatic changes that could result [from greenhouse gases], even if they are still poorly understood in terms of their scope and regional consequences, call into question the current conditions of life on Earth" (GIES, 1990, p. 2) In December 1990, France sent a memorandum to the European Commission that promoted both common quantified targets for industrial countries to reduce their emissions and a fiscal instrument on fossil fuels (*i.e.*, an eco-tax) (Gouvernement Français, 1990). But a year later, the new French Minister for Industry, Dominique Strauss-Kahn, sought to block the eco-tax. Meanwhile, European oil companies had aligned themselves in opposition through EUROPIA, the European Petroleum Industry Association created in 1989, and found allies in the nuclear industry and other heavy industrial sectors. In May 1992, the eco-tax proposal was weakened by the European Commission, who made its implementation conditional on similar policies by the US and Japan, and then blocked entirely the European Council of Industry Ministers. The following month, the President of the European Commission openly pointed to "critics who [had] come […] first from the oil producers."[13] *The Economist* described the battle against the eco-tax as "the most ferocious lobbying ever seen in Brussels" (Ikwue and Skea, 1994; Skjærseth and Skodvin, 2003, 158-195; Liberatore, 1995) and an internal report written at the end of 1992 by Elf's Francis Girault shows that the company actively participated in defeating it[14]. In his report, Girault welcomed the tax's recent failure, crediting the company's lobbying activities carried out through "hidden direct contacts with the ministerial cabinets and administrations, both in France (Prime Minister, Finance, Environment, Research, European Affairs) and in the European Economic Community"[15]. Tramier recalled that Total was "better than us [Elf] in developing lobbying activities in Brussels, where a full-time employee was positioned" (Interview with B. Tramier, Nov. 5, 2020). The failure of the eco-tax undermined Europe's position at the Rio summit, contributing to limiting the scope and ambition of the UN process, which Girault viewed as a success for the company[16].

When a weakened version of the eco-tax was relaunched in 1994 by the European Commission, Elf and Total again cracked down on it. An internal report presented to the Elf Management Committee estimated "a CO_2 tax would cost around 4 billion FF [French francs] per year to the group," reported that "the actions carried out by the industry have been effective, since today the European eco-tax project has not seen the light of day," and recommended the company continue "to mobilize against the eco-tax"[17]. Elf's CEO, Philippe Jaffré, privately wrote to the French Minister of Foreign Affairs, Alain Juppé, to voice the company's hard opposition as the French presidency of the European Council approached[18].

By 1993–1995, Tramier and some of Elf's other top managers began to feel ill at ease with the company's hard line. In Europe, climate change denial was becoming increasingly counterproductive for oil companies in the face of scientific advances and scrutiny from civil society (hence the eventual departure of Shell and BP from the Global Climate Coalition). Moreover, with the eco-tax proposal buried, oil firms could afford to engage in more subtle corporate environmental messaging, in the wake of the "sustainable development," "corporate responsibility," and "total quality management" turns that the business world had taken since the late 1980s (Bernstein, 2001).

Instead of disputing an overwhelming scientific consensus, the new strategy proposed by Tramier consisted of showing good will to go green. This comprised internal audits and measurements to see where GHG emissions could be inexpensively reduced – an effort that applied, however, only to the company's operations and not to its products. Second, with the Kyoto protocol in sight, the company promoted market based instruments. In this way, voluntary actions and a carbon permit trading system would make technology standards or other "command and control" regulations seem unnecessary. Third, efforts towards energy efficiency had to be made more visible. Elf's environmental director suggested internally "a joint action between Elf and Renault for the development of vehicles consuming less fuel," which would provide positive environmental publicity while also "tak[ing] advantage of the notoriety given by F1 [racing]"[19]. Finally, Elf and Total also turned to environmental conservation to burnish their image: Elf sponsored French botanist Francis Hallé's Canopy Raft Missions to study the forests of Cameroon and Venezuela in 1989 and became a partner of French national and regional parks, while by 1991 Total reoriented its patronage, which until that point had been focused on arts and culture, toward the preservation of biodiversity and the sea[20].

4. Acceptance and delay, 1997–2006

The years around the 1997 Kyoto conference mark a decisive shift in the political history of climate change. Multiple large petroleum companies, including BP and Shell, left the Global Climate Coalition, which had practiced overt climate denial since its formation in 1989, with a senior Shell employee later explaining that the company "didn't want to fall into the same trap as the tobacco companies who have become trapped in all their lies." (Rich, 2019, p. 186) Perhaps recognizing the reputational and legal risks of overt denial, as well as the potential inevitability of an international agreement, petroleum companies shifted their position toward publicly accepting the findings of the IPCC and promoting the industry as a rational, scientific actor. At Elf, Tramier's strategy of nominal acceptance prevailed over Girault's strategy of overt denial, as the former recalls:

> "at one point Jaffré [Elf's CEO] (…) summoned me to his office to ask me to present what I was proposing. I told him that the trends that would emerge from Kyoto would presumably be an objective of a 5–10% cut in emissions, and that 'we at Elf could make 15%' without excessive expenses. Elf made this announcement of a commitment to reduce its emissions by 15% a few days before Kyoto." (Interview with Bernard Tramier, Nov. 5, 2020)

Jaffré announced the company's turn in the French newspaper *Le Monde* in November 1997:

> "Whenever we are faced with a subject that gives rise to great fear, such as the hole in the ozone layer or the consequences of genetic engineering, our attitude is scientific. First, we have Cartesian doubt. Then we turn to the scientific community, in which we trust." (Le Monde, 1997)

In the same interview, Jaffré announced that Elf would aim for a 15% reduction in its emissions by 2010 (compared to 1990). This cut would come from operations that were relatively inefficient and therefore easier to clean up, with Jaffré noting that "reducing a ton of CO_2 costs us 30 FF in Guinea compared to 230 FF in France […] Elf subscribes to the American approach for reducing emissions, trusting the mechanisms of the market." Finally, Elf's CEO continued to promote the notion that global warming was not an urgent problem, noting, "The phenomenon

could, in fact, spread over a century or so. A century on the scale of the planet is very short. […] But on the scale of the capacity for human action, it is long." (Le Monde, 1997)

In 1999, Total absorbed Elf and Petrofina, a Belgian oil company. At the same time, the merged company faced a series of high-profile socio-environmental crises, including the sinking of the oil tanker *Erika* off the French coast in December 1999, the explosion of the AZF chemical factory in Toulouse in September 2001, and a lawsuit filed against Total in April 2002 regarding alleged forced labor in Burma. After the merger, Total temporarily dropped Elf's voluntary emissions targets, but the achievement of a 10% cut in the company's operational emissions between 1990 and 2000 was nevertheless announced in its 2001 annual report (TotalFinaElf, 2001).

In 2002 the company held its first official internal seminar dedicated to "sustainable development." There, in a question and answer session with top managers, the company's new CEO, Thierry Desmarest, continued to promote uncertainty:

> "Of course, the scientific evidence is not always convincing and is sometimes questionable. This said, I think we have reached a point where a certain level of precautionary principle needs to be taken into account. Thus, in terms of global warming, a certain moderation in emissions levels of pollutants is, at the stage of our knowledge, desirable."[(21)]

While Desmarest's support of a "precautionary principle" suggested a heightened level of care, in effect it rhetorically framed climate policies as discretionary precautions rather than needed preventions. This approach of acknowledging the existence of global warming while downplaying its urgency and scientific certainty continued throughout the early 2000s. In 2002, Total's first sustainability report framed climate change in ambiguous terms, noting, "without the greenhouse effect there would be no life on our planet," and "water vapor is the main greenhouse gas." (Total, 2002, p. 20) The report's glossary described the greenhouse effect as a "natural phenomenon" and equivocally reported that emissions due to human activities "*could be* the origin of climate change" (our emphasis, Total, 2002, p. 108), thus ignoring the detection confirmed by the IPCC's Second Assessment Report in 1996. The 2003 report also emphasized "uncertainties" and described the greenhouse effect merely as "the hypothesis most commonly accepted by specialists and national governments within the IPCC" (Total 2003, p. 102. The 2004 report attributed the intensifying greenhouse effect to vague "human activity," insisted "uncertainties […] persist on the origin and evolution of the phenomenon," (Total 2004, p. 69) and suggested the evidence for anthropogenic climate change consisted primarily of a mere correlation between greenhouse gas concentrations and average global temperature, both deflecting attention away from the company's products and ignoring the causal links provided by physical science and statistical attribution research.

Throughout these years, Total kept a vigilant eye on the elaboration of the EU Emission Trading System (EU ETS), which was initiated after the Kyoto Protocol and finally adopted in 2003. The institutional architecture of the EU ETS was based largely on BP's internal trading system, with Elf and Total playing only a minor role in its design (Cartel 2013; Skjærseth and Wettestad, 2008) [(22)].

Thus, rather than overtly attacking the scientific consensus on climate change, Elf and Total instead emphasized equivocal descriptions of global warming and downplayed the robustness and significance of the available scientific evidence. Meanwhile, the company continued to spend the bulk of its capital expenditures on upstream oil and gas production (more than $30 billion from 2000 to 2005; figures aggregated from TotalFinaElf 2001, Total 2004) without reporting the sum of its few, scattered investments in non-fossil energy sources. This fossil-fuel-focused strategy was broadly in line with those of other major fossil fuel companies, including ExxonMobil, although European companies such as BP generally promoted their minimal activities in renewables more heavily than their US-based counterparts (Cox, 2008).

5. Maintaining public legitimacy in the face of environmental criticism: 2006–2021

2006 opened a new phase for Total. As the countdown to the COP15 in Copenhagen began, global warming received increased public attention, and the institutionalization of climate policies in France accelerated with the adoption of a national emissions reduction goal of 75% by 2050 (2005 Law on Energy Policy Orientations). In this context, Total organized a climate change conference in order to present itself as receptive to the scientific community, responsible to the public, and able to move in new directions. Held in September 2006, the conference drew over 280 professionals, featured climate researchers as keynote speakers, and benefited from significant media coverage. In his opening speech, Desmarest, Total's CEO, publicly affirmed the company's acceptance of climate science [(23)]:

> "In the case of the scientific debate, there is a *convergence of views of experts* as to the reality of the phenomenon of warming. The uncertainties no longer relate to the phenomenon itself, but to its magnitude. This lack of precise vision is, moreover, in part attributable to the lack of knowledge of what our climate and energy policies will be in the future. […] The IPCC perfectly fulfills its unifying mission and the seriousness of its reports is not in dispute." (Total 2006)

From then on, Total consistently recognized the legitimacy of the IPCC. With this embrace, however, the company also reframed its own purported role: climate change was to be theoretically diagnosed by science but practically solved by business, without the two spheres interfering with one another. In this way, Total promoted its legitimacy to evaluate the climate compatibility of its own business plans and the suitability of climate policies more broadly. Thus, as it vocally supported the IPCC, the company invested more than $60 billion in upstream oil and gas operations from 2005 to 2009, again without reporting significant aggregate investments in non-fossil energy sources (Total, 2005a, Total, 2005b, Total, 2008a, Total, 2009).

Concurrently, Total continued to solidify its public image. In 2007, as European leaders agreed on the landmark 20–20–20 targets, which would pave the way for the first 2008–2009 EU climate and energy policy package (Böhringer 2014), the company created a "Gas & Renewables" division and appointed the former research director of the French national research center CNRS (the oceanographer Jean-François Minster) as its Senior Vice President for Scientific Development. The following year, Total endowed a "Sustainable Development" chair at the Collège de France (Total, 2008b), which was soon held by British climate economist Nicholas Stern.

Yet in this period the company also came under increased public scrutiny. The NGO Friends of the Earth (2008) published *"Total: la mise en examen"* (Total: the indictment). This report constituted one of the first systematic critiques of Total's activities in relation to their climate impact and clearly framed the interests of the petroleum industry as antagonistic to the preservation of the climate system. Moreover, in late 2009, the failure of COP15 in Copenhagen led the transnational climate movement to diversify its strategies and engage more directly with economic and political actors linked to the fossil fuel industry. Civil society actors explored the implications of the "carbon budget" concept (Lahn, 2020) and warned that the market valuations of investor-owned oil and gas majors were inconsistent with global climate goals (Carbon Tracker Initiative, 2011; McKibben, 2012). In this context, in 2011 a coalition of Total's shareholders organized to file a resolution at the company's annual meeting requesting disclosure of the environmental and climatic impacts of the company's Canadian tar sands operations. Yet Total's board and CEO, Christophe de Margerie, successfully maneuvered to prevent the shareholders from filing the resolution

(PhiTrust, 2011). Meanwhile, Total continued to invest heavily in oil and gas. From 2010 to 2014, the company injected approximately $127 billion in upstream exploration and production (Total, 2014, Total, 2015a, Total, 2017), while channelling no more than $3 billion toward non-fossil energy sources from (upper limit reconstructed from a cross referencing of Total, 2010, Total, 2011, Total, 2014).

As the COP21 conference in Paris approached, Total redoubled its efforts to promote itself as a climate leader. The company announced it would sell Total Coal South Africa – its last operating subsidiary in the coal industry, with an output of 12 million tons produced in 2014 – in June of 2015 (Novethic, 2015). Three months later, it spearheaded the creation of the Oil and Gas Climate Initiative (OGCI), an industry organization endowed with $1 billion by a dozen petroleum companies to promote voluntary climate actions for the period 2017–2027 (Bach, 2019), and in June 2015, Total joined other European petroleum companies in publicly challenging the UN to implement an international carbon price (Total, 2015b).

Total also began emphasizing future reductions in product carbon intensity. In 2016, three months after the Paris Agreement was signed, the company's CEO, Patrick Pouyanné, presented "One Total 2035," a roadmap for reducing the carbon intensity of its products (*Les* Echos, 2016). Yet the 2015–2019 period wasmarked by sustained capital expenditures of $77 billion in upstream oil and gas production; in comparison, investments in non-fossil energy sources did not exceed $5 billion (figures aggregated from Total, 2017, Total, 2018, Total, 2019). Without binding controls on the evolution of its energy mix, Total promotes itself as environmentally responsible through future scenario reports, which the company has issued since 2016. Regular updates to these reports generate a flow of complex, technical information that is difficult to interpret or challenge (Choquet, 2019), helping Total to put the burden of proof on its critics and keep the upper hand in climate controversies. In 2021, Total announced it would rename itself to TotalEnergies and expand its investments in non-fossil energy sources (the same name used by Total in its 1977 advertisements, when the company claimed to invest in solar energy without making actual changes to its oil-based business model) (Total, 1977). It remains to be seen how Total's announcement will be acted upon.

6. Conclusion

We have documented half a century of Total's shifting responses to global warming. In 1971 the company published a scientific warning about climate change but was muted in public about the issue for the remainder of the decade. By the mid 1980s, climate change produced heightened concern among the world's oil majors, and Exxon, through the industry association IPIECA, led efforts to organize petroleum companies internationally to dispute climate science and weaken controls on fossil fuels. As part of this effort, French companies Total and Elf began to promote uncertainty regarding climate science, both independently and through IPIECA, while successfully lobbying against policies to reduce greenhouse gas emissions. At the same time, both Total and Elf sought to build environmental credibility through voluntary commitments and environment-themed public relations.

By the late 1990s, the French petroleum industry shifted away from openly disputing climate science but continued to expand its investments in upstream oil and gas production and employed rhetorical strategies that emphasized uncertainty, downplayed urgency, and deflected attention away from fossil fuels as the primary cause of global warming. By the mid 2000s, the merged entity Total intensified its efforts to build scientific credibility, endorsing the IPCC and hosting a conference on climate change. The company began to promote a division of roles between science and business, in which science describes climate change and business claims to solve it, reinforcing its claim to legitimacy in determining appropriate public and corporate policies. This framing enables Total to portray itself as a socially responsible petroleum company by wrapping continued investments in fossil fuel production in an attractive "energy transition" narrative.

Our study sits at the intersection of environmental and business history and contributes to the field of agnotology - the study of culturally induced ignorance or doubt. While much commentary on the politics of climate change has framed relationships to science in terms of dichotomous acceptance or denial, the history of Total highlights the multidimensional and graded character of positions regarding climate science, such as publicly embracing climate science while deflecting attention away from fossil fuel products. Examining these multidimensional postures may aid in understanding historical and ongoing responses to global warming.

7. Notes

(1) We found representatives of Total Leonard in the API board of directors lists for 1965–1967 and 1974.

(2) The editorial was actually drafted by the secretary general and pillar of the group, Vincent Labouret: see Archives Total, 50ZZ507/58.

(3) Total Archives, 92AA091/160.

(4) https://wiki.total/en/country/total-south-africa. On Total's links with the apartheid regime, see Deneault, 2017.

(5) National Research Council (NRC), *Carbon Dioxide and Climate: a Scientific Assessment: Report of an Ad Hoc Study Group on Carbon Dioxide and Climate*, National Academy of Sciences, Washington, DC, 1979 ; N. Rich, op. cit, 2019, p. 53–59 ; Howe, 2014, p. 115–117.

(6) Neither Total internal press review fascicles nor Elf R&D department archives mention climate issues by 1973–1980 (see Total Archives 09AH0416 and 07AH0077/28–33). Elf and Total, being smaller than Exxon, BP or Shell, did not have the same R&D capacity to follow this issue.

(7) For Shell, see Shell Internationale Petroleum Maatschappij B.V., *The Greenhouse Effect*, 1988, p. 86. Online: https://www.industrydocuments.ucsf.edu/fossilfuel/docs/#id = khfl0228

(8) Total Archives. 11AC0783/106 - B. Tramier. *L'environnement dans le groupe Elf Aquitaine – Bilan 1985. Document préparatoire à la réunion du comité exécutif du 4 mars 1986*. Feb 1986, p. 14.

(9) Total Archives. 00AH001/142. Total, *Les cahiers de l'environnement*, 1992 (a cardboard folder distributed by Elf before and during the Rio 1992 conference).

(10) Historical Archives of the European Union. FXO-95. François-Xavier Ortoli, "Potential Global Climate Change - The Realities?" Speech at 15 th Congress of the World Energy Council, Madrid, 20–25 September 1992, p.2.

(11) Total Archives, 07AH0077/4. SNEA G/DPES, F. Girault, Note à l'attention de MM. les membres du comité de Direction Générale, "Effet de serre (proposition de plan d'action)", March 12, 1993.

(12) Id.

(13) Historical Archives of the European Union. JD-1669. Press conference held by Jacques Delors at the end of the United Nations Conference on Environment and Development, June 13, 1992.

(14) Total Archives, Elf Fund, 07AH0077/4. F. Girault, " Greenhouse effect and environmental tax. Proposals for action ", Nov. 17, 1992.

(15) Id.

(16) Id.

(17) Total Archives, Elf Fund, 07AH0077/4. DRTE, "Environnement Énergie 1994. Bilan Perspectives", p. 16 and 5.

(18) Total Archives, Elf Fund, 07AH0077/4. Philippe Jaffré to Alain Juppé, Oct 14, 1994.

(19) Total Archives, Elf Fund, 07AH0077/4. B. Tramier to P. Castillon, "Effet de serre: actions à entreprendre", Nov. 30, 1992.

(20) *EnergieS* , n°10, July-August 1992, p. 6–7 and 8–11.

(21) Total Archives. 05AA594/14. Premier séminaire de développement durable (Sept. 30-Oct. 2, 2002). Compte-rendu, p.10.

(22) The relative unavailability of corporate archival material from after the year 2000 presents a challenge for reconstructing Total's strategic engagement with the negotiations surrounding the EU ETS

quota allocations.

(23) Id.

8. Authors statement

C.B. conducted archival research and interviews and drafted analysis in French from 1968—1997. P.-L.C. conducted research and interviews and drafted analysis in French from 1997—2020. B.F. provided the 1971 document and drafted the paper in English. All authors subsequently participated in revisions.

9. Disclosure statement

B.F. has served as a consulting expert for climate change litigation, and the findings reported in this article may be relevant to such litigation. P.-L.C. has conducted a 9-month post-doc at ESSEC which was funded through a research convention with Total (IRENE-Codev Research Program, May 2019 – January 2020).

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.gloenvcha.2021.102386.

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Annex 566

J. Uri, "65 Years Ago: The International Geophysical Year Begins", *The National Aeronautics and Space Administration (NASA)*, 5 July 2022

7 MIN READ

65 Years Ago: The International Geophysical Year Begins

John Uri

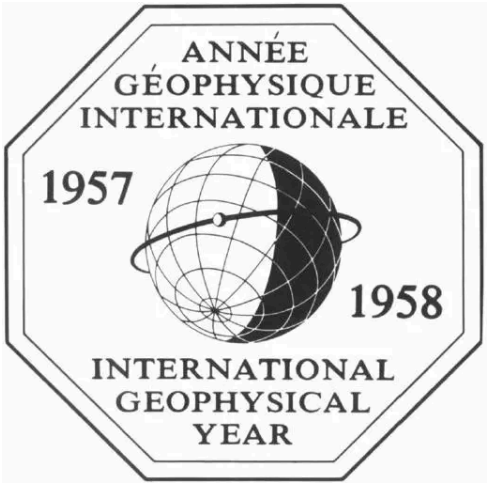
Johnson Space Center

JUL 05, 2022

ARTICLE

At the height of the Cold War in the 1950s, scientists established the International Geophysical Year (IGY), a global effort for a comprehensive study of the Earth, its poles, its atmosphere, and its interactions with the Sun. Seven years of planning led to coordinated activities in 11 science disciplines by participating scientists in 67 nations during the 18-month effort that began on July 1, 1957, and ended on Dec. 31, 1958. The Soviet Union and the United States announced plans to place satellites into Earth orbit during the IGY. The launches of Sputnik and Explorer 1 began the Space Age and led to new scientific discoveries. The large volume of information gathered during the IGY required the establishment of World Data Centers to make the results widely accessible.





Left: The house of physicist James A. and Abigail Van Allen in Silver Spring, Maryland. ***Image credit: Courtesy Physics Today.*** *Right: Official emblem of the International Geophysical Year.*

As with many great plans, the idea for the IGY began in a humble setting. In April 1950, physicist James A. Van Allen of the Johns Hopkins University's Applied Physics Laboratory and his wife Abigail hosted a dinner party at their house in Silver Spring, Maryland, for several prominent geophysicists. They discussed an idea to hold a third International Polar Year (IPY), based on the model of the first (1882-3) and second (1932-3) IPYs, international collaborations that sought to increase our knowledge of the Earth's polar regions. As they talked with other scientists, a consensus emerged that this international endeavor should not limit itself to just studying the Earth's poles. In May 1952, the International Council of Scientific Unions (ICSU) endorsed the idea and established the Special Committee for the IGY, better known by its French acronym CSAGI. Over the course of several meetings, the CSAGI established the IGY for the 18-month period from July 1, 1957, to December 31, 1958, to encompass an entire year in both of Earth's hemispheres. The time period coincided with the next expected maximum activity phase of the Sun's 11-year cycle. The scope of the IGY encompassed 11 different Earth sciences: aurora and airglow, cosmic rays, geomagnetism, glaciology, gravity, ionospheric physics, precision mapping, meteorology and radiation, oceanography, seismology, and solar activity. Two additional disciplines dealt with the development of rockets and satellites and the establishment of regular and special World Days for synchronized global observations. The large volume of information from the collective activities led to the establishment of World Data Centers to make the results available to all participants.





Left: Launch of Sputnik, the world's first artificial satellite. Middle: A model of Sputnik. Right: Laika, the first animal in orbit aboard Sputnik 2, during preflight testing.

After the United States announced on July 29, 1955, that it planned to launch artificial Earth satellites during the IGY, the Soviet Union responded four days later that it would do the same. At the time, the U.S. had separate ongoing satellite development efforts managed by its military branches. The Soviet Union formally approved a single program on Jan. 30, 1956. America made its plans and progress public while the Soviets worked in secret and therefore had an edge in upstaging U.S. efforts. Sergei P. Korolev, the chief designer of the Soviet Union's early space program, envisioned a large scientific satellite code named Object D as his country's contribution to the IGY. When the project ran behind schedule, the Soviet government directed him to launch a much simpler satellite in order to beat the Americans into space. On Oct. 4, 1957, following a crash program to develop the simple satellite and several test flights of its R-7 booster rocket, the Soviet Union announced that it had placed Sputnik into orbit around the Earth. Although it carried no scientific instruments, Sputnik had a large impact on the United States' space program. Buoyed by the success of Sputnik, and its political impact, the Soviet government directed Korolev to develop a second satellite, this one carrying a living animal. On Nov. 3, the Soviets launched Sputnik 2, carrying a dog named Laika. The first U.S. attempt to launch a small satellite named Vanguard on Dec. 3 ended in failure when its rocket exploded a few seconds after liftoff.



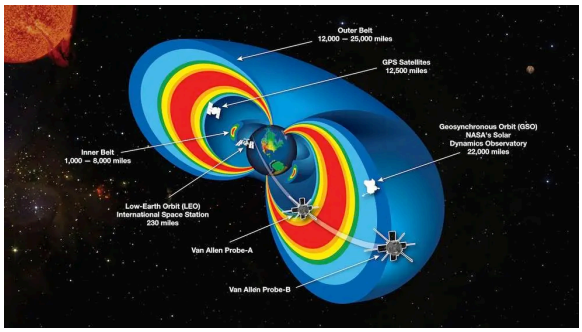


Left: Launch of Explorer 1. Middle: Director of the Jet Propulsion Laboratory William H. Pickering,
physicist James A. Van Allen, and rocket designer Wernher von Braun hold a model of Explorer 1
during a postlaunch press conference. Right: Sputnik 3 during assembly.

The U.S. finally met with success on Jan. 31, 1958, with the launch of Explorer 1. Developed at the Jet Propulsion Laboratory (JPL) in Pasadena, California, Explorer 1 rode into orbit atop a Jupiter C rocket designed by Wernher von Braun, who went on to design the Saturn family of rockets that sent Americans to the Moon. A team of women mathematicians at JPL computed Explorer's trajectory and confirmed that it had achieved orbit around the Earth. Unlike its Soviet predecessors, more than half of Explorer 1's mass consisted of scientific instruments developed under the direction of physicist Van Allen, by then at the University of Iowa. The instruments included a cosmic-ray detector, five temperature sensors, and two micrometeoroid detectors. The cosmic ray detector indicated a much lower cosmic ray count than expected. Van Allen postulated that the instrument gave those readings because energetic charged particles originating mainly in the Sun and trapped by Earth's magnetic field had saturated it. Explorer 1's discovery of these trapped radiation belts, subsequently named after Van Allen, is considered one of the outstanding scientific discoveries of the IGY. On May 15, 1958, Korolev's Object D scientific satellite finally made it into space as Sputnik 3, carrying 12 battery-powered instruments to study

the Earth's upper atmosphere, magnetic fields, radiation environment, and cosmic dust. The various instruments collected data for one week to one month, but the onboard tape recorder failed shortly after launch, precluding the recording of data during critical parts of the spacecraft's orbit when it passed through the Van Allen trapped radiation belts. Sputnik 3 carried experimental silicon solar batteries that powered its telemetry transmitter and scintillation counter until it reentered the Earth's atmosphere on April 6, 1960.





Left: Group of women mathematicians at the Jet Propulsion Laboratory who calculated Explorer 1's trajectory by hand. Right: Schematic of the Van Allen Belts discovered by Explorer 1 (right). ***Image credits: Courtesy NASA/JPL.***

The IGY had a far-reaching legacy beyond accelerating the start of the Space Age. It served as a shining example of international scientific cooperation, even during a time of heightened political tension. The sharing of scientific information through a global network of World Data Centers ensured that data collected by one nation remained accessible to all. The IGY served as a model for later international agreements, such as the Antarctic Treaty of 1959, the Outer Space Treaty of 1967, and the IPY of 2007-2008. In the United States, in response to the first Sputniks, Congressional hearings led to a consensus that a civilian agency should be established to run the American space program. President Dwight D. Eisenhower signed the bill creating the National Aeronautics and Space Administration. The new agency began operations on Oct. 1, 1958. Explorer 1 and Sputnik 3 led to a series of scientific satellites that over the coming decades vastly increased our understanding of the Earth and its environs. Derivatives of the Russian R-7 rocket that launched the Sputniks remain in use today to launch satellites and crews to the International Space Station.

To be continued...

Annex 567 bis

"International Geophysical Year (IGY)", *Dwight D. Eisenhower Presidential Library, Museum, and Boyhood Home*

NATIONAL ARCHIVES

Search Search

International Geophysical Year (IGY)

★ ★ ★ ★ ★

From July 1957 to December 1958 an international cooperative scientific program was conducted to study the earth and its environment. This program was called the International Geophysical Year. More than 70 countries participated in the project which led to the discovery of the Van Allen radiation belts, the theory of plate tectonics, exploration of outer space, construction of earth satellites, and increased research in the Arctic and Antarctic polar regions. IGY was sponsored by the International Council of Scientific Unions and involved nearly 30,000 scientists. In a radio and television address on June 30, 1957, President Eisenhower expressed his belief that "the most important result of the International Geophysical Year is that demonstration of the ability of peoples of all nations to work together harmoniously for the common good. I hope this can become common practice in other fields of human endeavor."

Article, "News Report of the National Academy of Sciences and the National Research Council, Volume IV, March-April 1954, Number 2 - The United States Program for the International Geophysical Year" by Joseph Kaplan, Chairman, United States National Committee, International Geophysical Year, March-April 1954 (/sites/default/files/research/online-documents/igy/1954-news-report.pdf)[DDE's Records as President, Official File, Box 624, OF 146-E International Geophysical Year (1); NAID #16645342]

Letter, Asst. Secretary of Defense to Joseph Dodge regarding DoD's interest in the IGY program, March 19, 1954 (/sites/default/files/research/online-documents/igy/1954-3-19.pdf)[DDE's Records as President, Official File, Box 624, OF 146-E International Geophysical Year (1); NAID #16645513]

Letter, Sinclair Weeks, Secretary of Commerce, to Detlev Bronk, President of the National Academy of Sciences, concerning U.S. program in geophysical research, March 23, 1954 (/sites/default/files/research/online-documents/igy/1954-3-23.pdf)[DDE's Records as President, Official File, Box 624, OF 146-E International Geophysical Year (1); NAID #16645565]

Letter, Detlev Bronk, President, National Academy of Sciences, to Sherman Adams proposing the International Geophysical Year, with attached memo, April 21, 1954 (/sites/default/files/research/online-documents/igy/1954-4-21.pdf)[DDE's Records as President, Official File, Box 624, OF 146-E International Geophysical Year (1); NAID #16645592]

National Science Foundation report on the International Geophysical Year, June 2, 1954 (/sites/default/files/research/online-documents/igy/1954-6-2.pdf) [DDE's Records as President, Official File, Box 624, OF 146-E International Geophysical Year (1); NAID #16645825]

List of 29 nations participating in International Geophysical Year, June 7, 1954 (/sites/default/files/research/online-documents/igy/1954-6-7.pdf)[DDE's Records as President, Official File, Box 624, OF 146-E International Geophysical Year (1); NAID #16645860]

Letter, Chester I. Barnard, Chairman, National Science Board to the President, June 22, 1954 (/sites/default/files/research/online-documents/igy/1954-6-22.pdf) concerning IGY and President's response, June 24, 1954 (/sites/default/files/research/online-documents/igy/1954-6-24.pdf) [DDE's Records as President, Official File, Box 624, OF 146-E International Geophysical Year (1); NAID #16646042 and 16646119]

"Outline of International Geophysical Year Program" by the U.S. National Committee, International Geophysical Year 1957-58, July 26, 1955 (/sites/default/files/research/online-documents/igy/1955-7-26.pdf)[DDE's Records as President, Official File, Box 624, OF 146-E International Geophysical Year (1); NAID #16646133]

Press Release, statement by White House Press Secretary, James C. Hagerty on earth-circling satellites as part of IGY program, July 29, 1955 (/sites/default/files/research/online-documents/igy/1955-7-29-press-release.pdf)[DDE's Records as President, Official File, Box 624, OF 146-E International Geophysical Year (1); NAID #16646172]

Press Release by the National Science Foundation and the National Academy of Science, "Plans for Construction of Earth Satellite Vehicle Announced," July 29, 1955 (/sites/default/files/research/online-documents/igy/1955-7-29-nsf-release.pdf)[DDE's Records as President, Official File, Box 624, OF 146-E International Geophysical Year (1); NAID #16646897]

Statement by President Eisenhower concerning the Amundsen-Scott IGY South Pole station, January 11, 1957 (/sites/default/files/research/online-documents/igy/1957-1-11.pdf)[DDE's Records as President, Official File, Box 624, OF 146-E International Geophysical Year (2); NAID #16646930]

Press Release, "Remarks by the President in connection with the opening of the International Geophysical Year," June 30, 1957 (/sites/default/files/research/online-documents/igy/1957-6-30-press-release.pdf)[DDE's Papers as President, Speech Series, Box 22, Int. Geophysical Year 6/30/1957; NAID #16647171]

Summary of IGY Projects Affected by Recent DoD Fiscal Actions, October 25, 1957 (/sites/default/files/research/online-documents/igy/1957-10-25.pdf) [White House Office of the Special Assistant for National Security Affairs, Special Assistant Series, Subject Subseries, Box 3, Dept. of Defense (2); NAID #16648904]

Memorandum to James R. Killian, Jr. from Dr. George Kistiakowsky, Dr. Emmanuel Piore and Dr. Herbert York on the "U.S. IGY Satellite Program Prognosis and Recommendations," December 19, 1957 (/sites/default/files/research/online-documents/igy/1957-12-19.pdf) [White House Office of the Special Assistant for Science and Technology, Box 12, IGY (International Geophysical Year); NAID #16649022]

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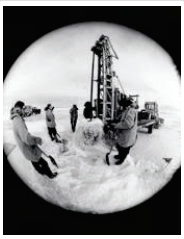
The Making of a Moon: The Story of the Earth Satellite Program by Arthur C. Clarke, Harper & Brothers, Publishers, New York, 1958.

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(https://www.eisenhowerlibrary.gov/sites/default/files/research/audiovisual/images/igy/

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Annex 567

"What was the International Geophysical Year?", *UK Antarctic Heritage Trust*, 26 June 2023



WHAT WAS THE INTERNATIONAL GEOPHYSICAL YEAR?

The worldwide research program had a prominent role in the history of our bases, but what exactly was the International Geophysical Year?

WHAT WAS THE INTERNATIONAL GEOPHYSICAL YEAR?

26/06/2023

The worldwide research program had a prominent role in the history of our bases, but what exactly was the International Geophysical Year?

As UKAHT approaches our 30th anniversary, we're using the opportunity to share some stories of adventure, discovery and hope from our archives. For a long period during the Cold War, scientific cooperation between the East and the West was virtually non-existent. The two blocs were entrenched in a nuclear arms race which devoured much of their concentration in terms of reserve and development. The International Geophysical Year (IGY) from 1957 to 1958, marked the end of that discord – in science terms at least – and the beginning of a new period of global cooperation in Earth sciences.

BACKGROUND

The origins of the IGY can be traced to two intensive periods of research conducted in the polar regions known as the International Polar Years (IPY). The first was held in 1882-1883 and the second in 1932-1933. Recently, a third was conducted from March 2007 to March 2009.

In 1950, a group of geophysicists led by the American scientist Lloyd V Berkner proposed a third International Polar Year, that would build on the advances made in instrumentation and rocketry since the second IPY.



A sledge party near Detaille during the IGY (Credit: BAS Archive)

However, these proposals soon broadened from the field of polar studies to a wider array of geophysical research. The parent body of international scientific organisations – the International Council of Scientific Unions – sanctioned the broader study of proposals for what became known as the International Geophysical Year.

WHO WAS INVOLVED IN THE INTERNATIONAL GEOPHYSICAL YEAR?

National IGY committees were established by scientific organisations in many countries with around 70 nations cooperating in the IGY. One notable exception was mainland China which withdrew in protest against Taiwan's participation.

Argentina	Cuba	Greece	Malaya	Poland	Uganda
Australia	Czechoslovakia	Guatemala	Mexico	Portugal	UK
Austria	Denmark	Hungary	Mongolia	Zimbabwe	USA
Belgium	Dominican Rep	Iceland	Morocco	Romania	Uruguay
Bolivia	Ecuador	India	Netherlands	South Africa	USSR
Brazil	Egypt	Indonesia	New Zealand	Spain	Venezuela
Bulgaria	Ethiopia	Iran	Norway	Sweden	North Vietnam
Myanmar	Finland	Ireland	North Korea	Switzerland	South Vietnam
Canada	France	Israel	Pakistan	Taiwan	Yugoslavia
Sri Lanka	East Germany	Italy	Panama	Tanzania	
Chile	West Germany	Japan	Peru	Thailand	
Colombia	Ghana	Kenya	Philippines	Tunisia	

WHAT WAS INTERNATIONAL GEOPHYSICAL YEAR?

Running from 1 July 1957 to 31 December 1958, the IGY was a cooperative scientific program conducted to study the earth and its environment. The research was conducted in 11 fields of geophysics:

1. Aurora and airglow
2. Cosmic rays
3. Geomagnetism
4. Glaciology
5. Gravity
6. Ionospheric physics
7. Longitude and latitude determinations
8. Meteorology
9. Oceanography
10. Seismology
11. Solar activity

The timing of the IGY was chosen to coincide with the maximum sunspot cycle – a period when solar flares and other disturbances are at their most prevalent. As such, research on the sun was particularly significant.



US and USSR scientists in Antarctica (Credit: Alexander Maksimov)

The IGY established the World Data Center system that is still in place today. The USA hosted World Data Center A and the USSR hosted World Data Center B while the World Data Center C was divided among countries in Western Europe, Australia and Japan.

Each data centre was equipped to manage myriad data formats. Additionally, each host country agreed to abide by the organising committee's resolution of free and open exchange of data among nations. In total, the IGY involved nearly 30,000 scientists.

The IGY pioneered the use of rockets to conduct studies of high-altitude and upper atmospheric phenomena. Several of the earliest artificial satellites launched by the USSR and the USA in the late 1950s were used to gather data for the IGY.

WHAT HAPPENED IN ANTARCTICA?

A significant focus of the IGY was to further the advancement of research in the polar regions, particularly Antarctica – the planet's least studied region. In fact, the official emblem of the IGY depicted the Earth's globe belted with a satellite's orbit and tilted to show the South Pole.

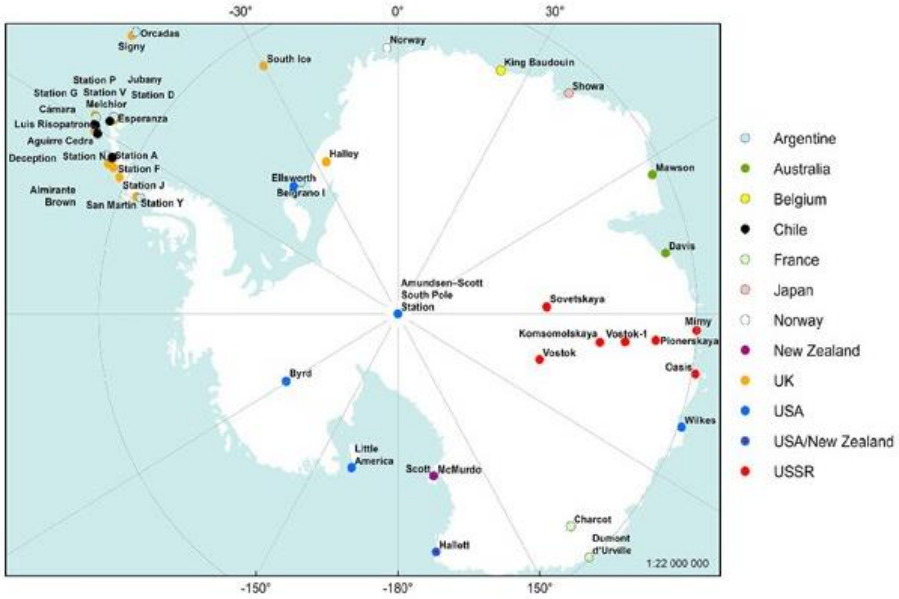


The IGY emblem (Credit: Public Domain)

Meteorological observations were one of the leading research areas in the IGY program. The global network of meteorological outposts established during the IGY consisted of over 4,000 scientific stations. Unsurprisingly, the polar regions were among the most important locations for IGY research due to their significant influence on the Earth's climate and weather.

The main goals of the research were to determine the circulation of the atmosphere and the study of the weather at high latitudes. Among other studies were the movements of drifting ice and geomagnetic and aurora phenomena and how radio interference was affected in the far north and far south by the auroras (northern and southern lights).

The countries that deployed IGY stations in Antarctica were Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, the UK, the US and the USSR. A total of 50 stations were organized on the Antarctic continent and sub-Antarctic waters.



IGY Antarctic research stations (Credit: Copernicus/CC 4.0)

Several UKAHT bases, including Port Lockroy, Horseshoe and Detaille, were key monitoring sites during the IGY. Port Lockroy acted as the communications centre for the 11 British bases during the IGY as well as undertaking atmospheric research.

Detaille Island was one of only two British bases that contributed meteorological data to the geophysical programmes of the IGY (the other being Port Lockroy). The remaining British bases mostly contributed to topographical surveying and geology.



Dennis Goldring uses a surveying instrument at Detaille (Credit: BAS Archives)

The IGY was also instrumental in establishing the first permanent structure at the South Pole, the Amundsen-Scott Station. Constructed in 1956, the station has been continuously occupied since it was built with the original structure surviving for over 53 years until it was demolished in 2010.

WHAT DID WE LEARN?

A number of huge advancements – too many to list here – were made across several fields but key IGY discoveries included the confirmation of the existence of a continuous system of submarine mid-oceanic ridges that encircled the globe. The verification of this mountain chain, the largest on Earth, would later form the foundations of the recognition of plate tectonics in the 1970s.

The discovery of the Van Allen radiation belts – two radiation belts filled with electrons and charged particles that surround Earth like giant doughnuts at altitudes of hundreds and thousands of kilometres – was another major achievement of IGY.

THE ANTARCTIC TREATY

The IGY also paved the way for the 1959 foundation of the Antarctic Treaty which came into force in 1961. The Antarctic Treaty called for the use of Antarctica for peaceful purposes and cooperative scientific research which in turn led to the Antarctic Treaty System, putting several international agreements in place to protect Antarctic wildlife.



The flags of the signatories at the Ceremonial South Pole (Credit: Public Domain)

The original 12 signatories to the Antarctic Treaty were Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, South Africa, the UK, the USA and the USSR – all of whom had been active in Antarctica during the International Geophysical Year of 1957-58, It has since been acceded to by many other nations taking the total number of parties to 56 today.

In a 1957 address, US President Eisenhower stated:

"The most important result of the International Geophysical Year is that demonstration of the ability of peoples of all nations to work together harmoniously for the common good. I hope this can become common practice in other fields of human endeavour."

Lead image: Port Lockroy during the IGY, 1957 (Credit: Peter Gale/BAS Archives)

Annex 568

Agreement on Cooperation in the Field of Environmental Protection between the United States of America and the Union of Soviet Socialist Republics, 23 May 1972, U.S. State Department, Treaties and Other International Act Series 7345, as set out in "U.S. and U.S.S.R. Sign Environmental Cooperation Treaty", *United States Environmental Protection Agency*

U.S. and U.S.S.R. Sign Environmental Cooperation Treaty

[U.S. State Department, Treaties and Other International Acts Series 7345 - May 23, 1972]

Agreement on Cooperation in the Field of Environmental Protection between the United States of America and the Union of Soviet Socialist Republics

The United States of America and the Union of Soviet Socialist Republics;

Attaching great importance to the problems of environmental protection;

Proceeding on the assumption that the proper utilization of contemporary scientific, technical and managerial achievements can, with appropriate control of their undesirable consequences, make possible the improvement of the interrelationship between man and nature;

Considering that the development of mutual cooperation in the field of environmental protection, taking into account the experience of countries with different social and economic systems, will be beneficial to the United States of America and the Union of Soviet Socialist Republics, as well as to other countries;

Considering that economic and social development for the benefit of future generations requires the protection and enhancement of the human environment today;

Desiring to facilitate the establishment of closer and long-term cooperation between interested organizations of the two countries in this field;

In accordance with the Agreement between the United States of America and the Union of Soviet Socialist Republics on Exchanges and Cooperation in Scientific, Technical, Educational, Cultural, and Other Fields in 1972-1973, signed April 11, 1972, [1] and developing further the principles of mutually beneficial cooperation between the two countries;

Have agreed as follows:

1TIAS 7343; 23 UST.

ARTICLE 1

The Parties will develop cooperation in the field of environmental protection on the basis of equality, reciprocity, and mutual benefit.

ARTICLE 2

This cooperation will be aimed at solving the most important aspects of the problems of the environment and will be devoted to working out measures to prevent pollution, to study pollution and its effect on the environment, and to develop the basis for controlling the impact of human activities on nature.

It will be implemented, in particular, in the following areas:

- air pollution;

- water pollution;
- environmental pollution associated with agricultural production;
- enhancement of the urban environment;
- preservation of nature and the organization of preserves;
- marine pollution;
- biological and genetic consequences of environmental pollution;
- influence of environmental changes on climate;
- earthquake prediction;
- arctic and subarctic ecological systems;
- legal and administrative measures for protecting environmental quality.

In the course of this cooperation the Parties will devote special attention to joint efforts improving existing technologies and developing new technologies which do not pollute the environment, to the introduction of these new technologies into everyday use, and to the study of their economic aspects.

The Parties declare that, upon mutual agreement, they will share the results of such cooperation with other countries.

ARTICLE 3

The Parties will conduct cooperative activities in the field of environmental protection by the following means:

- exchange of scientists, experts and research scholars;
- organization of bilateral conferences, symposia and meetings of experts;
- exchange of scientific and technical information and documentation, and the results of research on environment;
- joint development and implementation of programs and projects in the field of basic and applied sciences;
- other forms of cooperation which may be agreed upon in the course of the implementation of this Agreement.

ARTICLE 4

Proceeding from the aims of this Agreement the Parties will encourage and facilitate, as appropriate, the establishment and development of direct contacts and cooperation between institutions and organizations, governmental, public and private, of the two countries, and the conclusion, where appropriate, of separate agreements and contracts.

ARTICLE 5

For the implementation of this Agreement, a US-USSR Joint Committee on Cooperation in the Field of Environmental Protection shall be established. As a rule this Joint Committee shall meet once a year in Washington and Moscow, alternately. The Joint Committee shall approve concrete measures and programs of cooperation, designate the participating organizations responsible for the realization of these programs and make recommendations, as appropriate, to the two Governments.

Each Party shall designate a coordinator. These coordinators, between sessions of the Joint Committee, shall maintain contact between the United States and Soviet parts, supervise the implementation of the pertinent cooperative programs, specify the individual sections of these programs, and coordinate the activities of organizations participating in environmental cooperation in accordance with this Agreement.

ARTICLE 6

Nothing in this Agreement shall be construed to prejudice other agreements concluded between the two Parties.

ARTICLE 7

This Agreement shall enter into force upon signature and shall remain in force for five years after which it will be extend for successive five year periods unless one Party notifies the other of the termination thereof not less than six months prior to its expiration.

The termination of this Agreement shall not affect the validity of agreements and contracts between interested institutions and organizations of the two countries concluded on the basis of this Agreement.

DONE on May 23, 1972 at Moscow in duplicate, in the English and Russian languages, both texts being equally authentic.

FOR THE UNITED STATES OF AMERICA: Richard Nixon President of the United States of America	**FOR THE UNION OF SOVIET SOCIALIST REPUBLICS:** N. V. Podgorny Chairman of the Presidium of the Supreme Soviet of the USSR

Last updated on October 7, 2016

Annex 569

Consolidated Version of the Treaty on European Union, 26 October 2012,
OJ C 326/13

CONSOLIDATED VERSION OF

THE TREATY ON EUROPEAN UNION

PREAMBLE

HIS MAJESTY THE KING OF THE BELGIANS, HER MAJESTY THE QUEEN OF DENMARK, THE PRESIDENT OF THE FEDERAL REPUBLIC OF GERMANY, THE PRESIDENT OF IRELAND, THE PRESIDENT OF THE HELLENIC REPUBLIC, HIS MAJESTY THE KING OF SPAIN, THE PRESIDENT OF THE FRENCH REPUBLIC, THE PRESIDENT OF THE ITALIAN REPUBLIC, HIS ROYAL HIGHNESS THE GRAND DUKE OF LUXEMBOURG, HER MAJESTY THE QUEEN OF THE NETHERLANDS, THE PRESIDENT OF THE PORTUGUESE REPUBLIC, HER MAJESTY THE QUEEN OF THE UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND [1],

RESOLVED to mark a new stage in the process of European integration undertaken with the establishment of the European Communities,

DRAWING INSPIRATION from the cultural, religious and humanist inheritance of Europe, from which have developed the universal values of the inviolable and inalienable rights of the human person, freedom, democracy, equality and the rule of law,

RECALLING the historic importance of the ending of the division of the European continent and the need to create firm bases for the construction of the future Europe,

CONFIRMING their attachment to the principles of liberty, democracy and respect for human rights and fundamental freedoms and of the rule of law,

CONFIRMING their attachment to fundamental social rights as defined in the European Social Charter signed at Turin on 18 October 1961 and in the 1989 Community Charter of the Fundamental Social Rights of Workers,

DESIRING to deepen the solidarity between their peoples while respecting their history, their culture and their traditions,

DESIRING to enhance further the democratic and efficient functioning of the institutions so as to enable them better to carry out, within a single institutional framework, the tasks entrusted to them,

RESOLVED to achieve the strengthening and the convergence of their economies and to establish an economic and monetary union including, in accordance with the provisions of this Treaty and of the Treaty on the Functioning of the European Union, a single and stable currency,

DETERMINED to promote economic and social progress for their peoples, taking into account the principle of sustainable development and within the context of the accomplishment of the internal market and of reinforced cohesion and environmental protection, and to implement policies ensuring that advances in economic integration are accompanied by parallel progress in other fields,

---

[1] The Republic of Bulgaria, the Czech Republic, the Republic of Estonia, the Republic of Cyprus, the Republic of Latvia, the Republic of Lithuania, the Republic of Hungary, the Republic of Malta, the Republic of Austria, the Republic of Poland, Romania, the Republic of Slovenia, the Slovak Republic, the Republic of Finland and the Kingdom of Sweden have since become members of the European Union.

RESOLVED to establish a citizenship common to nationals of their countries,

RESOLVED to implement a common foreign and security policy including the progressive framing of a common defence policy, which might lead to a common defence in accordance with the provisions of Article 42, thereby reinforcing the European identity and its independence in order to promote peace, security and progress in Europe and in the world,

RESOLVED to facilitate the free movement of persons, while ensuring the safety and security of their peoples, by establishing an area of freedom, security and justice, in accordance with the provisions of this Treaty and of the Treaty on the Functioning of the European Union,

RESOLVED to continue the process of creating an ever closer union among the peoples of Europe, in which decisions are taken as closely as possible to the citizen in accordance with the principle of subsidiarity,

IN VIEW of further steps to be taken in order to advance European integration,

HAVE DECIDED to establish a European Union and to this end have designated as their Plenipotentiaries:

(List of plenipotentiaries not reproduced)

WHO, having exchanged their full powers, found in good and due form, have agreed as follows:

TITLE I

COMMON PROVISIONS

Article 1

(ex Article 1 TEU) [1]

By this Treaty, the HIGH CONTRACTING PARTIES establish among themselves a EUROPEAN UNION, hereinafter called 'the Union', on which the Member States confer competences to attain objectives they have in common.

This Treaty marks a new stage in the process of creating an ever closer union among the peoples of Europe, in which decisions are taken as openly as possible and as closely as possible to the citizen.

The Union shall be founded on the present Treaty and on the Treaty on the Functioning of the European Union (hereinafter referred to as 'the Treaties'). Those two Treaties shall have the same legal value. The Union shall replace and succeed the European Community.

[1] These references are merely indicative. For more ample information, please refer to the tables of equivalences between the old and the new numbering of the Treaties.

Article 2

The Union is founded on the values of respect for human dignity, freedom, democracy, equality, the rule of law and respect for human rights, including the rights of persons belonging to minorities. These values are common to the Member States in a society in which pluralism, non-discrimination, tolerance, justice, solidarity and equality between women and men prevail.

Article 3

(ex Article 2 TEU)

1. The Union's aim is to promote peace, its values and the well-being of its peoples.

2. The Union shall offer its citizens an area of freedom, security and justice without internal frontiers, in which the free movement of persons is ensured in conjunction with appropriate measures with respect to external border controls, asylum, immigration and the prevention and combating of crime.

3. The Union shall establish an internal market. It shall work for the sustainable development of Europe based on balanced economic growth and price stability, a highly competitive social market economy, aiming at full employment and social progress, and a high level of protection and improvement of the quality of the environment. It shall promote scientific and technological advance.

It shall combat social exclusion and discrimination, and shall promote social justice and protection, equality between women and men, solidarity between generations and protection of the rights of the child.

It shall promote economic, social and territorial cohesion, and solidarity among Member States.

It shall respect its rich cultural and linguistic diversity, and shall ensure that Europe's cultural heritage is safeguarded and enhanced.

4. The Union shall establish an economic and monetary union whose currency is the euro.

5. In its relations with the wider world, the Union shall uphold and promote its values and interests and contribute to the protection of its citizens. It shall contribute to peace, security, the sustainable development of the Earth, solidarity and mutual respect among peoples, free and fair trade, eradication of poverty and the protection of human rights, in particular the rights of the child, as well as to the strict observance and the development of international law, including respect for the principles of the United Nations Charter.

6. The Union shall pursue its objectives by appropriate means commensurate with the competences which are conferred upon it in the Treaties.

Article 4

1. In accordance with Article 5, competences not conferred upon the Union in the Treaties remain with the Member States.

2. The Union shall respect the equality of Member States before the Treaties as well as their national identities, inherent in their fundamental structures, political and constitutional, inclusive of regional and local self-government. It shall respect their essential State functions, including ensuring the territorial integrity of the State, maintaining law and order and safeguarding national security. In particular, national security remains the sole responsibility of each Member State.

3. Pursuant to the principle of sincere cooperation, the Union and the Member States shall, in full mutual respect, assist each other in carrying out tasks which flow from the Treaties.

The Member States shall take any appropriate measure, general or particular, to ensure fulfilment of the obligations arising out of the Treaties or resulting from the acts of the institutions of the Union.

The Member States shall facilitate the achievement of the Union's tasks and refrain from any measure which could jeopardise the attainment of the Union's objectives.

Article 5

(ex Article 5 TEC)

1. The limits of Union competences are governed by the principle of conferral. The use of Union competences is governed by the principles of subsidiarity and proportionality.

2. Under the principle of conferral, the Union shall act only within the limits of the competences conferred upon it by the Member States in the Treaties to attain the objectives set out therein. Competences not conferred upon the Union in the Treaties remain with the Member States.

3. Under the principle of subsidiarity, in areas which do not fall within its exclusive competence, the Union shall act only if and in so far as the objectives of the proposed action cannot be sufficiently achieved by the Member States, either at central level or at regional and local level, but can rather, by reason of the scale or effects of the proposed action, be better achieved at Union level.

The institutions of the Union shall apply the principle of subsidiarity as laid down in the Protocol on the application of the principles of subsidiarity and proportionality. National Parliaments ensure compliance with the principle of subsidiarity in accordance with the procedure set out in that Protocol.

4. Under the principle of proportionality, the content and form of Union action shall not exceed what is necessary to achieve the objectives of the Treaties.

The institutions of the Union shall apply the principle of proportionality as laid down in the Protocol on the application of the principles of subsidiarity and proportionality.

Article 6

(ex Article 6 TEU)

1. The Union recognises the rights, freedoms and principles set out in the Charter of Fundamental Rights of the European Union of 7 December 2000, as adapted at Strasbourg, on 12 December 2007, which shall have the same legal value as the Treaties.

The provisions of the Charter shall not extend in any way the competences of the Union as defined in the Treaties.

The rights, freedoms and principles in the Charter shall be interpreted in accordance with the general provisions in Title VII of the Charter governing its interpretation and application and with due regard to the explanations referred to in the Charter, that set out the sources of those provisions.

2. The Union shall accede to the European Convention for the Protection of Human Rights and Fundamental Freedoms. Such accession shall not affect the Union's competences as defined in the Treaties.

3. Fundamental rights, as guaranteed by the European Convention for the Protection of Human Rights and Fundamental Freedoms and as they result from the constitutional traditions common to the Member States, shall constitute general principles of the Union's law.

Article 7

(ex Article 7 TEU)

1. On a reasoned proposal by one third of the Member States, by the European Parliament or by the European Commission, the Council, acting by a majority of four fifths of its members after obtaining the consent of the European Parliament, may determine that there is a clear risk of a serious breach by a Member State of the values referred to in Article 2. Before making such a determination, the Council shall hear the Member State in question and may address recommendations to it, acting in accordance with the same procedure.

The Council shall regularly verify that the grounds on which such a determination was made continue to apply.

2. The European Council, acting by unanimity on a proposal by one third of the Member States or by the Commission and after obtaining the consent of the European Parliament, may determine the existence of a serious and persistent breach by a Member State of the values referred to in Article 2, after inviting the Member State in question to submit its observations.

3. Where a determination under paragraph 2 has been made, the Council, acting by a qualified majority, may decide to suspend certain of the rights deriving from the application of the Treaties to the Member State in question, including the voting rights of the representative of the government of that Member State in the Council. In doing so, the Council shall take into account the possible consequences of such a suspension on the rights and obligations of natural and legal persons.

The obligations of the Member State in question under the Treaties shall in any case continue to be binding on that State.

4. The Council, acting by a qualified majority, may decide subsequently to vary or revoke measures taken under paragraph 3 in response to changes in the situation which led to their being imposed.

5. The voting arrangements applying to the European Parliament, the European Council and the Council for the purposes of this Article are laid down in Article 354 of the Treaty on the Functioning of the European Union.

Article 8

1. The Union shall develop a special relationship with neighbouring countries, aiming to establish an area of prosperity and good neighbourliness, founded on the values of the Union and characterised by close and peaceful relations based on cooperation.

2. For the purposes of paragraph 1, the Union may conclude specific agreements with the countries concerned. These agreements may contain reciprocal rights and obligations as well as the possibility of undertaking activities jointly. Their implementation shall be the subject of periodic consultation.

TITLE II

PROVISIONS ON DEMOCRATIC PRINCIPLES

Article 9

In all its activities, the Union shall observe the principle of the equality of its citizens, who shall receive equal attention from its institutions, bodies, offices and agencies. Every national of a Member State shall be a citizen of the Union. Citizenship of the Union shall be additional to and not replace national citizenship.

Article 10

1. The functioning of the Union shall be founded on representative democracy.

2. Citizens are directly represented at Union level in the European Parliament.

Member States are represented in the European Council by their Heads of State or Government and in the Council by their governments, themselves democratically accountable either to their national Parliaments, or to their citizens.

3. Every citizen shall have the right to participate in the democratic life of the Union. Decisions shall be taken as openly and as closely as possible to the citizen.

4. Political parties at European level contribute to forming European political awareness and to expressing the will of citizens of the Union.

Article 11

1. The institutions shall, by appropriate means, give citizens and representative associations the opportunity to make known and publicly exchange their views in all areas of Union action.

2. The institutions shall maintain an open, transparent and regular dialogue with representative associations and civil society.

3. The European Commission shall carry out broad consultations with parties concerned in order to ensure that the Union's actions are coherent and transparent.

4. Not less than one million citizens who are nationals of a significant number of Member States may take the initiative of inviting the European Commission, within the framework of its powers, to submit any appropriate proposal on matters where citizens consider that a legal act of the Union is required for the purpose of implementing the Treaties.

The procedures and conditions required for such a citizens' initiative shall be determined in accordance with the first paragraph of Article 24 of the Treaty on the Functioning of the European Union.

Article 12

National Parliaments contribute actively to the good functioning of the Union:

(a) through being informed by the institutions of the Union and having draft legislative acts of the Union forwarded to them in accordance with the Protocol on the role of national Parliaments in the European Union;

(b) by seeing to it that the principle of subsidiarity is respected in accordance with the procedures provided for in the Protocol on the application of the principles of subsidiarity and proportionality;

(c) by taking part, within the framework of the area of freedom, security and justice, in the evaluation mechanisms for the implementation of the Union policies in that area, in accordance with Article 70 of the Treaty on the Functioning of the European Union, and through being involved in the political monitoring of Europol and the evaluation of Eurojust's activities in accordance with Articles 88 and 85 of that Treaty;

(d) by taking part in the revision procedures of the Treaties, in accordance with Article 48 of this Treaty;

(e) by being notified of applications for accession to the Union, in accordance with Article 49 of this Treaty;

(f) by taking part in the inter-parliamentary cooperation between national Parliaments and with the European Parliament, in accordance with the Protocol on the role of national Parliaments in the European Union.

TITLE III

PROVISIONS ON THE INSTITUTIONS

Article 13

1. The Union shall have an institutional framework which shall aim to promote its values, advance its objectives, serve its interests, those of its citizens and those of the Member States, and ensure the consistency, effectiveness and continuity of its policies and actions.

The Union's institutions shall be:

— the European Parliament,

— the European Council,

— the Council,

— the European Commission (hereinafter referred to as 'the Commission'),

— the Court of Justice of the European Union,

— the European Central Bank,

— the Court of Auditors.

2. Each institution shall act within the limits of the powers conferred on it in the Treaties, and in conformity with the procedures, conditions and objectives set out in them. The institutions shall practice mutual sincere cooperation.

3. The provisions relating to the European Central Bank and the Court of Auditors and detailed provisions on the other institutions are set out in the Treaty on the Functioning of the European Union.

4. The European Parliament, the Council and the Commission shall be assisted by an Economic and Social Committee and a Committee of the Regions acting in an advisory capacity.

Article 14

1. The European Parliament shall, jointly with the Council, exercise legislative and budgetary functions. It shall exercise functions of political control and consultation as laid down in the Treaties. It shall elect the President of the Commission.

2. The European Parliament shall be composed of representatives of the Union's citizens. They shall not exceed seven hundred and fifty in number, plus the President. Representation of citizens shall be degressively proportional, with a minimum threshold of six members per Member State. No Member State shall be allocated more than ninety-six seats.

The European Council shall adopt by unanimity, on the initiative of the European Parliament and with its consent, a decision establishing the composition of the European Parliament, respecting the principles referred to in the first subparagraph.

3. The members of the European Parliament shall be elected for a term of five years by direct universal suffrage in a free and secret ballot.

4. The European Parliament shall elect its President and its officers from among its members.

Article 15

1. The European Council shall provide the Union with the necessary impetus for its development and shall define the general political directions and priorities thereof. It shall not exercise legislative functions.

2. The European Council shall consist of the Heads of State or Government of the Member States, together with its President and the President of the Commission. The High Representative of the Union for Foreign Affairs and Security Policy shall take part in its work.

3. The European Council shall meet twice every six months, convened by its President. When the agenda so requires, the members of the European Council may decide each to be assisted by a minister and, in the case of the President of the Commission, by a member of the Commission. When the situation so requires, the President shall convene a special meeting of the European Council.

4. Except where the Treaties provide otherwise, decisions of the European Council shall be taken by consensus.

5. The European Council shall elect its President, by a qualified majority, for a term of two and a half years, renewable once. In the event of an impediment or serious misconduct, the European Council can end the President's term of office in accordance with the same procedure.

6. The President of the European Council:

(a) shall chair it and drive forward its work;

(b) shall ensure the preparation and continuity of the work of the European Council in cooperation with the President of the Commission, and on the basis of the work of the General Affairs Council;

(c) shall endeavour to facilitate cohesion and consensus within the European Council;

(d) shall present a report to the European Parliament after each of the meetings of the European Council.

The President of the European Council shall, at his level and in that capacity, ensure the external representation of the Union on issues concerning its common foreign and security policy, without prejudice to the powers of the High Representative of the Union for Foreign Affairs and Security Policy.

The President of the European Council shall not hold a national office.

Article 16

1. The Council shall, jointly with the European Parliament, exercise legislative and budgetary functions. It shall carry out policy-making and coordinating functions as laid down in the Treaties.

2. The Council shall consist of a representative of each Member State at ministerial level, who may commit the government of the Member State in question and cast its vote.

3. The Council shall act by a qualified majority except where the Treaties provide otherwise.

4. As from 1 November 2014, a qualified majority shall be defined as at least 55 % of the members of the Council, comprising at least fifteen of them and representing Member States comprising at least 65 % of the population of the Union.

A blocking minority must include at least four Council members, failing which the qualified majority shall be deemed attained.

The other arrangements governing the qualified majority are laid down in Article 238(2) of the Treaty on the Functioning of the European Union.

5. The transitional provisions relating to the definition of the qualified majority which shall be applicable until 31 October 2014 and those which shall be applicable from 1 November 2014 to 31 March 2017 are laid down in the Protocol on transitional provisions.

6. The Council shall meet in different configurations, the list of which shall be adopted in accordance with Article 236 of the Treaty on the Functioning of the European Union.

The General Affairs Council shall ensure consistency in the work of the different Council configurations. It shall prepare and ensure the follow-up to meetings of the European Council, in liaison with the President of the European Council and the Commission.

The Foreign Affairs Council shall elaborate the Union's external action on the basis of strategic guidelines laid down by the European Council and ensure that the Union's action is consistent.

7. A Committee of Permanent Representatives of the Governments of the Member States shall be responsible for preparing the work of the Council.

8. The Council shall meet in public when it deliberates and votes on a draft legislative act. To this end, each Council meeting shall be divided into two parts, dealing respectively with deliberations on Union legislative acts and non-legislative activities.

9. The Presidency of Council configurations, other than that of Foreign Affairs, shall be held by Member State representatives in the Council on the basis of equal rotation, in accordance with the conditions established in accordance with Article 236 of the Treaty on the Functioning of the European Union.

Article 17

1. The Commission shall promote the general interest of the Union and take appropriate initiatives to that end. It shall ensure the application of the Treaties, and of measures adopted by the institutions pursuant to them. It shall oversee the application of Union law under the control of the Court of Justice of the European Union. It shall execute the budget and manage programmes. It shall exercise coordinating, executive and management functions, as laid down in the Treaties. With the exception of the common foreign and security policy, and other cases provided for in the Treaties, it shall ensure the Union's external representation. It shall initiate the Union's annual and multiannual programming with a view to achieving interinstitutional agreements.

2. Union legislative acts may only be adopted on the basis of a Commission proposal, except where the Treaties provide otherwise. Other acts shall be adopted on the basis of a Commission proposal where the Treaties so provide.

3. The Commission's term of office shall be five years.

The members of the Commission shall be chosen on the ground of their general competence and European commitment from persons whose independence is beyond doubt.

In carrying out its responsibilities, the Commission shall be completely independent. Without prejudice to Article 18(2), the members of the Commission shall neither seek nor take instructions from any Government or other institution, body, office or entity. They shall refrain from any action incompatible with their duties or the performance of their tasks.

4. The Commission appointed between the date of entry into force of the Treaty of Lisbon and 31 October 2014, shall consist of one national of each Member State, including its President and the High Representative of the Union for Foreign Affairs and Security Policy who shall be one of its Vice-Presidents.

5. As from 1 November 2014, the Commission shall consist of a number of members, including its President and the High Representative of the Union for Foreign Affairs and Security Policy, corresponding to two thirds of the number of Member States, unless the European Council, acting unanimously, decides to alter this number.

The members of the Commission shall be chosen from among the nationals of the Member States on the basis of a system of strictly equal rotation between the Member States, reflecting the demographic and geographical range of all the Member States. This system shall be established unanimously by the European Council in accordance with Article 244 of the Treaty on the Functioning of the European Union.

6. The President of the Commission shall:

(a) lay down guidelines within which the Commission is to work;

(b) decide on the internal organisation of the Commission, ensuring that it acts consistently, efficiently and as a collegiate body;

(c) appoint Vice-Presidents, other than the High Representative of the Union for Foreign Affairs and Security Policy, from among the members of the Commission.

A member of the Commission shall resign if the President so requests. The High Representative of the Union for Foreign Affairs and Security Policy shall resign, in accordance with the procedure set out in Article 18(1), if the President so requests.

7. Taking into account the elections to the European Parliament and after having held the appropriate consultations, the European Council, acting by a qualified majority, shall propose to the European Parliament a candidate for President of the Commission. This candidate shall be elected by the European Parliament by a majority of its component members. If he does not obtain the required majority, the European Council, acting by a qualified majority, shall within one month propose a new candidate who shall be elected by the European Parliament following the same procedure.

The Council, by common accord with the President-elect, shall adopt the list of the other persons whom it proposes for appointment as members of the Commission. They shall be selected, on the basis of the suggestions made by Member States, in accordance with the criteria set out in paragraph 3, second subparagraph, and paragraph 5, second subparagraph.

The President, the High Representative of the Union for Foreign Affairs and Security Policy and the other members of the Commission shall be subject as a body to a vote of consent by the European Parliament. On the basis of this consent the Commission shall be appointed by the European Council, acting by a qualified majority.

8. The Commission, as a body, shall be responsible to the European Parliament. In accordance with Article 234 of the Treaty on the Functioning of the European Union, the European Parliament may vote on a motion of censure of the Commission. If such a motion is carried, the members of the Commission shall resign as a body and the High Representative of the Union for Foreign Affairs and Security Policy shall resign from the duties that he carries out in the Commission.

Article 18

1. The European Council, acting by a qualified majority, with the agreement of the President of the Commission, shall appoint the High Representative of the Union for Foreign Affairs and Security Policy. The European Council may end his term of office by the same procedure.

2. The High Representative shall conduct the Union's common foreign and security policy. He shall contribute by his proposals to the development of that policy, which he shall carry out as mandated by the Council. The same shall apply to the common security and defence policy.

3. The High Representative shall preside over the Foreign Affairs Council.

4. The High Representative shall be one of the Vice-Presidents of the Commission. He shall ensure the consistency of the Union's external action. He shall be responsible within the Commission for responsibilities incumbent on it in external relations and for coordinating other aspects of the Union's external action. In exercising these responsibilities within the Commission, and only for these responsibilities, the High Representative shall be bound by Commission procedures to the extent that this is consistent with paragraphs 2 and 3.

Article 19

1. The Court of Justice of the European Union shall include the Court of Justice, the General Court and specialised courts. It shall ensure that in the interpretation and application of the Treaties the law is observed.

Member States shall provide remedies sufficient to ensure effective legal protection in the fields covered by Union law.

2. The Court of Justice shall consist of one judge from each Member State. It shall be assisted by Advocates-General.

The General Court shall include at least one judge per Member State.

The Judges and the Advocates-General of the Court of Justice and the Judges of the General Court shall be chosen from persons whose independence is beyond doubt and who satisfy the conditions set out in Articles 253 and 254 of the Treaty on the Functioning of the European Union. They shall be appointed by common accord of the governments of the Member States for six years. Retiring Judges and Advocates-General may be reappointed.

3. The Court of Justice of the European Union shall, in accordance with the Treaties:

(a) rule on actions brought by a Member State, an institution or a natural or legal person;

(b) give preliminary rulings, at the request of courts or tribunals of the Member States, on the interpretation of Union law or the validity of acts adopted by the institutions;

(c) rule in other cases provided for in the Treaties.

TITLE IV

PROVISIONS ON ENHANCED COOPERATION

Article 20

(ex Articles 27*a* to 27*e*, 40 to 40*b* and 43 to 45 TEU and ex Articles 11 and 11*a* TEC)

1. Member States which wish to establish enhanced cooperation between themselves within the framework of the Union's non-exclusive competences may make use of its institutions and exercise those competences by applying the relevant provisions of the Treaties, subject to the limits and in accordance with the detailed arrangements laid down in this Article and in Articles 326 to 334 of the Treaty on the Functioning of the European Union.

Enhanced cooperation shall aim to further the objectives of the Union, protect its interests and reinforce its integration process. Such cooperation shall be open at any time to all Member States, in accordance with Article 328 of the Treaty on the Functioning of the European Union.

2. The decision authorising enhanced cooperation shall be adopted by the Council as a last resort, when it has established that the objectives of such cooperation cannot be attained within a reasonable period by the Union as a whole, and provided that at least nine Member States participate in it. The Council shall act in accordance with the procedure laid down in Article 329 of the Treaty on the Functioning of the European Union.

3. All members of the Council may participate in its deliberations, but only members of the Council representing the Member States participating in enhanced cooperation shall take part in the vote. The voting rules are set out in Article 330 of the Treaty on the Functioning of the European Union.

4. Acts adopted in the framework of enhanced cooperation shall bind only participating Member States. They shall not be regarded as part of the *acquis* which has to be accepted by candidate States for accession to the Union.

TITLE V

GENERAL PROVISIONS ON THE UNION'S EXTERNAL ACTION AND SPECIFIC PROVISIONS ON THE COMMON FOREIGN AND SECURITY POLICY

CHAPTER 1

GENERAL PROVISIONS ON THE UNION'S EXTERNAL ACTION

Article 21

1. The Union's action on the international scene shall be guided by the principles which have inspired its own creation, development and enlargement, and which it seeks to advance in the wider world: democracy, the rule of law, the universality and indivisibility of human rights and fundamental freedoms, respect for human dignity, the principles of equality and solidarity, and respect for the principles of the United Nations Charter and international law.

The Union shall seek to develop relations and build partnerships with third countries, and international, regional or global organisations which share the principles referred to in the first subparagraph. It shall promote multilateral solutions to common problems, in particular in the framework of the United Nations.

2. The Union shall define and pursue common policies and actions, and shall work for a high degree of cooperation in all fields of international relations, in order to:

(a) safeguard its values, fundamental interests, security, independence and integrity;

(b) consolidate and support democracy, the rule of law, human rights and the principles of international law;

(c) preserve peace, prevent conflicts and strengthen international security, in accordance with the purposes and principles of the United Nations Charter, with the principles of the Helsinki Final Act and with the aims of the Charter of Paris, including those relating to external borders;

(d) foster the sustainable economic, social and environmental development of developing countries, with the primary aim of eradicating poverty;

(e) encourage the integration of all countries into the world economy, including through the progressive abolition of restrictions on international trade;

(f) help develop international measures to preserve and improve the quality of the environment and the sustainable management of global natural resources, in order to ensure sustainable development;

(g) assist populations, countries and regions confronting natural or man-made disasters; and

(h) promote an international system based on stronger multilateral cooperation and good global governance.

3. The Union shall respect the principles and pursue the objectives set out in paragraphs 1 and 2 in the development and implementation of the different areas of the Union's external action covered by this Title and by Part Five of the Treaty on the Functioning of the European Union, and of the external aspects of its other policies.

The Union shall ensure consistency between the different areas of its external action and between these and its other policies. The Council and the Commission, assisted by the High Representative of the Union for Foreign Affairs and Security Policy, shall ensure that consistency and shall cooperate to that effect.

Article 22

1. On the basis of the principles and objectives set out in Article 21, the European Council shall identify the strategic interests and objectives of the Union.

Decisions of the European Council on the strategic interests and objectives of the Union shall relate to the common foreign and security policy and to other areas of the external action of the Union. Such decisions may concern the relations of the Union with a specific country or region or may be thematic in approach. They shall define their duration, and the means to be made available by the Union and the Member States.

The European Council shall act unanimously on a recommendation from the Council, adopted by the latter under the arrangements laid down for each area. Decisions of the European Council shall be implemented in accordance with the procedures provided for in the Treaties.

2. The High Representative of the Union for Foreign Affairs and Security Policy, for the area of common foreign and security policy, and the Commission, for other areas of external action, may submit joint proposals to the Council.

CHAPTER 2

SPECIFIC PROVISIONS ON THE COMMON FOREIGN AND SECURITY POLICY

SECTION 1

COMMON PROVISIONS

Article 23

The Union's action on the international scene, pursuant to this Chapter, shall be guided by the principles, shall pursue the objectives of, and be conducted in accordance with, the general provisions laid down in Chapter 1.

Article 24

(ex Article 11 TEU)

1. The Union's competence in matters of common foreign and security policy shall cover all areas of foreign policy and all questions relating to the Union's security, including the progressive framing of a common defence policy that might lead to a common defence.

The common foreign and security policy is subject to specific rules and procedures. It shall be defined and implemented by the European Council and the Council acting unanimously, except where the Treaties provide otherwise. The adoption of legislative acts shall be excluded. The common foreign and security policy shall be put into effect by the High Representative of the Union for Foreign Affairs and Security Policy and by Member States, in accordance with the Treaties. The specific role of the European Parliament and of the Commission in this area is defined by the Treaties. The Court of Justice of the European Union shall not have jurisdiction with respect to these provisions, with the exception of its jurisdiction to monitor compliance with Article 40 of this Treaty and to review the legality of certain decisions as provided for by the second paragraph of Article 275 of the Treaty on the Functioning of the European Union.

2. Within the framework of the principles and objectives of its external action, the Union shall conduct, define and implement a common foreign and security policy, based on the development of mutual political solidarity among Member States, the identification of questions of general interest and the achievement of an ever-increasing degree of convergence of Member States' actions.

3. The Member States shall support the Union's external and security policy actively and unreservedly in a spirit of loyalty and mutual solidarity and shall comply with the Union's action in this area.

The Member States shall work together to enhance and develop their mutual political solidarity. They shall refrain from any action which is contrary to the interests of the Union or likely to impair its effectiveness as a cohesive force in international relations.

The Council and the High Representative shall ensure compliance with these principles.

Article 25
(ex Article 12 TEU)

The Union shall conduct the common foreign and security policy by:

(a) defining the general guidelines;

(b) adopting decisions defining:

(i) actions to be undertaken by the Union;

(ii) positions to be taken by the Union;

(iii) arrangements for the implementation of the decisions referred to in points (i) and (ii);

and by

(c) strengthening systematic cooperation between Member States in the conduct of policy.

Article 26
(ex Article 13 TEU)

1. The European Council shall identify the Union's strategic interests, determine the objectives of and define general guidelines for the common foreign and security policy, including for matters with defence implications. It shall adopt the necessary decisions.

If international developments so require, the President of the European Council shall convene an extraordinary meeting of the European Council in order to define the strategic lines of the Union's policy in the face of such developments.

2. The Council shall frame the common foreign and security policy and take the decisions necessary for defining and implementing it on the basis of the general guidelines and strategic lines defined by the European Council.

The Council and the High Representative of the Union for Foreign Affairs and Security Policy shall ensure the unity, consistency and effectiveness of action by the Union.

3. The common foreign and security policy shall be put into effect by the High Representative and by the Member States, using national and Union resources.

Article 27

1. The High Representative of the Union for Foreign Affairs and Security Policy, who shall chair the Foreign Affairs Council, shall contribute through his proposals to the development of the common foreign and security policy and shall ensure implementation of the decisions adopted by the European Council and the Council.

2. The High Representative shall represent the Union for matters relating to the common foreign and security policy. He shall conduct political dialogue with third parties on the Union's behalf and shall express the Union's position in international organisations and at international conferences.

3. In fulfilling his mandate, the High Representative shall be assisted by a European External Action Service. This service shall work in cooperation with the diplomatic services of the Member States and shall comprise officials from relevant departments of the General Secretariat of the Council and of the Commission as well as staff seconded from national diplomatic services of the Member States. The organisation and functioning of the European External Action Service shall be established by a decision of the Council. The Council shall act on a proposal from the High Representative after consulting the European Parliament and after obtaining the consent of the Commission.

Article 28

(ex Article 14 TEU)

1. Where the international situation requires operational action by the Union, the Council shall adopt the necessary decisions. They shall lay down their objectives, scope, the means to be made available to the Union, if necessary their duration, and the conditions for their implementation.

If there is a change in circumstances having a substantial effect on a question subject to such a decision, the Council shall review the principles and objectives of that decision and take the necessary decisions.

2. Decisions referred to in paragraph 1 shall commit the Member States in the positions they adopt and in the conduct of their activity.

3. Whenever there is any plan to adopt a national position or take national action pursuant to a decision as referred to in paragraph 1, information shall be provided by the Member State concerned in time to allow, if necessary, for prior consultations within the Council. The obligation to provide prior information shall not apply to measures which are merely a national transposition of Council decisions.

4. In cases of imperative need arising from changes in the situation and failing a review of the Council decision as referred to in paragraph 1, Member States may take the necessary measures as a matter of urgency having regard to the general objectives of that decision. The Member State concerned shall inform the Council immediately of any such measures.

5. Should there be any major difficulties in implementing a decision as referred to in this Article, a Member State shall refer them to the Council which shall discuss them and seek appropriate solutions. Such solutions shall not run counter to the objectives of the decision referred to in paragraph 1 or impair its effectiveness.

Article 29

(ex Article 15 TEU)

The Council shall adopt decisions which shall define the approach of the Union to a particular matter of a geographical or thematic nature. Member States shall ensure that their national policies conform to the Union positions.

Article 30

(ex Article 22 TEU)

1. Any Member State, the High Representative of the Union for Foreign Affairs and Security Policy, or the High Representative with the Commission's support, may refer any question relating to the common foreign and security policy to the Council and may submit to it, respectively, initiatives or proposals.

2. In cases requiring a rapid decision, the High Representative, of his own motion, or at the request of a Member State, shall convene an extraordinary Council meeting within 48 hours or, in an emergency, within a shorter period.

Article 31

(ex Article 23 TEU)

1. Decisions under this Chapter shall be taken by the European Council and the Council acting unanimously, except where this Chapter provides otherwise. The adoption of legislative acts shall be excluded.

When abstaining in a vote, any member of the Council may qualify its abstention by making a formal declaration under the present subparagraph. In that case, it shall not be obliged to apply the decision, but shall accept that the decision commits the Union. In a spirit of mutual solidarity, the Member State concerned shall refrain from any action likely to conflict with or impede Union action based on that decision and the other Member States shall respect its position. If the members of the Council qualifying their abstention in this way represent at least one third of the Member States comprising at least one third of the population of the Union, the decision shall not be adopted.

2. By derogation from the provisions of paragraph 1, the Council shall act by qualified majority:

— when adopting a decision defining a Union action or position on the basis of a decision of the European Council relating to the Union's strategic interests and objectives, as referred to in Article 22(1),

— when adopting a decision defining a Union action or position, on a proposal which the High Representative of the Union for Foreign Affairs and Security Policy has presented following a specific request from the European Council, made on its own initiative or that of the High Representative,

— when adopting any decision implementing a decision defining a Union action or position,

— when appointing a special representative in accordance with Article 33.

If a member of the Council declares that, for vital and stated reasons of national policy, it intends to oppose the adoption of a decision to be taken by qualified majority, a vote shall not be taken. The High Representative will, in close consultation with the Member State involved, search for a solution acceptable to it. If he does not succeed, the Council may, acting by a qualified majority, request that the matter be referred to the European Council for a decision by unanimity.

3. The European Council may unanimously adopt a decision stipulating that the Council shall act by a qualified majority in cases other than those referred to in paragraph 2.

4. Paragraphs 2 and 3 shall not apply to decisions having military or defence implications.

5. For procedural questions, the Council shall act by a majority of its members.

Article 32

(ex Article 16 TEU)

Member States shall consult one another within the European Council and the Council on any matter of foreign and security policy of general interest in order to determine a common approach. Before undertaking any action on the international scene or entering into any commitment which could affect the Union's interests, each Member State shall consult the others within the European Council or the Council. Member States shall ensure, through the convergence of their actions, that the Union is able to assert its interests and values on the international scene. Member States shall show mutual solidarity.

When the European Council or the Council has defined a common approach of the Union within the meaning of the first paragraph, the High Representative of the Union for Foreign Affairs and Security Policy and the Ministers for Foreign Affairs of the Member States shall coordinate their activities within the Council.

The diplomatic missions of the Member States and the Union delegations in third countries and at international organisations shall cooperate and shall contribute to formulating and implementing the common approach.

Article 33

(ex Article 18 TEU)

The Council may, on a proposal from the High Representative of the Union for Foreign Affairs and Security Policy, appoint a special representative with a mandate in relation to particular policy issues. The special representative shall carry out his mandate under the authority of the High Representative.

Article 34

(ex Article 19 TEU)

1. Member States shall coordinate their action in international organisations and at international conferences. They shall uphold the Union's positions in such forums. The High Representative of the Union for Foreign Affairs and Security Policy shall organise this coordination.

In international organisations and at international conferences where not all the Member States participate, those which do take part shall uphold the Union's positions.

2. In accordance with Article 24(3), Member States represented in international organisations or international conferences where not all the Member States participate shall keep the other Member States and the High Representative informed of any matter of common interest.

Member States which are also members of the United Nations Security Council will concert and keep the other Member States and the High Representative fully informed. Member States which are members of the Security Council will, in the execution of their functions, defend the positions and the interests of the Union, without prejudice to their responsibilities under the provisions of the United Nations Charter.

When the Union has defined a position on a subject which is on the United Nations Security Council agenda, those Member States which sit on the Security Council shall request that the High Representative be invited to present the Union's position.

Article 35

(ex Article 20 TEU)

The diplomatic and consular missions of the Member States and the Union delegations in third countries and international conferences, and their representations to international organisations, shall cooperate in ensuring that decisions defining Union positions and actions adopted pursuant to this Chapter are complied with and implemented.

They shall step up cooperation by exchanging information and carrying out joint assessments.

They shall contribute to the implementation of the right of citizens of the Union to protection in the territory of third countries as referred to in Article 20(2)(c) of the Treaty on the Functioning of the European Union and of the measures adopted pursuant to Article 23 of that Treaty.

Article 36

(ex Article 21 TEU)

The High Representative of the Union for Foreign Affairs and Security Policy shall regularly consult the European Parliament on the main aspects and the basic choices of the common foreign and security policy and the common security and defence policy and inform it of how those policies evolve. He shall ensure that the views of the European Parliament are duly taken into consideration. Special representatives may be involved in briefing the European Parliament.

The European Parliament may address questions or make recommendations to the Council or the High Representative. Twice a year it shall hold a debate on progress in implementing the common foreign and security policy, including the common security and defence policy.

Article 37

(ex Article 24 TEU)

The Union may conclude agreements with one or more States or international organisations in areas covered by this Chapter.

Article 38

(ex Article 25 TEU)

Without prejudice to Article 240 of the Treaty on the Functioning of the European Union, a Political and Security Committee shall monitor the international situation in the areas covered by the common foreign and security policy and contribute to the definition of policies by delivering opinions to the Council at the request of the Council or of the High Representative of the Union for Foreign Affairs and Security Policy or on its own initiative. It shall also monitor the implementation of agreed policies, without prejudice to the powers of the High Representative.

Within the scope of this Chapter, the Political and Security Committee shall exercise, under the responsibility of the Council and of the High Representative, the political control and strategic direction of the crisis management operations referred to in Article 43.

The Council may authorise the Committee, for the purpose and for the duration of a crisis management operation, as determined by the Council, to take the relevant decisions concerning the political control and strategic direction of the operation.

Article 39

In accordance with Article 16 of the Treaty on the Functioning of the European Union and by way of derogation from paragraph 2 thereof, the Council shall adopt a decision laying down the rules relating to the protection of individuals with regard to the processing of personal data by the Member States when carrying out activities which fall within the scope of this Chapter, and the rules relating to the free movement of such data. Compliance with these rules shall be subject to the control of independent authorities.

Article 40

(ex Article 47 TEU)

The implementation of the common foreign and security policy shall not affect the application of the procedures and the extent of the powers of the institutions laid down by the Treaties for the exercise of the Union competences referred to in Articles 3 to 6 of the Treaty on the Functioning of the European Union.

Similarly, the implementation of the policies listed in those Articles shall not affect the application of the procedures and the extent of the powers of the institutions laid down by the Treaties for the exercise of the Union competences under this Chapter.

Article 41

(ex Article 28 TEU)

1. Administrative expenditure to which the implementation of this Chapter gives rise for the institutions shall be charged to the Union budget.

2. Operating expenditure to which the implementation of this Chapter gives rise shall also be charged to the Union budget, except for such expenditure arising from operations having military or defence implications and cases where the Council acting unanimously decides otherwise.

In cases where expenditure is not charged to the Union budget, it shall be charged to the Member States in accordance with the gross national product scale, unless the Council acting unanimously decides otherwise. As for expenditure arising from operations having military or defence implications, Member States whose representatives in the Council have made a formal declaration under Article 31(1), second subparagraph, shall not be obliged to contribute to the financing thereof.

3. The Council shall adopt a decision establishing the specific procedures for guaranteeing rapid access to appropriations in the Union budget for urgent financing of initiatives in the framework of the common foreign and security policy, and in particular for preparatory activities for the tasks referred to in Article 42(1) and Article 43. It shall act after consulting the European Parliament.

Preparatory activities for the tasks referred to in Article 42(1) and Article 43 which are not charged to the Union budget shall be financed by a start-up fund made up of Member States' contributions.

The Council shall adopt by a qualified majority, on a proposal from the High Representative of the Union for Foreign Affairs and Security Policy, decisions establishing:

(a) the procedures for setting up and financing the start-up fund, in particular the amounts allocated to the fund;

(b) the procedures for administering the start-up fund;

(c) the financial control procedures.

When the task planned in accordance with Article 42(1) and Article 43 cannot be charged to the Union budget, the Council shall authorise the High Representative to use the fund. The High Representative shall report to the Council on the implementation of this remit.

SECTION 2

PROVISIONS ON THE COMMON SECURITY AND DEFENCE POLICY

Article 42

(ex Article 17 TEU)

1. The common security and defence policy shall be an integral part of the common foreign and security policy. It shall provide the Union with an operational capacity drawing on civilian and military assets. The Union may use them on missions outside the Union for peace-keeping, conflict prevention and strengthening international security in accordance with the principles of the United Nations Charter. The performance of these tasks shall be undertaken using capabilities provided by the Member States.

2. The common security and defence policy shall include the progressive framing of a common Union defence policy. This will lead to a common defence, when the European Council, acting unanimously, so decides. It shall in that case recommend to the Member States the adoption of such a decision in accordance with their respective constitutional requirements.

The policy of the Union in accordance with this Section shall not prejudice the specific character of the security and defence policy of certain Member States and shall respect the obligations of certain Member States, which see their common defence realised in the North Atlantic Treaty Organisation (NATO), under the North Atlantic Treaty and be compatible with the common security and defence policy established within that framework.

3. Member States shall make civilian and military capabilities available to the Union for the implementation of the common security and defence policy, to contribute to the objectives defined by the Council. Those Member States which together establish multinational forces may also make them available to the common security and defence policy.

Member States shall undertake progressively to improve their military capabilities. The Agency in the field of defence capabilities development, research, acquisition and armaments (hereinafter referred to as 'the European Defence Agency') shall identify operational requirements, shall promote measures to satisfy those requirements, shall contribute to identifying and, where appropriate, implementing any measure needed to strengthen the industrial and technological base of the defence sector, shall participate in defining a European capabilities and armaments policy, and shall assist the Council in evaluating the improvement of military capabilities.

4. Decisions relating to the common security and defence policy, including those initiating a mission as referred to in this Article, shall be adopted by the Council acting unanimously on a proposal from the High Representative of the Union for Foreign Affairs and Security Policy or an initiative from a Member State. The High Representative may propose the use of both national resources and Union instruments, together with the Commission where appropriate.

5. The Council may entrust the execution of a task, within the Union framework, to a group of Member States in order to protect the Union's values and serve its interests. The execution of such a task shall be governed by Article 44.

6. Those Member States whose military capabilities fulfil higher criteria and which have made more binding commitments to one another in this area with a view to the most demanding missions shall establish permanent structured cooperation within the Union framework. Such cooperation shall be governed by Article 46. It shall not affect the provisions of Article 43.

7. If a Member State is the victim of armed aggression on its territory, the other Member States shall have towards it an obligation of aid and assistance by all the means in their power, in accordance with Article 51 of the United Nations Charter. This shall not prejudice the specific character of the security and defence policy of certain Member States.

Commitments and cooperation in this area shall be consistent with commitments under the North Atlantic Treaty Organisation, which, for those States which are members of it, remains the foundation of their collective defence and the forum for its implementation.

Article 43

1. The tasks referred to in Article 42(1), in the course of which the Union may use civilian and military means, shall include joint disarmament operations, humanitarian and rescue tasks, military advice and assistance tasks, conflict prevention and peace-keeping tasks, tasks of combat forces in crisis management, including peace-making and post-conflict stabilisation. All these tasks may contribute to the fight against terrorism, including by supporting third countries in combating terrorism in their territories.

2. The Council shall adopt decisions relating to the tasks referred to in paragraph 1, defining their objectives and scope and the general conditions for their implementation. The High Representative of the Union for Foreign Affairs and Security Policy, acting under the authority of the Council and in close and constant contact with the Political and Security Committee, shall ensure coordination of the civilian and military aspects of such tasks.

Article 44

1. Within the framework of the decisions adopted in accordance with Article 43, the Council may entrust the implementation of a task to a group of Member States which are willing and have the necessary capability for such a task. Those Member States, in association with the High Representative of the Union for Foreign Affairs and Security Policy, shall agree among themselves on the management of the task.

2. Member States participating in the task shall keep the Council regularly informed of its progress on their own initiative or at the request of another Member State. Those States shall inform the Council immediately should the completion of the task entail major consequences or require amendment of the objective, scope and conditions determined for the task in the decisions referred to in paragraph 1. In such cases, the Council shall adopt the necessary decisions.

Article 45

1. The European Defence Agency referred to in Article 42(3), subject to the authority of the Council, shall have as its task to:

(a) contribute to identifying the Member States' military capability objectives and evaluating observance of the capability commitments given by the Member States;

(b) promote harmonisation of operational needs and adoption of effective, compatible procurement methods;

(c) propose multilateral projects to fulfil the objectives in terms of military capabilities, ensure coordination of the programmes implemented by the Member States and management of specific cooperation programmes;

(d) support defence technology research, and coordinate and plan joint research activities and the study of technical solutions meeting future operational needs;

(e) contribute to identifying and, if necessary, implementing any useful measure for strengthening the industrial and technological base of the defence sector and for improving the effectiveness of military expenditure.

2. The European Defence Agency shall be open to all Member States wishing to be part of it. The Council, acting by a qualified majority, shall adopt a decision defining the Agency's statute, seat and operational rules. That decision should take account of the level of effective participation in the Agency's activities. Specific groups shall be set up within the Agency bringing together Member States engaged in joint projects. The Agency shall carry out its tasks in liaison with the Commission where necessary.

Article 46

1. Those Member States which wish to participate in the permanent structured cooperation referred to in Article 42(6), which fulfil the criteria and have made the commitments on military capabilities set out in the Protocol on permanent structured cooperation, shall notify their intention to the Council and to the High Representative of the Union for Foreign Affairs and Security Policy.

2. Within three months following the notification referred to in paragraph 1 the Council shall adopt a decision establishing permanent structured cooperation and determining the list of participating Member States. The Council shall act by a qualified majority after consulting the High Representative.

3. Any Member State which, at a later stage, wishes to participate in the permanent structured cooperation shall notify its intention to the Council and to the High Representative.

The Council shall adopt a decision confirming the participation of the Member State concerned which fulfils the criteria and makes the commitments referred to in Articles 1 and 2 of the Protocol on permanent structured cooperation. The Council shall act by a qualified majority after consulting the High Representative. Only members of the Council representing the participating Member States shall take part in the vote.

A qualified majority shall be defined in accordance with Article 238(3)(a) of the Treaty on the Functioning of the European Union.

4. If a participating Member State no longer fulfils the criteria or is no longer able to meet the commitments referred to in Articles 1 and 2 of the Protocol on permanent structured cooperation, the Council may adopt a decision suspending the participation of the Member State concerned.

The Council shall act by a qualified majority. Only members of the Council representing the participating Member States, with the exception of the Member State in question, shall take part in the vote.

A qualified majority shall be defined in accordance with Article 238(3)(a) of the Treaty on the Functioning of the European Union.

5. Any participating Member State which wishes to withdraw from permanent structured cooperation shall notify its intention to the Council, which shall take note that the Member State in question has ceased to participate.

6. The decisions and recommendations of the Council within the framework of permanent structured cooperation, other than those provided for in paragraphs 2 to 5, shall be adopted by unanimity. For the purposes of this paragraph, unanimity shall be constituted by the votes of the representatives of the participating Member States only.

TITLE VI

FINAL PROVISIONS

Article 47

The Union shall have legal personality.

Article 48

(ex Article 48 TEU)

1. The Treaties may be amended in accordance with an ordinary revision procedure. They may also be amended in accordance with simplified revision procedures.

Ordinary revision procedure

2. The Government of any Member State, the European Parliament or the Commission may submit to the Council proposals for the amendment of the Treaties. These proposals may, *inter alia*, serve either to increase or to reduce the competences conferred on the Union in the Treaties. These proposals shall be submitted to the European Council by the Council and the national Parliaments shall be notified.

3. If the European Council, after consulting the European Parliament and the Commission, adopts by a simple majority a decision in favour of examining the proposed amendments, the President of the European Council shall convene a Convention composed of representatives of the national Parliaments, of the Heads of State or Government of the Member States, of the European Parliament and of the Commission. The European Central Bank shall also be consulted in the case of institutional changes in the monetary area. The Convention shall examine the proposals for amendments and shall adopt by consensus a recommendation to a conference of representatives of the governments of the Member States as provided for in paragraph 4.

The European Council may decide by a simple majority, after obtaining the consent of the European Parliament, not to convene a Convention should this not be justified by the extent of the proposed amendments. In the latter case, the European Council shall define the terms of reference for a conference of representatives of the governments of the Member States.

4. A conference of representatives of the governments of the Member States shall be convened by the President of the Council for the purpose of determining by common accord the amendments to be made to the Treaties.

The amendments shall enter into force after being ratified by all the Member States in accordance with their respective constitutional requirements.

5. If, two years after the signature of a treaty amending the Treaties, four fifths of the Member States have ratified it and one or more Member States have encountered difficulties in proceeding with ratification, the matter shall be referred to the European Council.

Simplified revision procedures

6. The Government of any Member State, the European Parliament or the Commission may submit to the European Council proposals for revising all or part of the provisions of Part Three of the Treaty on the Functioning of the European Union relating to the internal policies and action of the Union.

The European Council may adopt a decision amending all or part of the provisions of Part Three of the Treaty on the Functioning of the European Union. The European Council shall act by unanimity after consulting the European Parliament and the Commission, and the European Central Bank in the case of institutional changes in the monetary area. That decision shall not enter into force until it is approved by the Member States in accordance with their respective constitutional requirements.

The decision referred to in the second subparagraph shall not increase the competences conferred on the Union in the Treaties.

7. Where the Treaty on the Functioning of the European Union or Title V of this Treaty provides for the Council to act by unanimity in a given area or case, the European Council may adopt a decision authorising the Council to act by a qualified majority in that area or in that case. This subparagraph shall not apply to decisions with military implications or those in the area of defence.

Where the Treaty on the Functioning of the European Union provides for legislative acts to be adopted by the Council in accordance with a special legislative procedure, the European Council may adopt a decision allowing for the adoption of such acts in accordance with the ordinary legislative procedure.

Any initiative taken by the European Council on the basis of the first or the second subparagraph shall be notified to the national Parliaments. If a national Parliament makes known its opposition within six months of the date of such notification, the decision referred to in the first or the second subparagraph shall not be adopted. In the absence of opposition, the European Council may adopt the decision.

For the adoption of the decisions referred to in the first and second subparagraphs, the European Council shall act by unanimity after obtaining the consent of the European Parliament, which shall be given by a majority of its component members.

Article 49

(ex Article 49 TEU)

Any European State which respects the values referred to in Article 2 and is committed to promoting them may apply to become a member of the Union. The European Parliament and national Parliaments shall be notified of this application. The applicant State shall address its application to the Council, which shall act unanimously after consulting the Commission and after receiving the consent of the European Parliament, which shall act by a majority of its component members. The conditions of eligibility agreed upon by the European Council shall be taken into account.

The conditions of admission and the adjustments to the Treaties on which the Union is founded, which such admission entails, shall be the subject of an agreement between the Member States and the applicant State. This agreement shall be submitted for ratification by all the contracting States in accordance with their respective constitutional requirements.

Article 50

1. Any Member State may decide to withdraw from the Union in accordance with its own constitutional requirements.

2. A Member State which decides to withdraw shall notify the European Council of its intention. In the light of the guidelines provided by the European Council, the Union shall negotiate and conclude an agreement with that State, setting out the arrangements for its withdrawal, taking account of the framework for its future relationship with the Union. That agreement shall be negotiated in accordance with Article 218(3) of the Treaty on the Functioning of the European Union. It shall be concluded on behalf of the Union by the Council, acting by a qualified majority, after obtaining the consent of the European Parliament.

3. The Treaties shall cease to apply to the State in question from the date of entry into force of the withdrawal agreement or, failing that, two years after the notification referred to in paragraph 2, unless the European Council, in agreement with the Member State concerned, unanimously decides to extend this period.

4. For the purposes of paragraphs 2 and 3, the member of the European Council or of the Council representing the withdrawing Member State shall not participate in the discussions of the European Council or Council or in decisions concerning it.

A qualified majority shall be defined in accordance with Article 238(3)(b) of the Treaty on the Functioning of the European Union.

5. If a State which has withdrawn from the Union asks to rejoin, its request shall be subject to the procedure referred to in Article 49.

Article 51

The Protocols and Annexes to the Treaties shall form an integral part thereof.

Article 52

1. The Treaties shall apply to the Kingdom of Belgium, the Republic of Bulgaria, the Czech Republic, the Kingdom of Denmark, the Federal Republic of Germany, the Republic of Estonia, Ireland, the Hellenic Republic, the Kingdom of Spain, the French Republic, the Italian Republic, the Republic of Cyprus, the Republic of Latvia, the Republic of Lithuania, the Grand Duchy of Luxembourg, the Republic of Hungary, the Republic of Malta, the Kingdom of the Netherlands, the Republic of Austria, the Republic of Poland, the Portuguese Republic, Romania, the Republic of Slovenia, the Slovak Republic, the Republic of Finland, the Kingdom of Sweden and the United Kingdom of Great Britain and Northern Ireland.

2. The territorial scope of the Treaties is specified in Article 355 of the Treaty on the Functioning of the European Union.

Article 53

(ex Article 51 TEU)

This Treaty is concluded for an unlimited period.

Article 54

(ex Article 52 TEU)

1. This Treaty shall be ratified by the High Contracting Parties in accordance with their respective constitutional requirements. The instruments of ratification shall be deposited with the Government of the Italian Republic.

2. This Treaty shall enter into force on 1 January 1993, provided that all the Instruments of ratification have been deposited, or, failing that, on the first day of the month following the deposit of the Instrument of ratification by the last signatory State to take this step.

Article 55

(ex Article 53 TEU)

1. This Treaty, drawn up in a single original in the Bulgarian, Czech, Danish, Dutch, English, Estonian, Finnish, French, German, Greek, Hungarian, Irish, Italian, Latvian, Lithuanian, Maltese, Polish, Portuguese, Romanian, Slovak, Slovenian, Spanish and Swedish languages, the texts in each of these languages being equally authentic, shall be deposited in the archives of the Government of the Italian Republic, which will transmit a certified copy to each of the governments of the other signatory States.

2. This Treaty may also be translated into any other languages as determined by Member States among those which, in accordance with their constitutional order, enjoy official status in all or part of their territory. A certified copy of such translations shall be provided by the Member States concerned to be deposited in the archives of the Council.

IN WITNESS WHEREOF the undersigned Plenipotentiaries have signed this Treaty.

Done at Maastricht on the seventh day of February in the year one thousand nine hundred and ninety-two.

(*List of signatories not reproduced*)

Annex 570

Doha Amendment to the Kyoto Protocol, 8 December 2012, 3377 UNTS

UNITED NATIONS NATIONS UNIES

POSTAL ADDRESS—ADRESSE POSTALE: UNITED NATIONS, N.Y. 10017
CABLE ADDRESS—ADRESSE TELEGRAPHIQUE: UNATIONS NEWYORK

Reference: C.N.718.2012.TREATIES-XXVII.7.c (Depositary Notification)

KYOTO PROTOCOL TO THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

KYOTO, 11 DECEMBER 1997

DOHA AMENDMENT TO THE KYOTO PROTOCOL

DOHA, 8 DECEMBER 2012

ADOPTION OF AMENDMENT TO THE PROTOCOL

The Secretary-General of the United Nations, acting in his capacity as depositary, communicates the following:

On 8 December 2012, at the eighth session of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP), held in Doha, Qatar, the Parties adopted, in accordance with Articles 20 and 21 of the Protocol, an Amendment to the Kyoto Protocol by Decision 1/CMP.8.

Pursuant to Article 20, paragraph 4, and Article 21, paragraph 7 of the Kyoto Protocol, the Amendment shall enter into force for those Parties having accepted it, on the ninetieth day after the date of receipt by the Depositary of an instrument of acceptance by at least three fourths of the Parties to the Kyoto Protocol.

In paragraph 5 of decision 1/CMP.8, the CMP recognized that Parties may provisionally apply the Amendment pending its entry into force in accordance with Articles 20 and 21 of the Kyoto Protocol. The Parties intending to provisionally apply the Amendment pending its entry into force in accordance with Articles 20 and 21 of the Protocol may provide notification to the Depositary of their intention to provisionally apply the Amendment.

… A copy of the authentic text of the Amendment in the Arabic, Chinese, English, French, Russian and Spanish languages is attached.

21 December 2012

Attention: Treaty Services of Ministries of Foreign Affairs and of international organizations concerned. Depositary notifications are issued in electronic format only. Depositary notifications are made available to the Permanent Missions to the United Nations in the United Nations Treaty Collection on the Internet at http://treaties.un.org, under "Depositary Notifications (CNs)". In addition, the Permanent Missions, as well as other interested individuals, can subscribe to receive depositary notifications by e-mail through the Treaty Section's "Automated Subscription Services", which is also available at http://treaties.un.org.

Doha amendment to the Kyoto Protocol

Article 1: Amendment

A. Annex B to the Kyoto Protocol

The following table shall replace the table in Annex B to the Protocol:

1	*2*	*3*	*4*	*5*	*6*
Party	*Quantified emission limitation or reduction commitment (2008–2012) (percentage of base year or period)*	*Quantified emission limitation or reduction commitment (2013–2020) (percentage of base year or period)*	*Reference year*[1]	*Quantified emission limitation or reduction commitment (2013–2020) (expressed as percentage of reference year)*[1]	*Pledges for the reduction of greenhouse gas emissions by 2020 (percentage of reference year)*[2]
Australia	108	99.5	2000	98	–5 to –15% or –25%[3]
Austria	92	80[4]	NA	NA	
Belarus[5]*		88	1990	NA	–8%
Belgium	92	80[4]	NA	NA	
Bulgaria*	92	80[4]	NA	NA	
Croatia*	95	80[6]	NA	NA	–20%/–30%[7]
Cyprus		80[4]	NA	NA	
Czech Republic*	92	80[4]	NA	NA	
Denmark	92	80[4]	NA	NA	
Estonia*	92	80[4]	NA	NA	
European Union	92	80[4]	1990	NA	–20%/–30%[7]
Finland	92	80[4]	NA	NA	
France	92	80[4]	NA	NA	
Germany	92	80[4]	NA	NA	
Greece	92	80[4]	NA	NA	
Hungary*	94	80[4]	NA	NA	
Iceland	110	80[8]	NA	NA	
Ireland	92	80[4]	NA	NA	
Italy	92	80[4]	NA	NA	
Kazakhstan*		95	1990	95	–7%
Latvia*	92	80[4]	NA	NA	
Liechtenstein	92	84	1990	84	–20%/–30%[9]
Lithuania*	92	80[4]	NA	NA	
Luxembourg	92	80[4]	NA	NA	
Malta		80[4]	NA	NA	

1	*2*	*3*	*4*	*5*	*6*
Party	*Quantified emission limitation or reduction commitment (2008–2012) (percentage of base year or period)*	*Quantified emission limitation or reduction commitment (2013–2020) (percentage of base year or period)*	*Reference year*[1]	*Quantified emission limitation or reduction commitment (2013–2020) (expressed as percentage of reference year)*[1]	*Pledges for the reduction of greenhouse gas emissions by 2020 (percentage of reference year)*[2]
Monaco	92	78	1990	78	–30%
Netherlands	92	80[4]	NA	NA	
Norway	101	84	1990	84	–30% to –40%[10]
Poland*	94	80[4]	NA	NA	
Portugal	92	80[4]	NA	NA	
Romania*	92	80[4]	NA	NA	
Slovakia*	92	80[4]	NA	NA	
Slovenia*	92	80[4]	NA	NA	
Spain	92	80[4]	NA	NA	
Sweden	92	80[4]	NA	NA	
Switzerland	92	84.2	1990	NA	–20% to –30%[11]
Ukraine*	100	76[12]	1990	NA	–20%
United Kingdom of Great Britain and Northern Ireland	92	80[4]	NA	NA	

Party	*Quantified emission limitation or reduction commitment (2008–2012) (percentage of base year or period)*
Canada[13]	94
Japan[14]	94
New Zealand[15]	100
Russian Federation[16]*	100

Abbreviation: NA = not applicable.

* Countries that are undergoing the process of transition to a market economy.

All footnotes below, except for footnotes 1, 2 and 5, have been provided through communications from the respective Parties.

1 A reference year may be used by a Party on an optional basis for its own purposes to express its quantified emission limitation or reduction commitment (QELRC) as a percentage of emissions of that year, that is not internationally binding under the Kyoto Protocol, in addition to the listing of its QELRC(s) in relation to the base year in the second and third columns of this table, which are internationally legally binding.

2 Further information on these pledges can be found in documents FCCC/SB/2011/INF.1/Rev.1 and FCCC/KP/AWG/2012/MISC.1, Add.1 and Add.2.

[3] Australia's QELRC under the second commitment period of the Kyoto Protocol is consistent with the achievement of Australia's unconditional 2020 target of 5 per cent below 2000 levels. Australia retains the option later to move up within its 2020 target of 5 to 15, or 25 per cent below 2000 levels, subject to certain conditions being met. This reference retains the status of these pledges as made under the Cancun Agreements and does not amount to a new legally binding commitment under this Protocol or its associated rules and modalities.

[4] The QELRCs for the European Union and its member States for a second commitment period under the Kyoto Protocol are based on the understanding that these will be fulfilled jointly with the European Union and its member States, in accordance with Article 4 of the Kyoto Protocol. The QELRCs are without prejudice to the subsequent notification by the European Union and its member States of an agreement to fulfil their commitments jointly in accordance with the provisions of the Kyoto Protocol.

[5] Added to Annex B by an amendment adopted pursuant to decision 10/CMP.2. This amendment has not yet entered into force.

[6] Croatia's QELRC for a second commitment period under the Kyoto Protocol is based on the understanding that it will fulfil this QELRC jointly with the European Union and its member States, in accordance with Article 4 of the Kyoto Protocol. As a consequence, Croatia's accession to the European Union shall not affect its participation in such joint fulfilment agreement pursuant to Article 4 or its QELRC.

[7] As part of a global and comprehensive agreement for the period beyond 2012, the European Union reiterates its conditional offer to move to a 30 per cent reduction by 2020 compared to 1990 levels, provided that other developed countries commit themselves to comparable emission reductions and developing countries contribute adequately according to their responsibilities and respective capabilities.

[8] The QELRC for Iceland for a second commitment period under the Kyoto Protocol is based on the understanding that it will be fulfilled jointly with the European Union and its member States, in accordance with Article 4 of the Kyoto Protocol.

[9] The QELRC presented in column three refers to a reduction target of 20 per cent by 2020 compared to 1990 levels. Liechtenstein would consider a higher reduction target of up to 30 per cent by 2020 compared to 1990 levels under the condition that other developed countries commit themselves to comparable emission reductions and that economically more advanced developing countries contribute adequately according to their responsibilities and respective capabilities.

[10] Norway's QELRC of 84 is consistent with its target of 30 per cent reduction of emissions by 2020, compared to 1990. If it can contribute to a global and comprehensive agreement where major emitting Parties agree on emission reductions in line with the 2° C target, Norway will move to a level of 40 per cent reduction for 2020 based on 1990 levels. This reference retains the status of the pledge made under the Cancun Agreements and does not amount to a new legally binding commitment under this Protocol.

[11] The QELRC presented in the third column of this table refers to a reduction target of 20 per cent by 2020 compared to 1990 levels. Switzerland would consider a higher reduction target up to 30 per cent by 2020 compared to 1990 levels subject to comparable emission reduction commitments from other developed countries and adequate contribution from developing countries according to their responsibilities and capabilities in line with the 2° C target. This reference retains the status of the pledge made under the Cancun Agreements and does not amount to a new legally binding commitment under this Protocol or its associated rules and modalities.

[12] Should be full carry-over and there is no acceptance of any cancellation or any limitation on use of this legitimately acquired sovereign property.

[13] On 15 December 2011, the Depositary received written notification of Canada's withdrawal from the Kyoto Protocol. This action will become effective for Canada on 15 December 2012.

[14] In a communication dated 10 December 2010, Japan indicated that it does not have any intention to be under obligation of the second commitment period of the Kyoto Protocol after 2012.

[15] New Zealand remains a Party to the Kyoto Protocol. It will be taking a quantified economy-wide emission reduction target under the United Nations Framework Convention on Climate Change in the period 2013 to 2020.

[16] In a communication dated 8 December 2010 that was received by the secretariat on 9 December 2010, the Russian Federation indicated that it does not intend to assume a quantitative emission limitation or reduction commitment for the second commitment period.

B. Annex A to the Kyoto Protocol

The following list shall replace the list under the heading "Greenhouse gases" in Annex A to the Protocol:

Greenhouse gases

Carbon dioxide (CO_2)

Methane (CH_4)

Nitrous oxide (N_2O)

Hydrofluorocarbons (HFCs)

Perfluorocarbons (PFCs)

Sulphur hexafluoride (SF_6)

Nitrogen trifluoride (NF_3)[1]

C. Article 3, paragraph 1 bis

The following paragraph shall be inserted after paragraph 1 of Article 3 of the Protocol:

1 bis. The Parties included in Annex I shall, individually or jointly, ensure that their aggregate anthropogenic carbon dioxide equivalent emissions of the greenhouse gases listed in Annex A do not exceed their assigned amounts, calculated pursuant to their quantified emission limitation and reduction commitments inscribed in the third column of the table contained in Annex B and in accordance with the provisions of this Article, with a view to reducing their overall emissions of such gases by at least 18 per cent below 1990 levels in the commitment period 2013 to 2020.

D. Article 3, paragraph 1 ter

The following paragraph shall be inserted after paragraph 1 bis of Article 3 of the Protocol:

1 ter. A Party included in Annex B may propose an adjustment to decrease the percentage inscribed in the third column of Annex B of its quantified emission limitation and reduction commitment inscribed in the third column of the table contained in Annex B. A proposal for such an adjustment shall be communicated to the Parties by the secretariat at least three months before the meeting of the Conference of the Parties serving as the meeting of the Parties to this Protocol at which it is proposed for adoption.

E. Article 3, paragraph 1 quater

The following paragraph shall be inserted after paragraph 1 ter of Article 3 of the Protocol:

1 quater. An adjustment proposed by a Party included in Annex I to increase the ambition of its quantified emission limitation and reduction commitment in accordance with Article 3, paragraph 1 ter, above shall be considered adopted by the Conference of the Parties serving as the meeting of the Parties to this Protocol unless more than three-fourths of the Parties present and voting object to its adoption. The adopted adjustment shall be communicated by the secretariat to the Depositary, who shall circulate it to all Parties, and

[1] Applies only from the beginning of the second commitment period.

shall enter into force on 1 January of the year following the communication by the Depositary. Such adjustments shall be binding upon Parties.

F. Article 3, paragraph 7 bis

The following paragraphs shall be inserted after paragraph 7 of Article 3 of the Protocol:

7 bis. In the second quantified emission limitation and reduction commitment period, from 2013 to 2020, the assigned amount for each Party included in Annex I shall be equal to the percentage inscribed for it in the third column of the table contained in Annex B of its aggregate anthropogenic carbon dioxide equivalent emissions of the greenhouse gases listed in Annex A in 1990, or the base year or period determined in accordance with paragraph 5 above, multiplied by eight. Those Parties included in Annex I for whom land-use change and forestry constituted a net source of greenhouse gas emissions in 1990 shall include in their 1990 emissions base year or period the aggregate anthropogenic carbon dioxide equivalent emissions by sources minus removals by sinks in 1990 from land-use change for the purposes of calculating their assigned amount.

G. Article 3, paragraph 7 ter

The following paragraph shall be inserted after paragraph 7 bis of Article 3 of the Protocol:

7 ter. Any positive difference between the assigned amount of the second commitment period for a Party included in the Annex I and average annual emissions for the first three years of the preceding commitment period multiplied by eight shall be transferred to the cancellation account of that Party.

H. Article 3, paragraph 8

In paragraph 8 of Article 3 of the Protocol, the words:

> calculation referred to in paragraph 7 above

shall be substituted by:

> calculations referred to in paragraphs 7 and 7 bis above

I. Article 3, paragraph 8 bis

The following paragraph shall be inserted after paragraph 8 of Article 3 of the Protocol:

8 bis. Any Party included in Annex I may use 1995 or 2000 as its base year for nitrogen trifluoride for the purposes of the calculation referred to in paragraph 7 bis above.

J. Article 3, paragraphs 12 bis and ter

The following paragraphs shall be inserted after paragraph 12 of Article 3 of the Protocol:

12 bis. Any units generated from market-based mechanisms to be established under the Convention or its instruments may be used by Parties included in Annex I to assist them in achieving compliance with their quantified emission limitation and reduction commitments under Article 3. Any such units which a Party acquires from another Party to the

Convention shall be added to the assigned amount for the acquiring Party and subtracted from the quantity of units held by the transferring Party.

12 ter. The Conference of the Parties serving as the meeting of the Parties to this Protocol shall ensure that, where units from approved activities under market-based mechanisms referred to in paragraph 12 bis above are used by Parties included in Annex I to assist them in achieving compliance with their quantified emission limitation and reduction commitments under Article 3, a share of these units is used to cover administrative expenses, as well as to assist developing country Parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation if these units are acquired under Article 17.

K. Article 4, paragraph 2

The following words shall be added to the end of the first sentence of paragraph 2 of Article 4 of the Protocol:

, or on the date of deposit of their instruments of acceptance of any amendment to Annex B pursuant to Article 3, paragraph 9

L. Article 4, paragraph 3

In paragraph 3 of Article 4 of the Protocol, the words:

, paragraph 7

shall be substituted by:

to which it relates

Article 2: Entry into force

This amendment shall enter into force in accordance with Articles 20 and 21 of the Kyoto Protocol.

I hereby certify that the foregoing text is a true copy of the Doha Amendment to the Kyoto Protocol adopted on 8 December 2012, at the eighth session of the Conference of the Parties serving at the meeting of the Parties to the Kyoto Protocol to the United Nations Framework Convention on Climate Change, held in Doha, Qatar.

Je certifie que le texte qui précède est une copie conforme de l'Amendement de Doha au Protocole de Kyoto adopté le 8 décembre 2012, lors de la huitième session de la Conférence des Parties agissant comme réunion des Parties au Protocole de Kyoto à la Convention-cadre des Nations Unies sur les changements climatiques, tenue à Doha, Qatar.

For the Assistant Secretary-General,
in charge of the Office of
Legal Affairs

Pour le Sous-Secrétaire général,
chargé du Bureau des
affaires juridiques

Stephen Mathias

United Nations
New York, 21 December 2012

Nations Unies
New York, le 21 décembre 2012

Annex 571

UN General Assembly Resolution 10/15 (2004), A/RES/ES-10/15, 2 August 2004

General Assembly

Distr.: General
2 August 2004

Tenth emergency special session
Agenda item 5

Resolution adopted by the General Assembly

[*without reference to a Main Committee (A/ES-10/L.18/Rev.1)*]

ES-10/15. Advisory opinion of the International Court of Justice on the *Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory*, including in and around East Jerusalem

The General Assembly,

Guided by the principles enshrined in the Charter of the United Nations,

Considering that the promotion of respect for the obligations arising from the Charter and other instruments and rules of international law is among the basic purposes and principles of the United Nations,

Recalling its resolution 2625 (XXV) of 24 October 1970, on the Declaration on Principles of International Law concerning Friendly Relations and Cooperation among States in accordance with the Charter of the United Nations,

Reaffirming the illegality of any territorial acquisition resulting from the threat or use of force,

Recalling the Regulations annexed to the Hague Convention Respecting the Laws and Customs of War on Land of 1907,[1]

Recalling also the Geneva Convention relative to the Protection of Civilian Persons in Time of War of 12 August 1949,[2] and relevant provisions of customary law, including those codified in Additional Protocol I to the Geneva Conventions,[3]

Recalling further the International Covenant on Civil and Political Rights,[4] the International Covenant on Economic, Social and Cultural Rights[4] and the Convention on the Rights of the Child,[5]

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[1] See Carnegie Endowment for International Peace, *The Hague Conventions and Declarations of 1899 and 1907* (New York, Oxford University Press, 1915).

[2] United Nations, *Treaty Series*, vol. 75, No. 973.

[3] Ibid., vol. 1125, No. 17512.

[4] See resolution 2200 A (XXI), annex.

[5] Resolution 44/25, annex.

Reaffirming the permanent responsibility of the United Nations towards the question of Palestine until it is resolved in all aspects in a satisfactory manner on the basis of international legitimacy,

Recalling relevant Security Council resolutions, including resolutions 242 (1967) of 22 November 1967, 338 (1973) of 22 October 1973, 446 (1979) of 22 March 1979, 452 (1979) of 20 July 1979, 465 (1980) of 1 March 1980, 476 (1980) of 30 June 1980, 478 (1980) of 20 August 1980, 904 (1994) of 18 March 1994, 1073 (1996) of 28 September 1996, 1397 (2002) of 12 March 2002, 1515 (2003) of 19 November 2003 and 1544 (2004) of 19 May 2004,

Recalling also the resolutions of its tenth emergency special session on illegal Israeli actions in Occupied East Jerusalem and the rest of the Occupied Palestinian Territory,

Reaffirming the most recent resolution of the fifty-eighth session of the General Assembly on the status of the Occupied Palestinian Territory, including East Jerusalem, resolution 58/292 of 6 May 2004,

Reaffirming also the right of the Palestinian people to self-determination, including their right to their independent State of Palestine,

Reaffirming further the commitment to the two-State solution of Israel and Palestine, living side by side in peace and security within recognized borders, based on the pre-1967 borders,

Condemning all acts of violence, terrorism and destruction,

Calling upon both parties to fulfil their obligations under relevant provisions of the road map,[6] the Palestinian Authority to undertake visible efforts on the ground to arrest, disrupt and restrain individuals and groups conducting and planning violent attacks, and the Government of Israel to take no actions undermining trust, including deportations and attacks on civilians and extrajudicial killings,

Reaffirming that all States have the right and the duty to take actions in conformity with international law and international humanitarian law to counter deadly acts of violence against their civilian population in order to protect the lives of their citizens,

Recalling its resolution ES-10/13 of 21 October 2003, in which it demanded that Israel stop and reverse the construction of the wall in the Occupied Palestinian Territory, including in and around East Jerusalem,

Recalling also its resolution ES-10/14 of 8 December 2003, in which it requested the International Court of Justice to urgently render an advisory opinion on the following question:

> "What are the legal consequences arising from the construction of the wall being built by Israel, the occupying Power, in the Occupied Palestinian Territory, including in and around East Jerusalem, as described in the report of the Secretary-General, considering the rules and principles of international law, including the Fourth Geneva Convention, of 1949, and relevant Security Council and General Assembly resolutions?",

[6] S/2003/529, annex.

Having received with respect the advisory opinion of the Court on the *Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory*, rendered on 9 July 2004,[7]

Noting in particular that the Court replied to the question put forth by the General Assembly in resolution ES-10/14 as follows:[8]

"A. The construction of the wall being built by Israel, the occupying Power, in the Occupied Palestinian Territory, including in and around East Jerusalem, and its associated regime, are contrary to international law;

"B. Israel is under an obligation to terminate its breaches of international law; it is under an obligation to cease forthwith the works of construction of the wall being built in the Occupied Palestinian Territory, including in and around East Jerusalem, to dismantle forthwith the structure therein situated, and to repeal or render ineffective forthwith all legislative and regulatory acts relating thereto, in accordance with paragraph 151 of this Opinion;

"C. Israel is under an obligation to make reparation for all damage caused by the construction of the wall in the Occupied Palestinian Territory, including in and around East Jerusalem;

"D. All States are under an obligation not to recognize the illegal situation resulting from the construction of the wall and not to render aid or assistance in maintaining the situation created by such construction; all States Parties to the Fourth Geneva Convention relative to the Protection of Civilian Persons in Time of War of 12 August 1949 have in addition the obligation, while respecting the United Nations Charter and international law, to ensure compliance by Israel with international humanitarian law as embodied in that Convention;

"E. The United Nations, and especially the General Assembly and the Security Council, should consider what further action is required to bring to an end the illegal situation resulting from the construction of the wall and the associated regime, taking due account of the present Advisory Opinion.",

Noting that the Court concluded that "the Israeli settlements in the Occupied Palestinian Territory (including East Jerusalem) have been established in breach of international law",[9]

Noting also the statement made by the Court that "Israel and Palestine are under an obligation scrupulously to observe the rules of international humanitarian law, one of the paramount purposes of which is to protect civilian life",[10] and that "in the Court's view, this tragic situation can be brought to an end only through implementation in good faith of all relevant Security Council resolutions, in particular resolutions 242 (1967) and 338 (1973)",[10]

Considering that respect for the Court and its functions is essential to the rule of law and reason in international affairs,

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[7] See A/ES-10/273 and Corr.1.

[8] Ibid., para. 163.

[9] Ibid., para. 120.

[10] Ibid., para. 162.

1. *Acknowledges* the advisory opinion of the International Court of Justice of 9 July 2004 on the *Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory*,[7] including in and around East Jerusalem;

2. *Demands* that Israel, the occupying Power, comply with its legal obligations as mentioned in the advisory opinion;

3. *Calls upon* all States Members of the United Nations to comply with their legal obligations as mentioned in the advisory opinion;

4. *Requests* the Secretary-General to establish a register of damage caused to all natural or legal persons concerned in connection with paragraphs 152 and 153 of the advisory opinion;

5. *Decides* to reconvene to assess the implementation of the present resolution, with the aim of ending the illegal situation resulting from the construction of the wall and its associated regime in the Occupied Palestinian Territory, including East Jerusalem;

6. *Calls upon* both the Government of Israel and the Palestinian Authority to immediately implement their obligations under the road map,[6] in cooperation with the Quartet, as endorsed by Security Council resolution 1515 (2003), to achieve the vision of two States living side by side in peace and security, and emphasizes that both Israel and the Palestinian Authority are under an obligation scrupulously to observe the rules of international humanitarian law;

7. *Calls upon* all States parties to the Fourth Geneva Convention[2] to ensure respect by Israel for the Convention, and invites Switzerland, in its capacity as the depositary of the Geneva Conventions,[11] to conduct consultations and to report to the General Assembly on the matter, including with regard to the possibility of resuming the Conference of High Contracting Parties to the Fourth Geneva Convention;

8. *Decides* to adjourn the tenth emergency special session temporarily and to authorize the President of the General Assembly at its most recent session to resume its meeting upon request from Member States.

27th plenary meeting
20 July 2004

[11] United Nations, *Treaty Series*, vol. 75, Nos. 970–973.

Annex 572

UN General Assembly Resolution 73/295 (2019), A/RES/73/295, 24 May 2019

United Nations A/RES/73/295

General Assembly

Distr.: General
24 May 2019

Seventy-third session
Agenda item 88

Resolution adopted by the General Assembly on 22 May 2019

[*without reference to a Main Committee (A/73/L.84/Rev.1 and A/73/L.84/Rev.1/Add.1)*]

73/295. Advisory opinion of the International Court of Justice on the legal consequences of the separation of the Chagos Archipelago from Mauritius in 1965

The General Assembly,

Guided by the principles enshrined in the Charter of the United Nations, including the inalienable right of self-determination of peoples,

Considering that respect for the obligations arising from the Charter and other instruments and rules of international law is among the basic purposes and principles of the United Nations,

Recalling its resolution 71/292 of 22 June 2017, by which it decided, in accordance with Article 96 of the Charter, to request the International Court of Justice, pursuant to Article 65 of the Statute of the Court, to render an advisory opinion on the following two questions relating to the legal consequences of the separation of the Chagos Archipelago from Mauritius in 1965:

(a) "Was the process of decolonization of Mauritius lawfully completed when Mauritius was granted independence in 1968, following the separation of the Chagos Archipelago from Mauritius and having regard to international law, including obligations reflected in General Assembly resolutions 1514 (XV) of 14 December 1960, 2066 (XX) of 16 December 1965, 2232 (XXI) of 20 December 1966 and 2357 (XXII) of 19 December 1967?",

(b) "What are the consequences under international law, including obligations reflected in the above-mentioned resolutions, arising from the continued administration by the United Kingdom of Great Britain and Northern Ireland of the Chagos Archipelago, including with respect to the inability of Mauritius to implement a programme for the resettlement on the Chagos Archipelago of its nationals, in particular those of Chagossian origin?",

Please recycle

Having received the advisory opinion of the Court, rendered on 25 February 2019,[1] in which the Court found that:

(a) "The process of decolonization of Mauritius was not lawfully completed when that country acceded to independence in 1968, following the separation of the Chagos Archipelago",

(b) "The United Kingdom is under an obligation to bring to an end its administration of the Chagos Archipelago as rapidly as possible",

(c) "All Member States are under an obligation to co-operate with the United Nations in order to complete the decolonization of Mauritius",

(d) "As regards the resettlement on the Chagos Archipelago of Mauritian nationals, including those of Chagossian origin, this is an issue relating to the protection of the human rights of those concerned, which should be addressed by the General Assembly during the completion of the decolonization of Mauritius",

Considering that respect for the Court and its functions, including in the exercise of its advisory jurisdiction, is essential to international law and justice and to an international order based on the rule of law,

Reaffirming the responsibility of the United Nations, in accordance with resolution 1514 (XV), to assist in the process of decolonization of Mauritius,

1. *Welcomes* the advisory opinion of the International Court of Justice of 25 February 2019 on the legal consequences of the separation of the Chagos Archipelago from Mauritius in 1965;[1]

2. *Affirms*, in accordance with the advisory opinion of the Court, that:

(a) Because the detachment of the Chagos Archipelago was not based on the free and genuine expression of the will of the people of Mauritius, the decolonization of Mauritius has not been lawfully completed;

(b) The Chagos Archipelago forms an integral part of the territory of Mauritius;

(c) Since the decolonization of Mauritius was not conducted in a manner consistent with the right of peoples to self-determination, it follows that the continued administration of the Chagos Archipelago by the United Kingdom of Great Britain and Northern Ireland constitutes a wrongful act entailing the international responsibility of that State;

(d) The United Kingdom is under an obligation to bring to an end its administration of the Chagos Archipelago as rapidly as possible;

(e) Since respect for the right to self-determination is an obligation *erga omnes*, all States have a legal interest in protecting that right and all Member States are under an obligation to cooperate with the United Nations in order to complete the decolonization of Mauritius;

(f) The resettlement of Mauritian nationals, including those of Chagossian origin, must be addressed as a matter of urgency during the completion of the decolonization process;

3. *Demands* that the United Kingdom of Great Britain and Northern Ireland withdraw its colonial administration from the Chagos Archipelago unconditionally within a period of no more than six months from the adoption of the present resolution, thereby enabling Mauritius to complete the decolonization of its territory as rapidly as possible;

[1] See A/73/773.

4. *Urges* the United Kingdom of Great Britain and Northern Ireland to cooperate with Mauritius in facilitating the resettlement of Mauritian nationals, including those of Chagossian origin, in the Chagos Archipelago, and to pose no impediment or obstacle to such resettlement;

5. *Calls upon* all Member States to cooperate with the United Nations to ensure the completion of the decolonization of Mauritius as rapidly as possible, and to refrain from any action that will impede or delay the completion of the process of decolonization of Mauritius in accordance with the advisory opinion of the Court and the present resolution;

6. *Calls upon* the United Nations and all its specialized agencies to recognize that the Chagos Archipelago forms an integral part of the territory of Mauritius, to support the decolonization of Mauritius as rapidly as possible, and to refrain from impeding that process by recognizing, or giving effect to any measure taken by or on behalf of, the "British Indian Ocean Territory";

7. *Calls upon* all other international, regional and intergovernmental organizations, including those established by treaty, to recognize that the Chagos Archipelago forms an integral part of the territory of Mauritius, to support the decolonization of Mauritius as rapidly as possible, and to refrain from impeding that process by recognizing, or giving effect to any measure taken by or on behalf of, the "British Indian Ocean Territory";

8. *Requests* the Secretary-General to submit a report to the General Assembly at its seventy-fourth session on the implementation of the present resolution, including any actions taken by the United Kingdom of Great Britain and Northern Ireland and other Member States.

83rd plenary meeting
22 May 2019

Annex 573

Greek Civil Code, Articles 1003 and 1108 (Greek original and English machine translation)

Translated Extract of '*Greek Civil Code, Articles 1003 and 1108'*

[. . .]

Article 1003 - Ownership restrictions, emissions.

The property owner has the obligation to tolerate the emission of smoke, soot, fumes, heat, noise, vibration or other similar effects emanating from another property, as long as they do not significantly interfere with the use of his property or come from use normal for properties in the area of the property from which the damage is caused.

[. . .]

Article 1108 - Negative action

If the ownership is infringed in any way other than by removal or retention of the thing, the owner is entitled to require the person who has infringed the ownership to remove the infringement and to refrain from doing so in the future. No further claim for damages shall be excluded under the provisions on tort/delict. The right referred to in the preceding paragraph shall not be granted if the person who committed the infringement acted pursuant to a right.

[. . .]

AstikosKodikas, Articles 1003 and 1108

[. . .]

Άρθρο 1003 - Περιορισμοί κυριότητας, εκπομπές.

Ο κύριος ακινήτου έχει υποχρέωση να ανέχεται την εκπομπή καπνού, αιθάλης, αναθυμιάσεων, θερμότητας, θορύβου, δονήσεων ή άλλες παρόμοιες επενέργειες που προέρχονται από άλλο ακίνητο, εφόσον αυτές δεν παραβλάπτουν σημαντικά τη χρήση του ακινήτου του ή προέρχονται από χρήση συνήθη για ακίνητα της περιοχής του κτήματος από το οποίο προκαλείται η βλάβη.

[. . .]

Άρθρο 1108 - Αρνητική αγωγή

Αν η κυριότητα προσβάλλεται με άλλο τρόπο εκτός από αφαίρεση ή κατακράτηση του πράγματος, ο κύριος δικαιούται να απαιτήσει από εκείνον που προσέβαλε την κυριότητα, να άρει την προσβολή και να την παραλείπει στο μέλλον. Δεν αποκλείεται περαιτέρω αξίωση αποζημίωσης κατά τις διατάξεις για τις αδικοπραξίες. Το δικαίωμα της προηγούμενης παραγράφου δεν παρέχεται, αν εκείνος που έκανε την προσβολή ενέργησε δυνάμει δικαιώματος.

[. . .]

Annex 574

Constitution of the Republic of Korea, 17 July 1948, as amended from time to time and updated in 1987

THE CONSTITUTION OF THE REPUBLIC OF KOREA

Jul. 17, 1948
Amended by Jul. 7, 1952
Nov. 29, 1954
Jun. 15, 1960
Nov. 29, 1960
Dec. 26, 1962
Oct. 21, 1969
Dec. 27, 1972
Oct. 27, 1980
Oct. 29, 1987

PREAMBLE

We, the people of Korea, proud of a resplendent history and traditions dating from time immemorial, upholding the cause of the Provisional Republic of Korea Government born of the March First Independence Movement of 1919 and the democratic ideals of the April Nineteenth Uprising of 1960 against injustice, having assumed the mission of democratic reform and peaceful unification of our homeland and having determined to consolidate national unity with justice, humanitarianism and brotherly love, and

To destroy all social vices and injustice, and

To afford equal opportunities to every person and provide for the fullest development of individual capabilities in all fields, including political, economic, social and cultural life by further strengthening the basic free and democratic order conducive to private initiative and public harmony, and

To help each person discharge those duties and responsibilities concomitant to freedoms and rights, and

To elevate the quality of life for all citizens and contribute to lasting world peace and the common prosperity of mankind and thereby to ensure security, liberty and happiness for ourselves and our posterity forever, Do hereby amend, through national referendum following a resolution by the National Assembly, the Constitution, ordained and established on the Twelfth Day of July anno Domini Nineteen hundred and forty-eight, and amended eight times subsequently.

Oct. 29, 1987

CHAPTER I GENERAL PROVISIONS

Article 1

(1) The Republic of Korea shall be a democratic republic.

(2) The sovereignty of the Republic of Korea shall reside in the people, and all state authority shall emanate from the people.

Article 2

(1) Nationality in the Republic of Korea shall be prescribed by Act.

(2) It shall be the duty of the State to protect citizens residing abroad as prescribed by Act.

Article 3

The territory of the Republic of Korea shall consist of the Korean peninsula and its adjacent islands.

Article 4

The Republic of Korea shall seek unification and shall formulate and carry out a policy of peaceful unification

based on the principles of freedom and democracy.

Article 5

(1) The Republic of Korea shall endeavor to maintain international peace and shall renounce all aggressive wars.

(2) The Armed Forces shall be charged with the sacred mission of national security and the defense of the land and their political neutrality shall be maintained.

Article 6

(1) Treaties duly concluded and promulgated under the Constitution and the generally recognized rules of international law shall have the same effect as the domestic laws of the Republic of Korea.

(2) The status of aliens shall be guaranteed as prescribed by international law and treaties.

Article 7

(1) All public officials shall be servants of the entire people and shall be responsible for the people.

(2) The status and political impartiality of public officials shall be guaranteed as prescribed by Act.

Article 8

(1) The establishment of political parties shall be free, and the plural party system shall be guaranteed.

(2) Political parties shall be democratic in their objectives, organization and activities, and shall have the necessary organizational arrangements for the people to participate in the formation of the political will.

(3) Political parties shall enjoy the protection of the State and may be provided with operational funds by the State under the conditions as prescribed by Act.

(4) If the purposes or activities of a political party are

contrary to the fundamental democratic order, the Government may bring an action against it in the Constitutional Court for its dissolution, and the political party shall be dissolved in accordance with the decision of the Constitutional Court.

Article 9

The State shall strive to sustain and develop the cultural heritage and to enhance national culture.

CHAPTER II RIGHTS AND DUTIES OF CITIZENS

Article 10

All citizens shall be assured of human dignity and worth and have the right to pursue happiness. It shall be the duty of the State to confirm and guarantee the fundamental and inviolable human rights of individuals.

Article 11

(1) All citizens shall be equal before the law, and there shall be no discrimination in political, economic, social or cultural life on account of sex, religion or social status.

(2) No privileged caste shall be recognized or ever established in any form.

(3) The awarding of decorations or distinctions of honor in any form shall be effective only for recipients, and no privileges shall ensue therefrom.

Article 12

(1) All citizens shall enjoy personal liberty. No person shall be arrested, detained, searched, seized or interrogated except as provided by Act. No person shall be punished, placed under preventive restrictions or subject to involuntary labor

except as provided by Act and through lawful procedures.
(2) No citizens shall be tortured or be compelled to testify against himself in criminal cases.
(3) Warrants issued by a judge through due procedures upon the request of a prosecutor shall be presented in case of arrest, detention, seizure or search: *Provided*, That in a case where a criminal suspect is an apprehended *flagrante delicto*, or where there is danger that a person suspected of committing a crime punishable by imprisonment of three years or more may escape or destroy evidence, investigative authorities may request an *ex post facto* warrant.
(4) Any person who is arrested or detained shall have the right to prompt assistance of counsel. When a criminal defendant is unable to secure counsel by his own efforts, the State shall assign counsel for the defendant as prescribed by Act.
(5) No person shall be arrested or detained without being informed of the reason therefor and of his right to assistance of counsel. The family, etc., as designated by Act, of a person arrested or detained shall be notified without delay of the reason for and the time and place of the arrest or detention.
(6) Any person who is arrested or detained, shall have the right to request the court to review the legality of the arrest or detention.
(7) In a case where a confession is deemed to have been made against a defendant's will due to torture, violence, intimidation, unduly prolonged arrest, deceit or etc., or in a case where a confession is the only evidence against a defendant in a formal trial, such a confession shall not be

admitted as evidence of guilt, nor shall a defendant be punished by reason of such a confession.

Article 13

(1) No citizen shall be prosecuted for an act which does not constitute a crime under the Act in force at the time it was committed, nor shall he be placed in double jeopardy.

(2) No restrictions shall be imposed upon the political rights of any citizen, nor shall any person be deprived of property rights by means of retroactive legislation.

(3) No citizen shall suffer unfavorable treatment on account of an act not of his own doing but committed by a relative.

Article 14

All citizens shall enjoy freedom of residence and the right to move at will.

Article 15

All citizens shall enjoy freedom of occupation.

Article 16

All citizens shall be free from intrusion into their place of residence. In case of search or seizure in a residence, a warrant issued by a judge upon request of a prosecutor shall be presented.

Article 17

The privacy of no citizen shall be infringed.

Article 18

The privacy of correspondence of no citizen shall be infringed.

Article 19

All citizens shall enjoy freedom of conscience.

Article 20

(1) All citizens shall enjoy freedom of religion.

(2) No state religion shall be recognized, and church and state shall be separated.

Article 21

(1) All citizens shall enjoy freedom of speech and the press, and freedom of assembly and association.

(2) Licensing or censorship of speech and the press, and licensing of assembly and association shall not be permitted.

(3) The standards of news service and broadcast facilities and matters necessary to ensure the functions of newspapers shall be determined by Act.

(4) Neither speech nor the press shall violate the honor or rights of other persons nor undermine public morals or social ethics. Should speech or the press violate the honor or rights of other persons, claims may be made for the damage resulting therefrom.

Article 22

(1) All citizens shall enjoy freedom of learning and the arts.

(2) The rights of authors, inventors, scientists, engineers and artists shall be protected by Act.

Article 23

(1) The right of property of all citizens shall be guaranteed. The contents and limitations thereof shall be determined by Act.

(2) The exercise of property rights shall conform to the public welfare.

(3) Expropriation, use or restriction of private property from public necessity and compensation therefor shall be governed by Act: *Provided*, That in such a case, just compensation shall be paid.

Article 24

All citizens shall have the right to vote under the conditions as prescribed by Act.

Article 25

All citizens shall have the right to hold public office under the conditions as prescribed by Act.

Article 26

(1) All citizens shall have the right to petition in writing to any governmental agency under the conditions as prescribed by Act.

(2) The State shall be obligated to examine all such petitions.

Article 27

(1) All citizens shall have the right to trial in conformity with the Act by judges qualified under the Constitution and the Act.

(2) Citizens who are not on active military service or employees of the military forces shall not be tried by a court martial within the territory of the Republic of Korea, except in case of crimes as prescribed by Act involving important classified military information, sentinels, sentry posts, the supply of harmful food and beverages, prisoners of war and military articles and facilities and in the case of the proclamation of extraordinary martial law.

(3) All citizens shall have the right to a speedy trial. The accused shall have the right to a public trial without delay in the absence of justifiable reasons to the contrary.

(4) The accused shall be presumed innocent until a judgment of guilt has been pronounced.

(5) A victim of a crime shall be entitled to make a statement

during the proceedings of the trial of the case involved as under the conditions prescribed by Act.

Article 28

In a case where a criminal suspect or an accused person who has been placed under detention is not indicted as provided by Act or is acquitted by a court, he shall be entitled to claim just compensation from the State under the conditions as prescribed by Act.

Article 29

(1) In case a person has sustained damages by an unlawful act committed by a public official in the course of official duties, he may claim just compensation from the State or public organization under the conditions as prescribed by Act. In this case, the public official concerned shall not be immune from liabilities.

(2) In case a person on active military service or an employee of the military forces, a police official or others as prescribed by Act sustains damages in connection with the performance of official duties such as combat action, drill and so forth, he shall not be entitled to a claim against the State or public organization on the grounds of unlawful acts committed by public officials in the course of official duties, but shall be entitled only to compensations as prescribed by Act.

Article 30

Citizens who have suffered bodily injury or death due to criminal acts of others may receive aid from the State under the conditions as prescribed by Act.

Article 31

(1) All citizens shall have an equal right to an education

corresponding to their abilities.

(2) All citizens who have children to support shall be responsible at least for their elementary education and other education as provided by Act.

(3) Compulsory education shall be free of charge.

(4) Independence, professionalism and political impartiality of education and the autonomy of institutions of higher learning shall be guaranteed under the conditions as prescribed by Act.

(5) The State shall promote lifelong education.

(6) Fundamental matters pertaining to the educational system, including in-school and lifelong education, administration, finance, and the status of teachers shall be determined by Act.

Article 32

(1) All citizens shall have the right to work. The State shall endeavor to promote the employment of workers and to guarantee optimum wages through social and economic means and shall enforce a minimum wage system under the conditions as prescribed by Act.

(2) All citizens shall have the duty to work. The State shall prescribe by Act the extent and conditions of the duty to work in conformity with democratic principles.

(3) Standards of working conditions shall be determined by Act in such a way as to guarantee human dignity.

(4) Special protection shall be accorded to working women, and they shall not be subjected to unjust discrimination in terms of employment, wages and working conditions.

(5) Special protection shall be accorded to working children.

(6) The opportunity to work shall be accorded preferentially,

under the conditions as prescribed by Act, to those who have given distinguished service to the State, wounded veterans and policemen, and members of the bereaved families of military servicemen and policemen killed in action.

Article 33

(1) To enhance working conditions, workers shall have the right to independent association, collective bargaining and collective action.

(2) Only those public officials who are designated by Act, shall have the right to association, collective bargaining and collective action.

(3) The right to collective action of workers employed by important defense industries may be either restricted or denied under the conditions as prescribed by Act.

Article 34

(1) All citizens shall be entitled to a life worthy of human beings.

(2) The State shall have the duty to endeavor to promote social security and welfare.

(3) The State shall endeavor to promote the welfare and rights of women.

(4) The State shall have the duty to implement policies for enhancing the welfare of senior citizens and the young.

(5) Citizens who are incapable of earning a livelihood due to a physical disability, disease, old age or other reasons shall be protected by the State under the conditions as prescribed by Act.

(6) The State shall endeavor to prevent disasters and to protect citizens from harm therefrom.

Article 35

(1) All citizens shall have the right to a healthy and pleasant environment. The State and all citizens shall endeavor to protect the environment.

(2) The substance of the environmental right shall be determined by Act.

(3) The State shall endeavor to ensure comfortable housing for all citizens through housing development policies and the like.

Article 36

(1) Marriage and family life shall be entered into and sustained on the basis of individual dignity and equality of the sexes, and the State shall do everything in its power to achieve that goal.

(2) The State shall endeavor to protect motherhood.

(3) The health of all citizens shall be protected by the State.

Article 37

(1) Freedoms and rights of citizens shall not be neglected on the grounds that they are not enumerated in the Constitution.

(2) The freedoms and rights of citizens may be restricted by Act only when necessary for national security, the maintenance of law and order or for public welfare. Even when such restriction is imposed, no essential aspect of the freedom or right shall be violated.

Article 38

All citizens shall have the duty to pay taxes under the conditions as prescribed by Act.

Article 39

(1) All citizens shall have the duty of national defense under

the conditions as prescribed by Act.

(2) No citizen shall be treated unfavorably on account of the fulfillment of his obligation of military service.

CHAPTER Ⅲ THE NATIONAL ASSEMBLY

Article 40

The legislative power shall be vested in the National Assembly.

Article 41

(1) The National Assembly shall be composed of members elected by universal, equal, direct and secret ballot by the citizens.

(2) The number of members of the National Assembly shall be determined by Act, but the number shall not be less than 200.

(3) The constituencies of members of the National Assembly, proportional representation and other matters pertaining to National Assembly elections shall be determined by Act.

Article 42

The term of office of members of the National Assembly shall be four years.

Article 43

Members of the National Assembly shall not concurrently hold any other office prescribed by Act.

Article 44

(1) During the sessions of the National Assembly, no member of the National Assembly shall be arrested or detained without the consent of the National Assembly except in case of *flagrante delicto*.

(2) In case of apprehension or detention of a member of the National Assembly prior to the opening of a session, such member shall be released during the session upon the request of the National Assembly, except in case of *flagrante delicto*.

Article 45

No member of the National Assembly shall be held responsible outside the National Assembly for opinions officially expressed or votes cast in the Assembly.

Article 46

(1) Members of the National Assembly shall have the duty to maintain high standards of integrity.

(2) Members of the National Assembly shall give preference to national interests and shall perform their duties in accordance with conscience.

(3) Members of the National Assembly shall not acquire, through abuse of their positions, rights and interests in property or positions, or assist other persons to acquire the same, by means of contracts with or dispositions by the State, public organizations or industries.

Article 47

(1) A regular session of the National Assembly shall be convened once every year under the conditions as prescribed by Act, and extraordinary sessions of the National Assembly shall be convened upon the request of the President or one fourth or more of the total members.

(2) The period of regular sessions shall not exceed a hundred days, and that of extraordinary sessions, thirty days.

(3) If the President requests the convening of an extraordinary session, the period of the session and the reasons

for the request shall be clearly specified.

Article 48

The National Assembly shall elect one Speaker and two Vice-Speakers.

Article 49

Except as otherwise provided for in the Constitution or in Act, the attendance of a majority of the total members, and the concurrent vote of a majority of the members present, shall be necessary for decisions of the National Assembly. In case of a tie vote, the matter shall be regarded as rejected.

Article 50

(1) Sessions of the National Assembly shall be open to the public: *Provided*, That when it is decided so by a majority of the members present, or when the Speaker deems it necessary to do so for the sake of national security, they may be closed to the public.

(2) The public disclosure of the proceedings of sessions which were not open to the public shall be determined by Act.

Article 51

Bills and other matters submitted to the National Assembly for deliberation shall not be abandoned on the ground that they were not acted upon during the session in which they were introduced, except in a case where the term of the members of the National Assembly has expired.

Article 52

Bills may be introduced by members of the National Assembly or by the Executive.

Article 53

(1) Each bill passed by the National Assembly shall be sent

to the Executive, and the President shall promulgate it within fifteen days.

(2) In case of objection to the bill, the President may, within the period referred to in paragraph (1), return it to the National Assembly with written explanation of his objection, and request it be reconsidered. The President may do the same during adjournment of the National Assembly.

(3) The President shall not request the National Assembly to reconsider the bill in part, or with proposed amendments.

(4) In case there is a request for reconsideration of a bill, the National Assembly shall reconsider it, and if the National Assembly repasses the bill in the original form with the attendance of more than one half of the total members, and with a concurrent vote of two thirds or more of the members present, it shall become Act.

(5) If the President does not promulgate the bill, or does not request the National Assembly to reconsider it within the period referred to in paragraph (1), it shall become Act.

(6) The President shall promulgate without delay the Act as finalized under paragraphs (4) and (5). If the President does not promulgate an Act within five days after it has become Act under paragraph (5), or after it has been returned to the Executive under paragraph (4), the Speaker shall promulgate it.

(7) Except as provided otherwise, an Act shall take effect twenty days after the date of promulgation.

Article 54

(1) The National Assembly shall deliberate and decide upon the national budget bill.

(2) The Executive shall formulate the budget bill for each

fiscal year and submit it to the National Assembly within ninety days before the beginning of a fiscal year. The National Assembly shall decide upon it within thirty days before the beginning of the fiscal year.

(3) If the budget bill is not passed by the beginning of the fiscal year, the Executive may, in conformity with the budget of the previous fiscal year, disburse funds for the following purposes until the budget bill is passed by the National Assembly:

1. The maintenance and operation of agencies and facilities established by the Constitution or Act;
2. Execution of the obligatory expenditures as prescribed by Act; and
3. Continuation of projects previously approved in the budget.

Article 55

(1) In a case where it is necessary to make continuing disbursements for a period longer than one fiscal year, the Executive shall obtain the approval of the National Assembly for a specified period of time.

(2) A reserve fund shall be approved by the National Assembly in total. The disbursement of the reserve fund shall be approved during the next session of the National Assembly.

Article 56

When it is necessary to amend the budget, the Executive may formulate a supplementary revised budget bill and submit it to the National Assembly.

Article 57

The National Assembly shall, without the consent of the

Executive, neither increase the sum of any item of expenditure nor create any new items of expenditure in the budget submitted by the Executive.

Article 58

When the Executive plans to issue national bonds or to conclude contracts which may incur financial obligations on the State outside the budget, it shall have the prior concurrence of the National Assembly.

Article 59

Types and rates of taxes shall be determined by Act.

Article 60

(1) The National Assembly shall have the right to consent to the conclusion and ratification of treaties pertaining to mutual assistance or mutual security; treaties concerning important international organizations; treaties of friendship, trade and navigation; treaties pertaining to any restriction in sovereignty; peace treaties; treaties which will burden the State or people with an important financial obligation; or treaties related to legislative matters.

(2) The National Assembly shall also have the right to consent to the declaration of war, the dispatch of armed forces to foreign states, or the stationing of alien forces in the territory of the Republic of Korea.

Article 61

(1) The National Assembly may inspect affairs of state or investigate specific matters of state affairs, and may demand the production of documents directly related thereto, the appearance of a witness in person and the furnishing of testimony or statements of opinion.

(2) The procedures and other necessary matters concerning

the inspection and investigation of state administration shall be determined by Act.

Article 62

(1) The Prime Minister, members of the State Council or government delegates may attend meetings of the National Assembly or its committees and report on the state administration or deliver opinions and answer questions.

(2) When requested by the National Assembly or its committees, the Prime Minister, members of the State Council or government delegates shall attend any meeting of the National Assembly and answer questions. If the Prime Minister or State Council members are requested to attend, the Prime Minister or State Council members may have State Council members or government delegates attend any meeting of the National Assembly and answer questions.

Article 63

(1) The National Assembly may pass a recommendation for the removal of the Prime Minister or a State Council member from office.

(2) A recommendation for removal as referred to in paragraph (1) may be introduced by one third or more of the total members of the National Assembly, and shall be passed with the concurrent vote of a majority of the total members of the National Assembly.

Article 64

(1) The National Assembly may establish the rules of its proceedings and internal regulations: *Provided*, That they are not in conflict with Act.

(2) The National Assembly may review the qualifications of its members and may take disciplinary actions against its

members.

(3) The concurrent vote of two thirds or more of the total members of the National Assembly shall be required for the expulsion of any member.

(4) No action shall be brought to court with regard to decisions taken under paragraphs (2) and (3).

Article 65

(1) In case the President, the Prime Minister, members of the State Council, heads of Executive Ministries, Justices of the Constitutional Court, judges, members of the National Election Commission, the Chairman and members of the Board of Audit and Inspection, and other public officials designated by Act have violated the Constitution or other Acts in the performance of official duties, the National Assembly may pass motions for their impeachment.

(2) A motion for impeachment prescribed in paragraph (1) may be proposed by one third or more of the total members of the National Assembly, and shall require a concurrent vote of a majority of the total members of the National Assembly for passage: *Provided*, That a motion for the impeachment of the President shall be proposed by a majority of the total members of the National Assembly and approved by two thirds or more of the total members of the National Assembly.

(3) Any person against whom a motion for impeachment has been passed shall be suspended from exercising his power until the impeachment has been adjudicated.

(4) A decision on impeachment shall not extend further than removal from public office: *Provided*, That it shall not exempt the person impeached from civil or criminal liability.

CHAPTER Ⅳ THE EXECUTIVE

SECTION 1 The President

Article 66

(1) The President shall be the Head of State and represent the State vis-a-vis foreign states.

(2) The President shall have the responsibility and duty to safeguard the independence, territorial integrity and continuity of the State and the Constitution.

(3) The President shall have the duty to pursue sincerely the peaceful unification of the homeland.

(4) Executive power shall be vested in the Executive Branch headed by the President.

Article 67

(1) The President shall be elected by universal, equal, direct and secret ballot by the people.

(2) In case two or more persons receive the same largest number of votes in the election as referred to in paragraph (1), the person who receives the largest number of votes in an open session of the National Assembly attended by a majority of the total members of the National Assembly shall be elected.

(3) If and when there is only one presidential candidate, he shall not be elected President unless he receives at least one third of the total eligible votes.

(4) Citizens who are eligible for election to the National Assembly, and who have reached the age of forty years or more on the date of the presidential election, shall be eligible to be elected to the presidency.

(5) Matters pertaining to presidential elections shall be determined by Act.

Article 68

(1) The successor to the incumbent President shall be elected seventy to forty days before his term expires.

(2) In case a vacancy occurs in the office of the President or the President-elect dies, or is disqualified by a court ruling or for any other reason, a successor shall be elected within sixty days.

Article 69

The President, at the time of his inauguration, shall take the following oath: "I do solemnly swear before the people that I will faithfully execute the duties of the President by observing the Constitution, defending the State, pursuing the peaceful unification of the homeland, promoting the freedom and welfare of the people and endeavoring to develop national culture."

Article 70

The term of office of the President shall be five years, and the President shall not be reelected.

Article 71

If the office of the presidency is vacant or the President is unable to perform his duties for any reason, the Prime Minister or the members of the State Council in the order of priority as determined by Act shall act for him.

Article 72

The President may submit important policies relating to diplomacy, national defense, unification and other matters relating to the national destiny to a national referendum if he deems it necessary.

Article 73

The President shall conclude and ratify treaties; accredit, receive or dispatch diplomatic envoys; and declare war and conclude peace.

Article 74

(1) The President shall be Commander-in-Chief of the Armed Forces under the conditions as prescribed by the Constitution and Act.

(2) The organization and formation of the Armed Forces shall be determined by Act.

Article 75

The President may issue presidential decrees concerning matters delegated to him by Act with the scope specifically defined and also matters necessary to enforce Acts.

Article 76

(1) In time of internal turmoil, external menace, natural calamity or a grave financial or economic crisis, the President may take in respect to them the minimum necessary financial and economic actions or issue orders having the effect of Act, only when it is required to take urgent measures for the maintenance of national security or public peace and order, and there is no time to await the convocation of the National Assembly.

(2) In case of major hostilities affecting national security, the President may issue orders having the effect of Act, only when it is required to preserve the integrity of the nation, and it is impossible to convene the National Assembly.

(3) In case actions are taken or orders are issued under paragraphs (1) and (2), the President shall promptly notify it to the National Assembly and obtain its approval.

(4) In case no approval is obtained, the actions or orders shall lose effect forthwith. In such case, the Acts which were amended or abolished by the orders in question shall automatically regain their original effect at the moment the orders fail to obtain approval.

(5) The President shall, without delay, put on public notice developments under paragraphs (3) and (4).

Article 77

(1) When it is required to cope with a military necessity or to maintain the public safety and order by mobilization of the military forces in time of war, armed conflict or similar national emergency, the President may proclaim martial law under the conditions as prescribed by Act.

(2) Martial law shall be of two types: extraordinary martial law and precautionary martial law.

(3) Under extraordinary martial law, special measures may be taken with respect to the necessity for warrants, freedom of speech, the press, assembly and association, or the powers of the Executive and the Judiciary under the conditions as prescribed by Act.

(4) When the President has proclaimed martial law, he shall notify it to the National Assembly without delay.

(5) When the National Assembly requests the lifting of martial law with the concurrent vote of a majority of the total members of the National Assembly, the President shall comply.

Article 78

The President shall appoint and dismiss public officials under the conditions as prescribed by the Constitution and Act.

Article 79

(1) The President may grant amnesty, commutation and restoration of rights under the conditions as prescribed by Act.

(2) The President shall receive the consent of the National Assembly in granting a general amnesty.

(3) Matters pertaining to amnesty, commutation and restoration of rights shall be determined by Act.

Article 80

The President shall award decorations and other honors under the conditions as prescribed by Act.

Article 81

The President may attend and address the National Assembly or express his views by written message.

Article 82

The acts of the President under law shall be executed in writing, and such documents shall be countersigned by the Prime Minister and the members of the State Council concerned. The same shall apply to military affairs.

Article 83

The President shall not concurrently hold the office of Prime Minister, a member of the State Council, the head of any Executive Ministry, nor other public or private posts as prescribed by Act.

Article 84

The President shall not be charged with a criminal offense during his tenure of office except for insurrection or treason.

Article 85

Matters pertaining to the status and courteous treatment of former Presidents shall be determined by Act.

SECTION 2 The Executive Branch

Sub-Section 1 The Prime Minister and Members of the State Council

Article 86

(1) The Prime Minister shall be appointed by the President with the consent of the National Assembly.

(2) The Prime Minister shall assist the President and shall direct the Executive Ministries under order of the President.

(3) No member of the military shall be appointed Prime Minister unless he is retired from active duty.

Article 87

(1) The members of the State Council shall be appointed by the President on the recommendation of the Prime Minister.

(2) The members of the State Council shall assist the President in the conduct of State affairs and, as constituents of the State Council, shall deliberate on State affairs.

(3) The Prime Minister may recommend to the President the removal of a member of the State Council from office.

(4) No member of the military shall be appointed a member of the State Council unless he is retired from active duty.

Sub-Section 2 The State Council

Article 88

(1) The State Council shall deliberate on important policies that fall within the power of the Executive.

(2) The State Council shall be composed of the President, the Prime Minister, and other members whose number shall be no more than thirty and no less than fifteen.

(3) The President shall be the chairman of the State Council, and the Prime Minister shall be the Vice-Chairman.

Article 89

The following matters shall be referred to the State Council for deliberation:

1. Basic plans for state affairs, and general policies of the Executive;
2. Declaration of war, conclusion of peace and other important matters pertaining to foreign policy;
3. Draft amendments to the Constitution, proposals for national referendums, proposed treaties, legislative bills, and proposed presidential decrees;
4. Budgets, settlement of accounts, basic plans for disposal of state properties, contracts incurring financial obligation on the State, and other important financial matters;
5. Emergency orders and emergency financial and economic actions or orders by the President, and declaration and termination of martial law;
6. Important military affairs;
7. Requests for convening an extraordinary session of the National Assembly;
8. Awarding of honors;
9. Granting of amnesty, commutation and restoration of rights;
10. Demarcation of jurisdiction between Executive Ministries;
11. Basic plans concerning delegation or allocation of powers within the Executive;
12. Evaluation and analysis of the administration of State

affairs;

13. Formulation and coordination of important policies of each Executive Ministry;
14. Action for the dissolution of a political party;
15. Examination of petitions pertaining to executive policies submitted or referred to the Executive;
16. Appointment of the Prosecutor General, the Chairman of the Joint Chiefs of Staff, the Chief of Staff of each armed service, the presidents of national universities, ambassadors, and such other public officials and managers of important State-run enterprises as designated by Act; and
17. Other matters presented by the President, the Prime Minister or a member of the State Council.

Article 90

(1) An Advisory Council of Elder Statesmen, composed of elder statesmen, may be established to advise the President on important affairs of State.

(2) The immediate former President shall become the Chairman of the Advisory Council of Elder Statesmen: *Provided*, That if there is no immediate former President, the President shall appoint the Chairman.

(3) The organization, function and other necessary matters pertaining to the Advisory Council of Elder Statesmen shall be determined by Act.

Article 91

(1) A National Security Council shall be established to advise the President on the formulation of foreign, military and domestic policies related to national security prior to their deliberation by the State Council.

(2) The meetings of the National Security Council shall be presided over by the President.

(3) The organization, function and other necessary matters pertaining to the National Security Council shall be determined by Act.

Article 92

(1) An Advisory Council on Democratic and Peaceful Unification may be established to advise the President on the formulation of peaceful unification policy.

(2) The organization, function and other necessary matters pertaining to the Advisory Council on Democratic and Peaceful Unification shall be determined by Act.

Article 93

(1) A National Economic Advisory Council may be established to advise the President on the formulation of important policies for developing the national economy.

(2) The organization, function and other necessary matters pertaining to the National Economic Advisory Council shall be determined by Act.

Sub-Section 3 The Executive Ministries

Article 94

Heads of Executive Ministries shall be appointed by the President from among members of the State Council on the recommendation of the Prime Minister.

Article 95

The Prime Minister or the head of each Executive Ministry may, under the powers delegated by Act or Presidential Decree, or ex officio, issue ordinances of the Prime Minister or the Executive Ministry concerning matters that are

within their jurisdiction.

Article 96

The establishment, organization and function of each Executive Ministry shall be determined by Act.

Sub-Section 4 The Board of Audit and Inspection

Article 97

The Board of Audit and Inspection shall be established under the direct jurisdiction of the President to inspect and examine the settlement of the revenues and expenditures of the State, the accounts of the State and other organizations specified by Act and the job performances of the executive agencies and public officials.

Article 98

(1) The Board of Audit and Inspection shall be composed of no less than five and no more than eleven members, including the Chairman.

(2) The Chairman of the Board shall be appointed by the President with the consent of the National Assembly. The term of office of the Chairman shall be four years, and he may be reappointed only once.

(3) The members of the Board shall be appointed by the President on the recommendation of the Chairman. The term of office of the members shall be four years, and they may be reappointed only once.

Article 99

The Board of Audit and Inspection shall inspect the closing of accounts of revenues and expenditures each year, and report the results to the President and the National Assembly in the following year.

Article 100

The organization and function of the Board of Audit and Inspection, the qualifications of its members, the range of the public officials subject to inspection and other necessary matters shall be determined by Act.

CHAPTER V THE COURTS

Article 101

(1) Judicial power shall be vested in courts composed of judges.

(2) The courts shall be composed of the Supreme Court, which is the highest court of the State, and other courts at specified levels.

(3) Qualifications for judges shall be determined by Act.

Article 102

(1) Departments may be established in the Supreme Court.

(2) There shall be Supreme Court Justices at the Supreme Court: *Provided*, That judges other than Supreme Court Justices may be assigned to the Supreme Court under the conditions as prescribed by Act.

(3) The organization of the Supreme Court and lower courts shall be determined by Act.

Article 103

Judges shall rule independently according to their conscience and in conformity with the Constitution and Act.

Article 104

(1) The Chief Justice of the Supreme Court shall be appointed by the President with the consent of the National Assembly.

(2) The Supreme Court Justices shall be appointed by the President on the recommendation of the Chief Justice and with the consent of the National Assembly.

(3) Judges other than the Chief Justice and the Supreme Court Justices shall be appointed by the Chief Justice with the consent of the Conference of Supreme Court Justices.

Article 105

(1) The term of office of the Chief Justice shall be six years and he shall not be reappointed.

(2) The term of office of the Justices of the Supreme Court shall be six years and they may be reappointed as prescribed by Act.

(3) The term of office of judges other than the Chief Justice and Justices of the Supreme Court shall be ten years, and they may be reappointed under the conditions as prescribed by Act.

(4) The retirement age of judges shall be determined by Act.

Article 106

(1) No judge shall be removed from office except by im peachment or a sentence of imprisonment without prison labor or heavier punishment, nor shall he be suspended from office, have his salary reduced or suffer any other unfavorable treatment except by disciplinary action.

(2) In the event a judge is unable to discharge his official duties because of serious mental or physical impairment, he may be retired from office under the conditions as prescribed by Act.

Article 107

(1) When the constitutionality of a law is at issue in a trial,

the court shall request a decision of the Constitutional Court, and shall judge according to the decision thereof.

(2) The Supreme Court shall have the power to make a final review of the constitutionality or legality of administrative decrees, regulations or actions, when their constitutionality or legality is at issue in a trial.

(3) Administrative appeals may be conducted as a procedure prior to a judicial trial. The procedure of administrative appeals shall be determined by Act and shall be in conformity with the principles of judicial procedures.

Article 108

The Supreme Court may establish, within the scope of Act, regulations pertaining to judicial proceedings and internal discipline and regulations on administrative matters of the court.

Article 109

Trials and decisions of the courts shall be open to the public: *Provided*, That when there is a danger that such trials may undermine the national security or disturb public safety and order, or be harmful to public morals, trials may be closed to the public by court decision.

Article 110

(1) Courts-martial may be established as special courts to exercise jurisdiction over military trials.

(2) The Supreme Court shall have the final appellate jurisdiction over courts-martial.

(3) The organization and authority of courts-martial, and the qualifications of their judges shall be determined by Act.

(4) Military trials under an extraordinary martial law may not be appealed in case of crimes of soldiers and employees

of the military; military espionage; and crimes as defined by Act in regard to sentinels, sentry posts, supply of harmful foods and beverages, and prisoners of war, except in the case of a death sentence.

CHAPTER Ⅵ THE CONSTITUTIONAL COURT

Article 111

(1) The Constitutional Court shall have jurisdiction over the following matters:

1. The constitutionality of a law upon the request of the courts;
2. Impeachment;
3. Dissolution of a political party;
4. Competence disputes between State agencies, between State agencies and local governments, and between local governments; and
5. Constitutional complaint as prescribed by Act.

(2) The Constitutional Court shall be composed of nine Justices qualified to be court judges, and they shall be appointed by the President.

(3) Among the Justices referred to in paragraph (2), three shall be appointed from persons selected by the National Assembly, and three appointed from persons nominated by the Chief Justice of the Supreme Court.

(4) The president of the Constitutional Court shall be appointed by the President from among the Justices with the consent of the National Assembly.

Article 112

(1) The term of office of the Justices of the Constitutional

Court shall be six years and they may be reappointed under the conditions as prescribed by Act.

(2) The Justices of the Constitutional Court shall not join any political party, nor shall they participate in political activities.

(3) No Justice of the Constitutional Court shall be expelled from office except by impeachment or a sentence of imprisonment without prison labor or heavier punishment.

Article 113

(1) When the Constitutional Court makes a decision of the unconstitutionality of a law, a decision of impeachment, a decision of dissolution of a political party or an affirmative decision regarding the constitutional complaint, the concurrence of six Justices or more shall be required.

(2) The Constitutional Court may establish regulations relating to its proceedings and internal discipline and regulations on administrative matters within the limits of Act.

(3) The organization, function and other necessary matters of the Constitutional Court shall be determined by Act.

CHAPTER Ⅶ ELECTION MANAGEMENT

Article 114

(1) Election commissions shall be established for the purpose of fair management of elections and national referenda, and dealing with administrative affairs concerning political parties.

(2) The National Election Commission shall be composed of three members appointed by the President, three members selected by the National Assembly, and three members

designated by the Chief Justice of the Supreme Court. The Chairman of the Commission shall be elected from among the members.

(3) The term of office of the members of the Commission shall be six years.

(4) The members of the Commission shall not join political parties, nor shall they participate in political activities.

(5) No member of the Commission shall be expelled from office except by impeachment or a sentence of imprisonment without prison labor or heavier punishment.

(6) The National Election Commission may establish, within the limit of Acts and decrees, regulations relating to the management of elections, national referenda, and administrative affairs concerning political parties and may also establish regulations relating to internal discipline that are compatible with Act.

(7) The organization, function and other necessary matters of the election commissions at each level shall be determined by Act.

Article 115

(1) Election commissions at each level may issue necessary instructions to administrative agencies concerned with respect to administrative affairs pertaining to elections and national referenda such as the preparation of the pollbooks.

(2) Administrative agencies concerned, upon receipt of such instructions, shall comply.

Article 116

(1) Election campaigns shall be conducted under the management of the election commissions at each level within the limit set by Act. Equal opportunity shall be guaranteed.

(2) Except as otherwise prescribed by Act, expenditures for elections shall not be imposed on political parties or candidates.

CHAPTER Ⅷ LOCAL AUTONOMY

Article 117

(1) Local governments shall deal with administrative matters pertaining to the welfare of local residents, manage properties, and may enact provisions relating to local autonomy, within the limit of Acts and subordinate statutes.

(2) The types of local governments shall be determined by Act.

Article 118

(1) A local government shall have a council.

(2) The organization and powers of local councils, and the election of members; election procedures for heads of local governments; and other matters pertaining to the organization and operation of local governments shall be determined by Act.

CHAPTER Ⅸ THE ECONOMY

Article 119

(1) The economic order of the Republic of Korea shall be based on a respect for the freedom and creative initiative of enterprises and individuals in economic affairs.

(2) The State may regulate and coordinate economic affairs in order to maintain the balanced growth and stability of the national economy, to ensure proper distribution of income, to

prevent the domination of the market and the abuse of economic power and to democratize the economy through harmony among the economic agents.

Article 120

(1) Licenses to exploit, develop or utilize minerals and all other important underground resources, marine resources, water power, and natural powers available for economic use may be granted for a period of time under the conditions as prescribed by Act.

(2) The land and natural resources shall be protected by the State, and the State shall establish a plan necessary for their balanced development and utilization.

Article 121

(1) The State shall endeavor to realize the land-to-the-tillers principle with respect to agricultural land. Tenant farming shall be prohibited.

(2) The leasing of agricultural land and the consignment management of agricultural land to increase agricultural productivity and to ensure the rational utilization of agricultural land or due to unavoidable circumstances, shall be recognized under the conditions as prescribed by Act.

Article 122

The State may impose, under the conditions as prescribed by Act, restrictions or obligations necessary for the efficient and balanced utilization, development and preservation of the land of the nation that is the basis for the productive activities and daily lives of all citizens.

Article 123

(1) The State shall establish and implement a plan to comprehensively develop and support the farm and fishing

communities in order to protect and foster agriculture and fisheries.

(2) The State shall have the duty to foster regional economies to ensure the balanced development of all regions.

(3) The State shall protect and foster small and medium enterprises.

(4) In order to protect the interests of farmers and fishermen, the State shall endeavor to stabilize the prices of agricultural and fishery products by maintaining an equilibrium between the demand and supply of such products and improving their marketing and distribution systems.

(5) The State shall foster organizations founded on the spirit of self-help among farmers, fishermen and businessmen engaged in small and medium industry and shall guarantee their independent activities and development.

Article 124

The State shall guarantee the consumer protection movement intended to encourage sound consumption activities and improvement in the quality of products under the conditions as prescribed by Act.

Article 125

The State shall foster foreign trade, and may regulate and coordinate it.

Article 126

Private enterprises shall not be nationalized nor transferred to ownership by a local government, nor shall their management be controlled or administered by the State, except in cases as prescribed by Act to meet urgent necessities of national defense or the national economy.

Article 127

(1) The State shall strive to develop the national economy by developing science and technology, information and human resources and encouraging innovation.

(2) The State shall establish a system of national standards.

(3) The President may establish advisory organizations necessary to achieve the purpose referred to in paragraph (1).

CHAPTER X AMENDMENTS TO THE CONSTITUTION

Article 128

(1) A proposal to amend the Constitution shall be introduced either by a majority of the total members of the National Assembly or by the President.

(2) Amendments to the Constitution for the extension of the term of office of the President or for a change allowing for the reelection of the President shall not be effective for the President in office at the time of the proposal for such amendments to the Constitution.

Article 129

Proposed amendments to the Constitution shall be put before the public by the President for twenty days or more.

Article 130

(1) The National Assembly shall decide upon the proposed amendments within sixty days of the public announcement, and passage by the National Assembly shall require the concurrent vote of two thirds or more of the total members of the National Assembly.

(2) The proposed amendments to the Constitution shall be submitted to a national referendum not later than thirty

days after passage by the National Assembly, and shall be determined by more than one half of all votes cast by more than one half of voters eligible to vote in elections for members of the National Assembly.

(3) When the proposed amendments to the Constitution receive the concurrence prescribed in paragraph (2), the amendments to the Constitution shall be finalized, and the President shall promulgate it without delay.

ADDENDA

Article 1

This Constitution shall enter into force on the twenty-fifth day of February, anno Domini Nineteen hundred and eighty-eight: *Provided*, That the enactment or amendment of Acts necessary to implement this Constitution, the elections of the President and the National Assembly under this Constitution and other preparations to implement this Constitution may be carried out prior to the entry into force of this Constitution.

Article 2

(1) The first presidential election under this Constitution shall be held not later than forty days before this Constitution enters into force.

(2) The term of office of the first President under this Constitution shall commence on the date of its enforcement.

Article 3

(1) The first elections of the National Assembly under this Constitution shall be held within six months from the promulgation of this Constitution. The term of office of the

members of the first National Assembly elected under this Constitution shall commence on the date of the first convening of the National Assembly under this Constitution.

(2) The term of office of the members of the National Assembly incumbent at the time this Constitution is promulgated shall terminate the day prior to the first convening of the National Assembly under paragraph (1).

Article 4

(1) Public officials and officers of enterprises appointed by the Government, who are in office at the time of the enforcement of this Constitution, shall be considered as having been appointed under this Constitution: *Provided*, That public officials whose election procedures or appointing authorities are changed under this Constitution, the Chief Justice of the Supreme Court and the Chairman of the Board of Audit and Inspection shall remain in office until such time as their successors are chosen under this Constitution, and their terms of office shall terminate the day before the installation of their successors.

(2) Judges attached to the Supreme Court who are not the Chief Justice or Justices of the Supreme Court and who are in office at the time of the enforcement of this Constitution shall be considered as having been appointed under this Constitution notwithstanding the proviso of paragraph (1).

(3) Those provisions of this Constitution which prescribe the terms of office of public officials or which restrict the number of terms that public officials may serve, shall take effect upon the dates of the first elections or the first appointments of such public officials under this Constitution.

Article 5

Acts, decrees, ordinances and treaties in force at the time this Constitution enters into force, shall remain valid unless they are contrary to this Constitution.

Article 6

Those organizations existing at the time of the enforcement of this Constitution which have been performing the functions falling within the authority of new organizations to be created under this Constitution, shall continue to exist and perform such functions until such time as the new organizations are created under this Constitution.

Annex 575

National Environmental Policy Act, No. 6.938/81, 31 August 1981 (Portuguese original and English machine translation of Article 14)

Translated Extract of ‘National Environmental Policy Act, No. 6.938/81, 31 August 1981’, Article 14

[. . .]

Art. 14 – Without prejudice to the penalties defined by federal, state and municipal legislation, failure to comply with the measures necessary to preserve or correct the inconveniences and damage caused by the degradation of environmental quality will subject offenders:

I - - a simple or daily fine of at least 10 (ten) and at most 1,000 (one thousand) National Treasury Adjustable Obligations (ORTNs), increased in cases of specific recidivism, in accordance with the regulations, which may not be levied by the Federal Government if it has already been levied by the State, Federal District, Territories or Municipalities.

II - the loss or restriction of tax incentives and benefits granted by the Government.

III - the loss or suspension of participation in financing lines with official credit establishments.

IV - the suspension of its activity.

§ Without prejudice to the application of the penalties provided for in this article, the polluter is obliged, regardless of fault, to indemnify or repair the damage caused to the environment and to third parties affected by its activity. The Federal and State Public Prosecutor's Offices shall have legal standing to bring civil and criminal liability actions for damage caused to the environment.

§ Paragraph 2 In the event of failure to act by the state or municipal authority, the Secretary for the Environment shall be responsible for imposing the financial penalties provided for in this article.

§ Paragraph 3 In the cases provided for in items II and III of this article, the declaratory act of loss, restriction or suspension shall be the responsibility of the administrative or financial authority that granted the benefits, incentives or financing, in compliance with a CONAMA resolution.

§ Paragraph 4 (Repealed by Law 9.966 of 2000)

§ 5o The execution of the guarantees demanded of the polluter does not prevent the application of the obligations to indemnify and repair damages provided for in § 1 of this article. (Included by Law nº 11.284, of 2006)

[. . .]

LEI Nº 6.938, DE 31 DE AGOSTO DE 1981

Regulamento
Mensagem de veto
(Vide Decreto de 15 de setembro de 2010)

Dispõe sobre a Política Nacional do Meio Ambiente, seus fins e mecanismos de formulação e aplicação, e dá outras providências.

O PRESIDENTE DA REPÚBLICA, Faço saber que o Congresso Nacional decreta e eu sanciono a seguinte Lei:

Art 1º - Esta lei, com fundamento nos incisos VI e VII do art. 23 e no art. 235 da Constituição, estabelece a Política Nacional do Meio Ambiente, seus fins e mecanismos de formulação e aplicação, constitui o Sistema Nacional do Meio Ambiente (Sisnama) e institui o Cadastro de Defesa Ambiental. (Redação dada pela Lei nº 8.028, de 1990)

DA POLÍTICA NACIONAL DO MEIO AMBIENTE

Art. 2º. A Política Nacional do Meio Ambiente tem por objetivo a preservação, melhoria e recuperação da qualidade ambiental propícia à vida, visando assegurar, no País, condições ao desenvolvimento sócioeconômico, aos interesses da segurança nacional e à proteção da dignidade da vida humana, atendidos os seguintes princípios:

I - ação governamental na manutenção do equilíbrio ecológico, considerando o meio ambiente como um patrimônio público a ser necessariamente assegurado e protegido, tendo em vista o uso coletivo;

II - racionalização do uso do solo, do subsolo, da água e do ar;

III - planejamento e fiscalização do uso dos recursos ambientais;

IV - proteção dos ecossistemas, com a preservação de áreas representativas;

V - controle e zoneamento das atividades potencial ou efetivamente poluidoras;

VI - incentivos ao estudo e à pesquisa de tecnologias orientadas para o uso racional e a proteção dos recursos ambientais;

VII - acompanhamento do estado da qualidade ambiental;

VIII - recuperação de áreas degradadas; (Regulamento)

IX - proteção de áreas ameaçadas de degradação;

X - educação ambiental a todos os níveis do ensino, inclusive a educação da comunidade, objetivando capacitá-la para participação ativa na defesa do meio ambiente.

Art. 3º - Para os fins previstos nesta Lei, entende-se por:

I - meio ambiente, o conjunto de condições, leis, influências e interações de ordem física, química e biológica, que permite, abriga e rege a vida em todas as suas formas;

II - degradação da qualidade ambiental, a alteração adversa das características do meio ambiente;

III - poluição, a degradação da qualidade ambiental resultante de atividades que direta ou indiretamente:

a) prejudiquem a saúde, a segurança e o bem-estar da população;

b) criem condições adversas às atividades sociais e econômicas;

c) afetem desfavoravelmente a biota;

d) afetem as condições estéticas ou sanitárias do meio ambiente;

e) lancem matérias ou energia em desacordo com os padrões ambientais estabelecidos;

IV - poluidor, a pessoa física ou jurídica, de direito público ou privado, responsável, direta ou indiretamente, por atividade causadora de degradação ambiental;

V - recursos ambientais: a atmosfera, as águas interiores, superficiais e subterrâneas, os estuários, o mar territorial, o solo, o subsolo, os elementos da biosfera, a fauna e a flora. (Redação dada pela Lei nº 7.804, de 1989)

DOS OBJETIVOS DA POLÍTICA NACIONAL DO MEIO AMBIENTE

Art. 4º - A Política Nacional do Meio Ambiente visará:

I - à compatibilização do desenvolvimento econômico social com a preservação da qualidade do meio ambiente e do equilíbrio ecológico;

II - à definição de áreas prioritárias de ação governamental relativa à qualidade e ao equilíbrio ecológico, atendendo aos interesses da União, dos Estados, do Distrito Federal, do Territórios e dos Municípios;

III - ao estabelecimento de critérios e padrões da qualidade ambiental e de normas relativas ao uso e manejo de recursos ambientais;

IV - ao desenvolvimento de pesquisas e de tecnologia s nacionais orientadas para o uso racional de recursos ambientais;

V - à difusão de tecnologias de manejo do meio ambiente, à divulgação de dados e informações ambientais e à formação de uma consciência pública sobre a necessidade de preservação da qualidade ambiental e do equilíbrio ecológico;

VI - à preservação e restauração dos recursos ambientais com vistas á sua utilização racional e disponibilidade permanente, concorrendo para a manutenção do equilíbrio ecológico propício à vida;

VII - à imposição, ao poluidor e ao predador, da obrigação de recuperar e/ou indenizar os danos causados, e ao usuário, de contribuição pela utilização de recursos ambientais com fins econômicos.

Art. 5º - As diretrizes da Política Nacional do Meio Ambiente serão formuladas em normas e planos, destinados a orientar a ação dos Governos da União, dos Estados, do Distrito Federal, dos Territórios e dos Municípios no que se relaciona com a preservação da qualidade ambiental e manutenção do equilíbrio ecológico, observados os princípios estabelecidos no art. 2º desta Lei.

Parágrafo único. As atividades empresariais públicas ou privadas serão exercidas em consonância com as diretrizes da Política Nacional do Meio Ambiente.

DO SISTEMA NACIONAL DO MEIO AMBIENTE

Art. 6º Os órgãos e entidades da União, dos Estados, do Distrito Federal, dos Territórios e dos Municípios, bem como as fundações instituídas pelo Poder Público, responsáveis pela proteção e melhoria da qualidade ambiental, constituirão o Sistema Nacional do Meio Ambiente - SISNAMA, assim estruturado:

I - órgão superior: o Conselho de Governo, com a função de assessorar o Presidente da República na formulação da política nacional e nas diretrizes governamentais para o meio ambiente e os recursos ambientais; (Redação dada pela Lei nº 8.028, de 1990)

II - órgão consultivo e deliberativo: o Conselho Nacional do Meio Ambiente (CONAMA), com a finalidade de assessorar, estudar e propor ao Conselho de Governo, diretrizes de políticas governamentais para o meio ambiente e os recursos naturais e deliberar, no âmbito de sua competência, sobre normas e padrões compatíveis com o meio ambiente ecologicamente equilibrado e essencial à sadia qualidade de vida; (Redação dada pela Lei nº 8.028, de 1990)

III - órgão central: a Secretaria do Meio Ambiente da Presidência da República, com a finalidade de planejar, coordenar, supervisionar e controlar, como órgão federal, a política nacional e as diretrizes governamentais fixadas para o meio ambiente; (Redação dada pela Lei nº 8.028, de 1990)

IV - órgãos executores: o Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis - IBAMA e o Instituto Chico Mendes de Conservação da Biodiversidade - Instituto Chico Mendes, com a finalidade de executar e fazer executar a política e as diretrizes governamentais fixadas para o meio ambiente, de acordo com as respectivas competências; (Redação dada pela Lei nº 12.856, de 2013)

V - Órgãos Seccionais: os órgãos ou entidades estaduais responsáveis pela execução de programas, projetos e pelo controle e fiscalização de atividades capazes de provocar a degradação ambiental; (Redação dada pela Lei nº 7.804, de 1989)

VI - Órgãos Locais: os órgãos ou entidades municipais, responsáveis pelo controle e fiscalização dessas atividades, nas suas respectivas jurisdições; (Incluído pela Lei nº 7.804, de 1989)

§ 1º - Os Estados, na esfera de suas competências e nas áreas de sua jurisdição, elaborarão normas supletivas e complementares e padrões relacionados com o meio ambiente, observados os que forem estabelecidos pelo CONAMA.

§ 2º O s Municípios, observadas as normas e os padrões federais e estaduais, também poderão elaborar as normas mencionadas no parágrafo anterior.

§ 3º Os órgãos central, setoriais, seccionais e locais mencionados neste artigo deverão fornecer os resultados das análises efetuadas e sua fundamentação, quando solicitados por pessoa legitimamente interessada.

§ 4º De acordo com a legislação em vigor, é o Poder Executivo autorizado a criar uma Fundação de apoio técnico científico às atividades do IBAMA. (Redação dada pela Lei nº 7.804, de 1989)

DO CONSELHO NACIONAL DO MEIO AMBIENTE

Art. 7º (Revogado pela Lei nº 8.028, de 1990)

Art. 8º Compete ao CONAMA: (Redação dada pela Lei nº 8.028, de 1990)

I - estabelecer, mediante proposta do IBAMA, normas e critérios para o licenciamento de atividades efetiva ou potencialmente poluídoras, a ser concedido pelos Estados e supervisionado pelo IBAMA; (Redação dada pela Lei nº 7.804, de 1989)

II - determinar, quando julgar necessário, a realização de estudos das alternativas e das possíveis conseqüências ambientais de projetos públicos ou privados, requisitando aos órgãos federais, estaduais e municipais, bem assim a entidades privadas, as informações indispensáveis para apreciação dos estudos de impacto ambiental, e respectivos relatórios, no caso de obras ou atividades de significativa degradação ambiental, especialmente nas áreas consideradas patrimônio nacional. (Redação dada pela Lei nº 8.028, de 1990)

III - (Revogado pela Lei nº 11.941, de 2009)

IV - homologar acordos visando à transformação de penalidades pecuniárias na obrigação de executar medidas de interesse para a proteção ambiental; (VETADO);

V - determinar, mediante representação do IBAMA, a perda ou restrição de benefícios fiscais concedidos pelo Poder Público, em caráter geral ou condicional, e a perda ou suspensão de participação em linhas de fianaciamento em estabelecimentos oficiais de crédito; (Redação dada pela Lei nº 7.804, de 1989)

VI - estabelecer, privativamente, normas e padrões nacionais de controle da poluição por veículos automotores, aeronaves e embarcações, mediante audiência dos Ministérios competentes;

VII - estabelecer normas, critérios e padrões relativos ao controle e à manutenção da qualidade do meio ambiente com vistas ao uso racional dos recursos ambientais, principalmente os hídricos.

Parágrafo único. O Secretário do Meio Ambiente é, sem prejuízo de suas funções, o Presidente do Conama. (Incluído pela Lei nº 8.028, de 1990)

DOS INSTRUMENTOS DA POLÍTICA NACIONAL DO MEIO AMBIENTE

Art. 9º - São Instrumentos da Política Nacional do Meio Ambiente:

I - o estabelecimento de padrões de qualidade ambiental;

II - o zoneamento ambiental; (Regulamento)

III - a avaliação de impactos ambientais;

IV - o licenciamento e a revisão de atividades efetiva ou potencialmente poluidoras;

V - os incentivos à produção e instalação de equipamentos e a criação ou absorção de tecnologia, voltados para a melhoria da qualidade ambiental;

VI - a criação de espaços territoriais especialmente protegidos pelo Poder Público federal, estadual e municipal, tais como áreas de proteção ambiental, de relevante interesse ecológico e reservas extrativistas; (Redação dada pela Lei nº 7.804, de 1989)

VII - o sistema nacional de informações sobre o meio ambiente;

VIII - o Cadastro Técnico Federal de Atividades e Instrumento de Defesa Ambiental;

IX - as penalidades disciplinares ou compensatórias ao não cumprimento das medidas necessárias à preservação ou correção da degradação ambiental.

X - a instituição do Relatório de Qualidade do Meio Ambiente, a ser divulgado anualmente pelo Instituto Brasileiro do Meio Ambiente e Recursos Naturais Renováveis - IBAMA; (Incluído pela Lei nº 7.804, de 1989)

XI - a garantia da prestação de informações relativas ao Meio Ambiente, obrigando-se o Poder Público a produzí-las, quando inexistentes; (Incluído pela Lei nº 7.804, de 1989)

XII - o Cadastro Técnico Federal de atividades potencialmente poluidoras e/ou utilizadoras dos recursos ambientais. (Incluído pela Lei nº 7.804, de 1989)

XIII - instrumentos econômicos, como concessão florestal, servidão ambiental, seguro ambiental e outros. (Incluído pela Lei nº 11.284, de 2006)

Art. 9º-A. O proprietário ou possuidor de imóvel, pessoa natural ou jurídica, pode, por instrumento público ou particular ou por termo administrativo firmado perante órgão integrante do Sisnama, limitar o uso de toda a sua propriedade ou de parte dela para preservar, conservar ou recuperar os recursos ambientais existentes, instituindo servidão ambiental. (Redação dada pela Lei nº 12.651, de 2012).

§ 1º O instrumento ou termo de instituição da servidão ambiental deve incluir, no mínimo, os seguintes itens: (Redação dada pela Lei nº 12.651, de 2012).

I - memorial descritivo da área da servidão ambiental, contendo pelo menos um ponto de amarração georreferenciado; (Incluído pela Lei nº 12.651, de 2012).

II - objeto da servidão ambiental; (Incluído pela Lei nº 12.651, de 2012).

III - direitos e deveres do proprietário ou possuidor instituidor; (Incluído pela Lei nº 12.651, de 2012).

IV - prazo durante o qual a área permanecerá como servidão ambiental. (Incluído pela Lei nº 12.651, de 2012).

§ 2º A servidão ambiental não se aplica às Áreas de Preservação Permanente e à Reserva Legal mínima exigida. (Redação dada pela Lei nº 12.651, de 2012).

§ 3º A restrição ao uso ou à exploração da vegetação da área sob servidão ambiental deve ser, no mínimo, a mesma estabelecida para a Reserva Legal. (Redação dada pela Lei nº 12.651, de 2012).

§ 4º Devem ser objeto de averbação na matrícula do imóvel no registro de imóveis competente: (Redação dada pela Lei nº 12.651, de 2012).

I - o instrumento ou termo de instituição da servidão ambiental; (Incluído pela Lei nº 12.651, de 2012).

II - o contrato de alienação, cessão ou transferência da servidão ambiental. (Incluído pela Lei nº 12.651, de 2012).

§ 5º Na hipótese de compensação de Reserva Legal, a servidão ambiental deve ser averbada na matrícula de todos os imóveis envolvidos. (Redação dada pela Lei nº 12.651, de 2012).

§ 6º É vedada, durante o prazo de vigência da servidão ambiental, a alteração da destinação da área, nos casos de transmissão do imóvel a qualquer título, de desmembramento ou de retificação dos limites do imóvel. (Incluído pela Lei nº 12.651, de 2012).

§ 7º As áreas que tenham sido instituídas na forma de servidão florestal, nos termos do art. 44-A da Lei nº 4.771, de 15 de setembro de 1965, passam a ser consideradas, pelo efeito desta Lei, como de servidão ambiental. (Incluído pela Lei nº 12.651, de 2012).

Art. 9º-B. A servidão ambiental poderá ser onerosa ou gratuita, temporária ou perpétua. (Incluído pela Lei nº 12.651, de 2012).

§ 1º O prazo mínimo da servidão ambiental temporária é de 15 (quinze) anos. (Incluído pela Lei nº 12.651, de 2012).

§ 2º A servidão ambiental perpétua equivale, para fins creditícios, tributários e de acesso aos recursos de fundos públicos, à Reserva Particular do Patrimônio Natural - RPPN, definida no art. 21 da Lei nº 9.985, de 18 de julho de 2000. (Incluído pela Lei nº 12.651, de 2012).

§ 3º O detentor da servidão ambiental poderá aliená-la, cedê-la ou transferi-la, total ou parcialmente, por prazo determinado ou em caráter definitivo, em favor de outro proprietário ou de entidade pública ou privada que tenha a conservação ambiental como fim social. (Incluído pela Lei nº 12.651, de 2012).

Art. 9º-C. O contrato de alienação, cessão ou transferência da servidão ambiental deve ser averbado na matrícula do imóvel. (Incluído pela Lei nº 12.651, de 2012).

§ 1º O contrato referido no caput deve conter, no mínimo, os seguintes itens: (Incluído pela Lei nº 12.651, de 2012).

I - a delimitação da área submetida a preservação, conservação ou recuperação ambiental; (Incluído pela Lei nº 12.651, de 2012).

II - o objeto da servidão ambiental; (Incluído pela Lei nº 12.651, de 2012).

III - os direitos e deveres do proprietário instituidor e dos futuros adquirentes ou sucessores; (Incluído pela Lei nº 12.651, de 2012).

IV - os direitos e deveres do detentor da servidão ambiental; (Incluído pela Lei nº 12.651, de 2012).

V - os benefícios de ordem econômica do instituidor e do detentor da servidão ambiental; (Incluído pela Lei nº 12.651, de 2012).

VI - a previsão legal para garantir o seu cumprimento, inclusive medidas judiciais necessárias, em caso de ser descumprido. (Incluído pela Lei nº 12.651, de 2012).

§ 2º São deveres do proprietário do imóvel serviente, entre outras obrigações estipuladas no contrato: (Incluído pela Lei nº 12.651, de 2012).

I - manter a área sob servidão ambiental; (Incluído pela Lei nº 12.651, de 2012).

II - prestar contas ao detentor da servidão ambiental sobre as condições dos recursos naturais ou artificiais; (Incluído pela Lei nº 12.651, de 2012).

III - permitir a inspeção e a fiscalização da área pelo detentor da servidão ambiental; (Incluído pela Lei nº 12.651, de 2012).

IV - defender a posse da área serviente, por todos os meios em direito admitidos. (Incluído pela Lei nº 12.651, de 2012).

§ 3º São deveres do detentor da servidão ambiental, entre outras obrigações estipuladas no contrato: (Incluído pela Lei nº 12.651, de 2012).

I - documentar as características ambientais da propriedade; (Incluído pela Lei nº 12.651, de 2012).

II - monitorar periodicamente a propriedade para verificar se a servidão ambiental está sendo mantida; (Incluído pela Lei nº 12.651, de 2012).

III - prestar informações necessárias a quaisquer interessados na aquisição ou aos sucessores da propriedade; (Incluído pela Lei nº 12.651, de 2012).

IV - manter relatórios e arquivos atualizados com as atividades da área objeto da servidão; (Incluído pela Lei nº 12.651, de 2012).

V - defender judicialmente a servidão ambiental.(Incluído pela Lei nº 12.651, de 2012).

Art. 10. A construção, instalação, ampliação e funcionamento de estabelecimentos e atividades utilizadores de recursos ambientais, efetiva ou potencialmente poluidores ou capazes, sob qualquer forma, de causar degradação ambiental

dependerão de prévio licenciamento ambiental. (Redação dada pela Lei Complementar nº 140, de 2011)

§ 1º Os pedidos de licenciamento, sua renovação e a respectiva concessão serão publicados no jornal oficial, bem como em periódico regional ou local de grande circulação, ou em meio eletrônico de comunicação mantido pelo órgão ambiental competente. (Redação dada pela Lei Complementar nº 140, de 2011)

§ 2º (Revogado). (Redação dada pela Lei Complementar nº 140, de 2011)

§ 3º (Revogado). (Redação dada pela Lei Complementar nº 140, de 2011)

§ 4º (Revogado). (Redação dada pela Lei Complementar nº 140, de 2011)

Art. 11. Compete ao IBAMA propor ao CONAMA normas e padrões para implantação, acompanhamento e fiscalização do licenciamento previsto no artigo anterior, além das que forem oriundas do próprio CONAMA. (Vide Lei nº 7.804, de 1989)

§ 1º (Revogado pela Lei Complementar nº 140, de 2011)

§ 2º Inclui-se na competência da fiscalização e controle a análise de projetos de entidades, públicas ou privadas, objetivando a preservação ou a recuperação de recursos ambientais, afetados por processos de exploração predatórios ou poluidores.

Art. 12. As entidades e órgãos de financiamento e incentivos governamentais condicionarão a aprovação de projetos habilitados a esses benefícios ao licenciamento, na forma desta Lei, e ao cumprimento das normas, dos critérios e dos padrões expedidos pelo CONAMA.

Parágrafo único. As entidades e órgãos referidos no caput deste artigo deverão fazer constar dos projetos a realização de obras e aquisição de equipamentos destinados ao controle de degradação ambiental e a melhoria da qualidade do meio ambiente.

Art. 13. O Poder Executivo incentivará as atividades voltadas ao meio ambiente, visando:

I - ao desenvolvimento, no País, de pesquisas e processos tecnológicos destinados a reduzir a degradação da qualidade ambiental;

II - à fabricação de equipamentos antipoluidores;

III - a outras iniciativas que propiciem a racionalização do uso de recursos ambientais.

Parágrafo único. Os órgãos, entidades e programas do Poder Público, destinados ao incentivo das pesquisas científicas e tecnológicas, considerarão, entre as suas metas prioritárias, o apoio aos projetos que visem a adquirir e desenvolver conhecimentos básicos e aplicáveis na área ambiental e ecológica.

Art. 14 - Sem prejuízo das penalidades definidas pela legislação federal, estadual e municipal, o não cumprimento das medidas necessárias à preservação ou correção dos inconvenientes e danos causados pela degradação da qualidade ambiental sujeitará os transgressores:

I - à multa simples ou diária, nos valores correspondentes, no mínimo, a 10 (dez) e, no máximo, a 1.000 (mil) Obrigações Reajustáveis do Tesouro Nacional - ORTNs, agravada em casos de reincidência específica, conforme dispuser o regulamento, vedada a sua cobrança pela União se já tiver sido aplicada pelo Estado, Distrito Federal, Territórios ou pelos Municípios;

II - à perda ou restrição de incentivos e benefícios fiscais concedidos pelo Poder Público;

III - à perda ou suspensão de participação em linhas de financiamento em estabelecimentos oficiais de crédito;

IV - à suspensão de sua atividade.

§ 1º Sem obstar a aplicação das penalidades previstas neste artigo, é o poluidor obrigado, independentemente da existência de culpa, a indenizar ou reparar os danos causados ao meio ambiente e a terceiros, afetados por sua atividade. O Ministério Público da União e dos Estados terá legitimidade para propor ação de responsabilidade civil e criminal, por danos causados ao meio ambiente.

§ 2º No caso de omissão da autoridade estadual ou municipal, caberá ao Secretário do Meio Ambiente a aplicação das penalidades pecuniárias prevista neste artigo.

§ 3º Nos casos previstos nos incisos II e III deste artigo, o ato declaratório da perda, restrição ou suspensão será atribuição da autoridade administrativa ou financeira que concedeu os benefícios, incentivos ou financiamento, cumprimento resolução do CONAMA.

§ 4º (Revogado pela Lei nº 9.966, de 2000)

§ 5º A execução das garantias exigidas do poluidor não impede a aplicação das obrigações de indenização e reparação de danos previstas no § 1º deste artigo. (Incluído pela Lei nº 11.284, de 2006)

Art. 15. O poluidor que expuser a perigo a incolumidade humana, animal ou vegetal, ou estiver tornando mais grave situação de perigo existente, fica sujeito à pena de reclusão de 1 (um) a 3 (três) anos e multa de 100 (cem) a 1.000 (mil) MVR. (Redação dada pela Lei nº 7.804, de 1989)

§ 1º A pena e aumentada até o dobro se: (Redação dada pela Lei nº 7.804, de 1989)

I - resultar: (Incluído pela Lei nº 7.804, de 1989)

a) dano irreversível à fauna, à flora e ao meio ambiente; (Incluído pela Lei nº 7.804, de 1989)

b) lesão corporal grave; (Incluído pela Lei nº 7.804, de 1989)

II - a poluição é decorrente de atividade industrial ou de transporte; (Incluído pela Lei nº 7.804, de 1989)

III - o crime é praticado durante a noite, em domingo ou em feriado. (Incluído pela Lei nº 7.804, de 1989)

§ 2º Incorre no mesmo crime a autoridade competente que deixar de promover as medidas tendentes a impedir a prática das condutas acima descritas. (Redação dada pela Lei nº 7.804, de 1989)

Art. 16 - (Revogado pela Lei nº 7.804, de 1989)

Art. 17. Fica instituído, sob a administração do Instituto Brasileiro do Meio Ambiente e Recursos Naturais Renováveis - IBAMA: (Redação dada pela Lei nº 7.804, de 1989)

I - Cadastro Técnico Federal de Atividades e Instrumentos de Defesa Ambiental, para registro obrigatório de pessoas físicas ou jurídicas que se dedicam a consultoria técnica sobre problemas ecológicos e ambientais e à indústria e comércio de equipamentos, aparelhos e instrumentos destinados ao controle de atividades efetiva ou potencialmente poluidoras; (Incluído pela Lei nº 7.804, de 1989)

II - Cadastro Técnico Federal de Atividades Potencialmente Poluidoras ou Utilizadoras de Recursos Ambientais, para registro obrigatório de pessoas físicas ou jurídicas que se dedicam a atividades potencialmente poluidoras e/ou à extração, produção, transporte e comercialização de produtos potencialmente perigosos ao meio ambiente, assim como de produtos e subprodutos da fauna e flora. (Incluído pela Lei nº 7.804, de 1989)

Art. 17-A. São estabelecidos os preços dos serviços e produtos do Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis - Ibama, a serem aplicados em âmbito nacional, conforme Anexo a esta Lei. (Incluído pela Lei nº 9.960, de 2000) (Vide Medida Provisória nº 687, de 2015)

Art. 17-B. Fica instituída a Taxa de Controle e Fiscalização Ambiental – TCFA, cujo fato gerador é o exercício regular do poder de polícia conferido ao Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis – Ibama para controle e fiscalização das atividades potencialmente poluidoras e utilizadoras de recursos naturais." (Redação dada pela Lei nº 10.165, de 2000) (Vide Medida Provisória nº 687, de 2015)

§ 1º Revogado. (Redação dada pela Lei nº 10.165, de 2000)

§ 2º Revogado.(Redação dada pela Lei nº 10.165, de 2000)

Art. 17-C. É sujeito passivo da TCFA todo aquele que exerça as atividades constantes do Anexo VIII desta Lei. (Redação dada pela Lei nº 10.165, de 2000)

§ 1º O sujeito passivo da TCFA é obrigado a entregar até o dia 31 de março de cada ano relatório das atividades exercidas no ano anterior, cujo modelo será definido pelo Ibama, para o fim de colaborar com os procedimentos de controle e fiscalização.(Redação dada pela Lei nº 10.165, de 2000)

§ 2º O descumprimento da providência determinada no § 1º sujeita o infrator a multa equivalente a vinte por cento da TCFA devida, sem prejuízo da exigência desta. (Redação dada pela Lei nº 10.165, de 2000)

§ 3º Revogado. (Redação dada pela Lei nº 10.165, de 2000)

Art. 17-D. A TCFA é devida por estabelecimento e os seus valores são os fixados no Anexo IX desta Lei. (Redação dada pela Lei nº 10.165, de 2000)

§ 1º Para os fins desta Lei, consideram-se: (Redação dada pela Lei nº 10.165, de 2000)

I – microempresa e empresa de pequeno porte, as pessoas jurídicas que se enquadrem, respectivamente, nas descrições dos incisos I e II do *caput* do art. 2º da Lei nº 9.841, de 5 de outubro de 1999; (Incluído pela Lei nº 10.165, de 2000)

II – empresa de médio porte, a pessoa jurídica que tiver receita bruta anual superior a R$ 1.200.000,00 (um milhão e duzentos mil reais) e igual ou inferior a R$ 12.000.000,00 (doze milhões de reais); (Incluído pela Lei nº 10.165, de 2000)

III – empresa de grande porte, a pessoa jurídica que tiver receita bruta anual superior a R$ 12.000.000,00 (doze milhões de reais). (Incluído pela Lei nº 10.165, de 2000)

§ 2º O potencial de poluição (PP) e o grau de utilização (GU) de recursos naturais de cada uma das atividades sujeitas à fiscalização encontram-se definidos no Anexo VIII desta Lei. (Incluído pela Lei nº 10.165, de 2000)

§ 3º Caso o estabelecimento exerça mais de uma atividade sujeita à fiscalização, pagará a taxa relativamente a apenas uma delas, pelo valor mais elevado.(Incluído pela Lei nº 10.165, de 2000)

Art. 17-E. É o Ibama autorizado a cancelar débitos de valores inferiores a R$ 40,00 (quarenta reais), existentes até 31 de dezembro de 1999. (Incluído pela Lei nº 9.960, de 2000)

Art. 17-F. São isentas do pagamento da TCFA as entidades públicas federais, distritais, estaduais e municipais, as entidades filantrópicas, aqueles que praticam agricultura de subsistência e as populações tradicionais. (Redação dada pela Lei nº 10.165, de 2000)

Art. 17-G. A TCFA será devida no último dia útil de cada trimestre do ano civil, nos valores fixados no Anexo IX desta Lei, e o recolhimento será efetuado em conta bancária vinculada ao Ibama, por intermédio de documento próprio de arrecadação, até o quinto dia útil do mês subseqüente.(Redação dada pela Lei nº 10.165, de 2000)

Parágrafo único. Revogado. (Redação dada pela Lei nº 10.165, de 2000)

§ 2º Os recursos arrecadados com a TCFA terão utilização restrita em atividades de controle e fiscalização ambiental. (Incluído pela Lei nº 11.284, de 2006)

Art. 17-H. A TCFA não recolhida nos prazos e nas condições estabelecidas no artigo anterior será cobrada com os seguintes acréscimos: (Redação dada pela Lei nº 10.165, de 2000)

I – juros de mora, na via administrativa ou judicial, contados do mês seguinte ao do vencimento, à razão de um por cento; (Redação dada pela Lei nº 10.165, de 2000)

II – multa de mora de vinte por cento, reduzida a dez por cento se o pagamento for efetuado até o último dia útil do mês subseqüente ao do vencimento;(Redação dada pela Lei nº 10.165, de 2000)

III – encargo de vinte por cento, substitutivo da condenação do devedor em honorários de advogado, calculado sobre o total do débito inscrito como Dívida Ativa, reduzido para dez por cento se o pagamento for efetuado antes do ajuizamento da execução.(Incluído pela Lei nº 10.165, de 2000)

§ 1º-A. Os juros de mora não incidem sobre o valor da multa de mora.(Incluído pela Lei nº 10.165, de 2000)

§ 1º Os débitos relativos à TCFA poderão ser parcelados de acordo com os critérios fixados na legislação tributária, conforme dispuser o regulamento desta Lei.(Redação dada pela Lei nº 10.165, de 2000)

Art. 17-I. As pessoas físicas e jurídicas que exerçam as atividades mencionadas nos incisos I e II do art. 17 e que não estiverem inscritas nos respectivos cadastros até o último dia útil do terceiro mês que se seguir ao da publicação desta Lei incorrerão em infração punível com multa de: (Redação dada pela Lei nº 10.165, de 2000)

I – R$ 50,00 (cinqüenta reais), se pessoa física; (Incluído pela Lei nº 10.165, de 2000)

II – R$ 150,00 (cento e cinqüenta reais), se microempresa; (Incluído pela Lei nº 10.165, de 2000)

III – R$ 900,00 (novecentos reais), se empresa de pequeno porte; (Incluído pela Lei nº 10.165, de 2000)

IV – R$ 1.800,00 (mil e oitocentos reais), se empresa de médio porte; (Incluído pela Lei nº 10.165, de 2000)

V – R$ 9.000,00 (nove mil reais), se empresa de grande porte. (Incluído pela Lei nº 10.165, de 2000)

Parágrafo único. Revogado.(Redação dada pela Lei nº 10.165, de 2000)

Art. 17-J. (Revogado pela Lei nº 10.165, de 2000)

Art. 17-L. As ações de licenciamento, registro, autorizações, concessões e permissões relacionadas à fauna, à flora, e ao controle ambiental são de competência exclusiva dos órgãos integrantes do Sistema Nacional do Meio Ambiente. (Incluído pela Lei nº 9.960, de 2000)

Art. 17-M. Os preços dos serviços administrativos prestados pelo Ibama, inclusive os referentes à venda de impressos e publicações, assim como os de entrada, permanência e utilização de áreas ou instalações nas unidades de conservação, serão definidos em portaria do Ministro de Estado do Meio Ambiente, mediante proposta do Presidente daquele Instituto. (Incluído pela Lei nº 9.960, de 2000)

Art. 17-N. Os preços dos serviços técnicos do Laboratório de Produtos Florestais do Ibama, assim como os para venda de produtos da flora, serão, também, definidos em portaria do Ministro de Estado do Meio Ambiente, mediante proposta do Presidente daquele Instituto. (Incluído pela Lei nº 9.960, de 2000)

Art. 17-O. Os proprietários rurais que se beneficiarem com redução do valor do Imposto sobre a Propriedade Territorial Rural – ITR, com base em Ato Declaratório Ambiental - ADA, deverão recolher ao Ibama a importância prevista no item 3.11 do Anexo VII da Lei nº 9.960, de 29 de janeiro de 2000, a título de Taxa de Vistoria.(Redação dada pela Lei nº 10.165, de 2000)

§ 1º-A. A Taxa de Vistoria a que se refere o *caput* deste artigo não poderá exceder a dez por cento do valor da redução do imposto proporcionada pelo ADA.(Incluído pela Lei nº 10.165, de 2000)

§ 1º A utilização do ADA para efeito de redução do valor a pagar do ITR é obrigatória.(Redação dada pela Lei nº 10.165, de 2000)

§ 2º O pagamento de que trata o *caput* deste artigo poderá ser efetivado em cota única ou em parcelas, nos mesmos moldes escolhidos pelo contribuinte para o pagamento do ITR, em documento próprio de arrecadação do Ibama.(Redação dada pela Lei nº 10.165, de 2000)

§ 3º Para efeito de pagamento parcelado, nenhuma parcela poderá ser inferior a R$ 50,00 (cinqüenta reais). (Redação dada pela Lei nº 10.165, de 2000)

§ 4º O inadimplemento de qualquer parcela ensejará a cobrança de juros e multa nos termos dos incisos I e II do *caput* e §§ 1º-A e 1º, todos do art. 17-H desta Lei.(Redação dada pela Lei nº 10.165, de 2000)

§ 5º Após a vistoria, realizada por amostragem, caso os dados constantes do ADA não coincidam com os efetivamente levantados pelos técnicos do Ibama, estes lavrarão, de ofício, novo ADA, contendo os dados reais, o qual será encaminhado à Secretaria da Receita Federal, para as providências cabíveis. (Redação dada pela Lei nº 10.165, de 2000)

Art. 17-P. Constitui crédito para compensação com o valor devido a título de TCFA, até o limite de sessenta por cento e relativamente ao mesmo ano, o montante efetivamente pago pelo estabelecimento ao Estado, ao Município e ao Distrito Federal em razão de taxa de fiscalização ambiental.(Redação dada pela Lei nº 10.165, de 2000)

§ 1º Valores recolhidos ao Estado, ao Município e ao Distrital Federal a qualquer outro título, tais como taxas ou preços públicos de licenciamento e venda de produtos, não constituem crédito para compensação com a TCFA. (Redação dada pela Lei nº 10.165, de 2000)

§ 2º A restituição, administrativa ou judicial, qualquer que seja a causa que a determine, da taxa de fiscalização ambiental estadual ou distrital compensada com a TCFA restaura o direito de crédito do Ibama contra o estabelecimento, relativamente ao valor compensado.(Redação dada pela Lei nº 10.165, de 2000)

Art. 17-Q. É o Ibama autorizado a celebrar convênios com os Estados, os Municípios e o Distrito Federal para desempenharem atividades de fiscalização ambiental, podendo repassar-lhes parcela da receita obtida com a TCFA." (Redação dada pela Lei nº 10.165, de 2000)

Art. 18. (Revogado pela Lei nº 9.985, de 2000)

Art 19 -(VETADO).

Art. 19. Ressalvado o disposto nas Leis nºs 5.357, de 17 de novembro de 1967, e 7.661, de 16 de maio de 1988, a receita proveniente da aplicação desta Lei será recolhida de acordo com o disposto no art. 4º da Lei nº 7.735, de 22 de fevereiro de 1989. (Incluído pela Lei nº 7.804, de 1989)**)**

Art. 20. Esta Lei entrará em vigor na data de sua publicação.

Art. 21. Revogam-se as disposições em contrário.

Brasília, 31 de agosto de 1981; 160º da Independência e 93º da República.

JOÃO FIGUEIREDO
Mário Andreazza

Este texto não substitui o publicado no D.O.U. de 2.9.1981

ANEXO
(Incluído pela Lei nº 9.960, de 2000)

TABELA DE PREÇOS DOS SERVIÇOS E PRODUTOS COBRADOS PELO INSTITUTO BRASILEIRO DO MEIO AMBIENTE E DOS RECURSOS NATURAIS RENOVÁVEIS - IBAMA

DESCRIÇÃO	VALOR (R$)
I - FAUNA	
1. LICENÇA E RENOVAÇÃO	
1. Licença ou renovação para transporte nacional de fauna silvestre, partes, produtos e derivados para criadouros científicos ligados a instituições públicas de pesquisa, pesquisadores ligados a instituições públicas de pesquisa e zoológicos públicos	ISENTO
• Licença ou renovação para transporte nacional de fauna silvestre, partes, produtos e derivados da fauna exótica constante do Anexo I da Convenção sobre Comercio Internacional de Espécies da Fauna e Flora em perigo de extinção - CITES (por formulário)	21,00
• Licença ou renovação para exposição ou concurso de animais silvestres (por formulário)	32,00
• Licença para importação, exportação ou reexportação de	

animais vivos, partes, produtos e derivados da fauna para criadouros científicos e pesquisadores ligados a instituições públicas de pesquisa e zoológicos públicos	ISENTO
• Licença para importação, exportação ou reexportação de animais vivos, partes, produtos e derivados da fauna:	
1.5.1 Por formulário de até 14 itens	37,00
1.5.2 Por formulário adicional	6,00
2. LICENCIAMENTO AMBIENTAL	
2.1 - Criadouro de espécimes da fauna exótica para fins comerciais:	
2.1.1 - Pessoa física	600,00
2.1.2 - Microempresa	800,00
2.1.3 - Demais empresas	1.200,00
2.2 - Mantenedor de fauna exótica :	
2.2.1 - Pessoa física	300,00
2.2.2 - Microempresa	400,00
2.2.3 - Demais empresas	500,00
2.3. Importador de animais vivos, abatidos, partes, produtos e subprodutos da fauna silvestre brasileira e exótica:	
2.3.1. Microempresa	500,00
2.3.2. Demais empresas	600,00
2.4. Circo:	
2.4.1. Microempresa	300,00
2.4.2. Demais empresas	600,00
Obs.: O licenciamento ambiental da fauna será renovável a cada dois anos	
3. REGISTRO	
3.1. Criadouros de espécies da fauna brasileira para fins científicos:	
3.1.1. Vinculados a instituições públicas de pesquisas	ISENTO
3.1.2. Não vinculados	100,00
3.2. Criadouros de espécies da fauna brasileira para fins comerciais:	

3.2.1. Categoria A – Pessoa Física	400,00
3.2.2. Categoria B – Pessoa Jurídica	300,00
3.3. Industria de beneficiamento de peles, partes, produtos e derivados da fauna brasileira	400,00
3.4. Zoológico Público – Categorias A, B e C	ISENTO
3.5. Zoológico privado:	
3.5.1. Categorias A	300,00
3.5.2. Categorias B	350,00
3.5.3. Categorias C	400,00
3.6. Exportador de animais vivos, abatidos, partes, produtos e derivados da fauna	300,00
3.7. Importador de animais vivos, abatidos, partes, produtos e derivados da fauna	400,00
4. CAÇA AMADORISTA	
4.1. Liberação de armas e demais petrechos de caça	373,00
4.2. Autorização anual de caça amadorista de campo e licença de transporte das peças abatidas	300,00
4.3. Autorização anual de caça amadorista de banhado e licença de transporte das peças abatidas	300,00
4.4. Autorização de ingresso de caça abatida no exterior (por formulário)	319,00
5. VENDA DE PRODUTOS	
5.1. Selo de lacre de segurança para peles, partes, produtos e derivados da fauna	1,10
6. SERVIÇOS DIVERSOS	
6.1. Expedição ou renovação anual de carteira da fauna para sócios de clubes agrupados à Federação Ornitófila	30,00
6.2. Identificação ou marcação de espécimes da fauna (por unidade por ano).	16,00
II - FLORA	
1. LICENÇA E RENOVAÇÃO	
1.1. Licença ou renovação para exposição ou concurso de plantas ornamentais	53,00
1.2. Licença ou renovação para transporte nacional de flora brasileira, partes, produtos e derivados para jardins botânicos públicos e pesquisadores ligados a instituições públicas de pesquisa	ISENTO

1.3. Licença ou renovação para transporte nacional de flora exótica constante do Anexo I da CITES (por formulário)	21,00
1.4. Licença ou renovação para importação, exportação ou reexportação de plantas vivas, partes, produtos e derivados da flora para jardins botânicos públicos e pesquisadores ligados a instituições públicas de pesquisa	ISENTO
1.5. Licença ou renovação para importação, exportação ou reexportação de plantas vivas, partes, produtos e derivados da flora:	
1.5.1. Por formulário de 14 itens	37,00
1.5.2. Por formulário adicional	6,00
1.6. Licença para porte e uso de motosserra - anual	30,00
2. AUTORIZAÇÃO	
2.1. Autorização para uso do fogo em queimada controlada:	
2.1.1. Sem vistoria	ISENTO
2.1.2. Com vistoria:	
2.1.2.1. Queimada Comunitária:	
. Área até 13 hectares	3,50
. De 14 a 35 hectares	7,00
. De 36 a 60 hectares	10,50
. De 61 a 85 hectares	14,00
. De 86 a 110 hectares	17,50
. De 111 a 135 hectares	21,50
. De 136 a 150 hectares	25,50

2.1.2.2. Demais Queimadas Controladas:	
. Área até 13 hectares	3,50
. Acima de 13 hectares – por hectare autorizado	3,50
2.2. Autorização de Transporte para Produtos Florestais- ATPF	
2.2.1. Para lenha, rachas e lascas, palanques roliços, escoramentos, xaxim, óleos essenciais e carvão vegetal	5,00
2.2.2. Para demais produtos	10,00
2.3. Autorização para Consumo de Matéria Prima Florestal - m^3 consumido/ano	vide formula
Até 1.000 = (125, 00 + Q x 0,0020) Reais	
1.001 a 10.000 = (374,50 + Q x 0,0030) Reais	
10.001 a 25.000 = (623,80 + Q x 0,0035) Reais	
25.001 a 50.000 = (873,80 + Q x 0,0040) Reais	
50.001 a 100.000 = (1.248,30 + Q x 0,0045) Reais	
100.001 a 1.000.000 = (1. 373,30 + Q x 0,0050) Reais	
1.000.001 a 2.500.000 = (1. 550,00 + Q x 0,0055) Reais	
Acima de 2.500.000 = 22.500,00 Reais Q = quantidade consumida em metros cúbicos	
3. VISTORIA	
3.1. Vistorias para fins de loteamento urbano	532,00
3.2. Vistoria prévia para implantação de Plano de Manejo Florestal Sustentado	

(área projetada):	
. Até 250 há	289,00
. Acima de 250 ha. - Valor = R$ 289,00 + R$ 0,55 por ha. excedente	vide fórmula
3.3. Vistoria de acompanhamento de Plano de Manejo Florestal Sustentado (área explorada):	
. Até 250 há	289,00
. Acima de 250 ha. – Valor = R$ 289,00 + R$ 0,55 por ha excedente	vide fórmula
3.4. Vistoria técnica para coleta de plantas ornamentais e medicinais (área a ser explorada):	
. Até 20 ha/ano	ISENTO
. De 21 a 50 ha/ano	160,00
. De 51 a 100 ha/ano	289,00
. Acima de 100 ha/ano – Valor = R$ 289,00 + R$ 0,55 por ha	vide fórmula
3.5. Vistoria para limpeza de área (área solicitada)	289,00
3.6. Vistoria técnica de desmatamento para uso alternativo do solo de projetos enquadrados no Programa Nacional de Agricultura Familiar-PRONAF ou no Programa de Financiamento à Conservação e Controle do Meio Ambiente-FNE VERDE (área a ser explorada):	
. Até Módulo INCRA por ano	ISENTO
. Acima de Módulo INCRA por ano - Valor = R$ 128,00 + R$ 0,55 por ha excedente	vide fórmula
3.7. Vistorias de implantação, acompanhamento e exploração de florestas plantadas, enriquecimento (palmito e outras frutíferas) e cancelamentos de projetos (por área a ser vistoriada):	

. Até 50 ha/ano	64,00
. De 51 a 100 ha/ano	117,00
. Acima de 100 ha/ano – Valor = R$ 289,00 + R$ 0,55 por ha excedente	vide fórmula
3.8. Vistoria técnica para desmatamento para uso alternativo do solo e utilização de sua matéria-prima florestal:	
. Até 20 há	ISENTO
. De 21 a 50 ha/ano	160,00
. De 51 a 100 ha/ano	289,00
. Acima de 100 ha/ano – Valor = R$ 289,00 + R$ 0,55 por ha excedente	vide fórmula
3.9. Vistoria para fins de averbação de área de Reserva Legal (sobre a área total da propriedade):	
. Até 100 ha/ano	ISENTO
. De 101 a 300 ha/ano	75,00
. De 301 a 500 ha/ano	122,00
. De 501 a 750 ha/ano	160,00
. Acima de 750 ha/ano – Valor = R$ 160,00 + R$ 0,21 por ha excedente	vide fórmula
Obs.: Quando a solicitação de vistoria para averbação de reserva legal for concomitante a outras vistorias (desmatamento, plano de manejo, etc.), cobra-se pelo maior valor	
3.10. Vistoria de áreas degradadas em recuperação, de avaliação de danos ambientais em áreas antropizadas e em empreendimentos cujas áreas estão sujeitas a impacto ambiental - EIA/RIMA:	
- até 250 ha/ano	289,00
- acima de 250 ha/ano – Valor = R$ 289,00 + R$ 0,55 por ha excedente	vide fórmula

3.11. Demais Vistorias Técnicas Florestais: - até 250 ha/ano - acima de 250 ha/ano – Valor = R$289,00 + 0,55 por ha excedente	289,00 vide fórmula
4. INSPEÇÃO DE PRODUTOS E SUBPRODUTOS DA FLORA PARA EXPORTAÇÃO OU IMPORTAÇÃO	
4.1. Inspeção de espécies contingenciadas	ISENTO
4.2 Levantamento circunstanciado de áreas vinculados à reposição florestal e ao Plano Integrado Florestal, Plano de Corte e Resinagem (projetos vinculados e projetos de reflorestamento para implantação ou cancelamento):	
- Até 250 ha/ano	289,00
- Acima de 250 ha/ano – Valor = R$ 289,00 + R$ 0,55 por ha excedente	vide fórmula
5. OPTANTES DE REPOSIÇÃO FLORESTAL	
5.1. Valor por árvore	1,10
III – CONTROLE AMBIENTAL	
1. LICENÇA E RENOVAÇÃO	
1.1. Licença Ambiental ou Renovação	vide tabela
EMPRESA DE PEQUENO PORTE	
Impacto Ambiental Pequeno Medio Alto	
Licença Prévia 2.000,00 4.000,00 8.000,00	
Licença de Instalação 5.600,00 11.200,00 22.400,00	
Licença de Operação 2.800,00 5.600,00 11.200,00	
EMPRESA DE PORTE MÉDIO	
Impacto Ambiental Pequeno Medio Alto	
Licença Prévia 2.800,00 5.600,00 11.200,00	
Licença de Instalação 7.800,00 15.600,00 31.200,00	
Licença de Operação 3.600,00 7.800,00 15.600,00	
EMPRESA DE GRANDE PORTE	
Impacto Ambiental Pequeno Medio Alto	

Licença Prévia 4.000,00 8.000,00 16.000,00	
Licença de Instalação 11.200,00 22.400,00 44.800,00	
Licença de Operação 5.600,00 11.200,00 22.400,00	
1.2. Licença para uso da configuração de veículo ou motor	vide fórmula
Valor = R$266,00 + N x R$1,00 N = número de veículos comercializados no mercado interno – pagamento até o último dia do mês subsequente à comercialização.	
1.3. Licença de uso do Selo Ruído	266,00
1.4. Certidão de dispensa de Licença para uso da configuração de veículo ou motor por unidade.	266,00
1.5. Declaração de atendimento aos limites de ruídos	266,00
2. AVALIAÇÃO E ANÁLISE	
2.1. Análise de documentação técnica que subsidie a emissão de: Registros, Autorizações, Licenças, inclusive para supressão de vegetação em Áreas de Preservação Permanente e respectivas renovações :	vide fórmula
Valor = {K + [(A x B x C) + (D x A x E)]}	
A - Nº de Técnicos envolvidos na análise	
B - Nº de horas/homem necessárias para análise	
C - Valor em Reais da hora/homem dos técnicos envolvidos na análise + total de obrigações sociais	
(OS) = 84,71% sobre o valor da hora/homem	
D - Despesas com viagem	
E - Nº de viagens necessárias	
K - Despesas administrativas = 5% do somatório de (A x B x C) + (D x A x E)	
2.2. Avaliação e classificação do Potencial de Periculosidade Ambiental - PPA:	
2.2.1. Produto Técnico	22.363,00

2.2.2. Produto formulado	11.714,00
2.2.3. Produto Atípico	6.389,00
2.2.4. PPA complementar	2.130,00
2.2.5. Pequenas alterações	319,00
2.3. Conferência de documentação técnica para avaliação e registro de agrotóxicos e afins	319,00
2.4. Avaliação de eficiência de agrotóxicos e afins para registro	2.130,00
2.5. Reavaliação técnica de agrotóxicos (inclusão de novos usos)	3.195,00
2.6. Avaliação Ambiental Preliminar de Agrotóxicos, seus componentes e afins, com ou sem emissão de Certificado de Registro Especial Temporário:	
2.6.1. Fase 2	532,00
2.6.2. Fase 3	2.130,00
2.6.3. Fase 4	4.260,00
2.7. Avaliação/Classificação Ambiental de Produtos Biotecnológicos para fins de registro	6.389,00
2.8. Avaliação Ambiental de Preservativos de Madeira	4.260,00
2.9. Avaliação Ambiental de Organismos Geneticamente Modificados	22.363,00
3. AUTORIZAÇÃO	
3.1. Autorizações para supressão de vegetação em Área de Preservação Permanente:	
. Até 50 há	133,00
. Acima de 50 há	vide fórmula
Valor = R$ 6.250,00 +(25,00 x Área que excede 50 ha)	
3.2. Autorização para importação, produção, comercialização e uso de mercúrio	vide fórmula
Valor = R$ 125,00 + (125,00 x 0,003 x QM) QM = quantidade de Mercúrio Metálico (medido em quilograma) importado, comercializado ou produzido por ano	

4. REGISTRO	
4.1. Proprietário e comerciante de motosserra	ISENTO
4.2. Registro de agrotóxicos, seus componentes e afins	1.278,00
4.3. Manutenção de registro ou da classificação do PPA (Classe I e II)	7.454,00
4.4. Manutenção de registro ou da classificação do PPA(Classe III e IV)	3.195,00
4.5. Registro ou renovação de produto preservativo de madeira	1.278,00
4.6. Registro de produtos que contenham organismos geneticamente modificados	1.278,00
4.7. Manutenção de registro de produtos que contenham organismos geneticamente modificados	5.325,00

ANEXO VIII
(Incluído pela Lei nº 10.165, de 27.12.2000)

atividades potenciaLmente poluidoras e utilizadoras de recursos ambientais

Código	Categoria	Descrição	Pp/gu
01	Extração e Tratamento de Minerais	- pesquisa mineral com guia de utilização; lavra a céu aberto, inclusive de aluvião, com ou sem beneficiamento; lavra subterrânea com ou sem beneficiamento, lavra garimpeira, perfuração de poços e produção de petróleo e gás natural.	AAlto
02	Indústria de Produtos Minerais Não Metálicos	- beneficiamento de minerais não metálicos, não associados a extração; fabricação e elaboração de produtos minerais não metálicos tais como produção de material cerâmico, cimento, gesso, amianto, vidro e similares.	MMédio
03	Indústria Metalúrgica	- fabricação de aço e de produtos siderúrgicos, produção de fundidos de ferro e aço, forjados, arames,	AAlto

		relaminados com ou sem tratamento; de superfície, inclusive galvanoplastia, metalurgia dos metais não-ferrosos, em formas primárias e secundárias, inclusive ouro; produção de laminados, ligas, artefatos de metais não-ferrosos com ou sem tratamento de superfície, inclusive galvanoplastia; relaminação de metais não-ferrosos, inclusive ligas, produção de soldas e anodos; metalurgia de metais preciosos; metalurgia do pó, inclusive peças moldadas; fabricação de estruturas metálicas com ou sem tratamento de superfície, inclusive; galvanoplastia, fabricação de artefatos de ferro, aço e de metais não-ferrosos com ou sem tratamento de superfície, inclusive galvanoplastia, têmpera e cementação de aço, recozimento de arames, tratamento de superfície.	
04	Indústria Mecânica	- fabricação de máquinas, aparelhos, peças, utensílios e acessórios com e sem tratamento térmico ou de superfície.	MMédio
05	Indústria de material Elétrico, Eletrônico e Comunicações	- fabricação de pilhas, baterias e outros acumuladores, fabricação de material elétrico, eletrônico e equipamentos para telecomunicação e informática; fabricação de aparelhos elétricos e eletrodomésticos.	MMédio
06	Indústria de Material de Transporte	- fabricação e montagem de veículos rodoviários e ferroviários, peças e acessórios; fabricação e montagem de aeronaves; fabricação e reparo de embarcações e estruturas flutuantes.	MMédio

07	Indústria de Madeira	- serraria e desdobramento de madeira; preservação de madeira; fabricação de chapas, placas de madeira aglomerada, prensada e compensada; fabricação de estruturas de madeira e de móveis.	Médio
08	Indústria de Papel e Celulose	- fabricação de celulose e pasta mecânica; fabricação de papel e papelão; fabricação de artefatos de papel, papelão, cartolina, cartão e fibra prensada.	Alto
09	Indústria de Borracha	- beneficiamento de borracha natural, fabricação de câmara de ar, fabricação e recondicionamento de pneumáticos; fabricação de laminados e fios de borracha; fabricação de espuma de borracha e de artefatos de espuma de borracha, inclusive látex.	Pequeno
10	Indústria de Couros e Peles	- secagem e salga de couros e peles, curtimento e outras preparações de couros e peles; fabricação de artefatos diversos de couros e peles; fabricação de cola animal.	Alto
11	Indústria Têxtil, de Vestuário, Calçados e Artefatos de Tecidos	- beneficiamento de fibras têxteis, vegetais, de origem animal e sintéticos; fabricação e acabamento de fios e tecidos; tingimento, estamparia e outros acabamentos em peças do vestuário e artigos diversos de tecidos; fabricação de calçados e componentes para calçados.	Médio
12	Indústria de Produtos de Matéria Plástica.	- fabricação de laminados plásticos, fabricação de artefatos de material plástico.	Pequeno
13	Indústria do Fumo	- fabricação de cigarros, charutos, cigarrilhas e outras	Médio

		atividades de beneficiamento do fumo.	
14	Indústrias Diversas	- usinas de produção de concreto e de asfalto.	Pequeno
15	Indústria Química	- produção de substâncias e fabricação de produtos químicos, fabricação de produtos derivados do processamento de petróleo, de rochas betuminosas e da madeira; fabricação de combustíveis não derivados de petróleo, produção de óleos, gorduras, ceras, vegetais e animais, óleos essenciais, vegetais e produtos similares, da destilação da madeira, fabricação de resinas e de fibras e fios artificiais e sintéticos e de borracha e látex sintéticos, fabricação de pólvora, explosivos, detonantes, munição para caça e desporto, fósforo de segurança e artigos pirotécnicos; recuperação e refino de solventes, óleos minerais, vegetais e animais; fabricação de concentrados aromáticos naturais, artificiais e sintéticos; fabricação de preparados para limpeza e polimento, desinfetantes, inseticidas, germicidas e fungicidas; fabricação de tintas, esmaltes, lacas, vernizes, impermeabilizantes, solventes e secantes; fabricação de fertilizantes e agroquímicos; fabricação de produtos farmacêuticos e veterinários; fabricação de sabões, detergentes e velas; fabricação de perfumarias e cosméticos; produção de álcool etílico, metanol e similares.	Alto
16	Indústria de Produtos	- beneficiamento,	Médio

	Alimentares e Bebidas	moagem, torrefação e fabricação de produtos alimentares; matadouros, abatedouros, frigoríficos, charqueadas e derivados de origem animal; fabricação de conservas; preparação de pescados e fabricação de conservas de pescados; beneficiamento e industrialização de leite e derivados; fabricação e refinação de açúcar; refino e preparação de óleo e gorduras vegetais; produção de manteiga, cacau, gorduras de origem animal para alimentação; fabricação de fermentos e leveduras; fabricação de rações balanceadas e de alimentos preparados para animais; fabricação de vinhos e vinagre; fabricação de cervejas, chopes e maltes; fabricação de bebidas não-alcoólicas, bem como engarrafamento e gaseificação e águas minerais; fabricação de bebidas alcoólicas.	
17	Serviços de Utilidade	- produção de energia termoelétrica; tratamento e destinação de resíduos industriais líquidos e sólidos; disposição de resíduos especiais tais como: de agroquímicos e suas embalagens; usadas e de serviço de saúde e similares; destinação de resíduos de esgotos sanitários e de resíduos sólidos urbanos, inclusive aqueles provenientes de fossas; dragagem e derrocamentos em corpos d'água; recuperação de áreas contaminadas ou degradadas.	Médio
18	Transporte, Terminais,	- transporte de cargas	Alto

	Depósitos e Comércio	perigosas, transporte por dutos; marinas, portos e aeroportos; terminais de minério, petróleo e derivados e produtos químicos; depósitos de produtos químicos e produtos perigosos; comércio de combustíveis, derivados de petróleo e produtos químicos e produtos perigosos.	
19	Turismo	- complexos turísticos e de lazer, inclusive parques temáticos.	Pequeno
20 (Redação dada pela Lei nº 11.105, de 2005)	Uso de Recursos Naturais	Silvicultura; exploração econômica da madeira ou lenha e subprodutos florestais; importação ou exportação da fauna e flora nativas brasileiras; atividade de criação e exploração econômica de fauna exótica e de fauna silvestre; utilização do patrimônio genético natural; exploração de recursos aquáticos vivos; introdução de espécies exóticas, exceto para melhoramento genético vegetal e uso na agricultura; introdução de espécies geneticamente modificadas previamente identificadas pela CTNBio como potencialmente causadoras de significativa degradação do meio ambiente; uso da diversidade biológica pela biotecnologia em atividades previamente identificadas pela CTNBio como potencialmente causadoras de significativa degradação do meio ambiente.	Médio
21	(VETADO)	x	x
22	(VETADO)	x	x

ANEXO IX

(Incluído pela Lei nº 10.165, de 27.12.2000)

VALORES, EM REAIS, DEVIDOS A TÍTULOS DE TCFA POR ESTABELECiMENTO POR TRIMESTRE

Potencial de Poluição, Grau de utilização de Recursos Naturais	Pessoa Física	Microempresa	Empresa de Pequeno Porte	Empresa de Médio Porte	Empresa de Grande Porte
Pequeno	-	-	112,50	225,00	450,00
Médio	-	-	180,00	360,00	900,00
Alto	-	50,00	225,00	450,00	2.250,00

Annex 576

Framework Act on Environmental Policy, as amended from time to time and updated in 2022

FRAMEWORK ACT ON ENVIRONMENTAL POLICY

Wholly Amended by Act No. 10893, Jul. 21, 2011
Amended by Act No. 10911, Jul. 25, 2011
Act No. 10977, Jul. 28, 2011
Act No. 11268, Feb. 1, 2012
Act No. 11603, Jan. 1, 2013
Act No. 11751, Apr. 5, 2013
Act No. 11913, Jul. 16, 2013
Act No. 11917, Jul. 16, 2013
Act No. 11980, Jul. 30, 2013
Act No. 13410, Jul. 20, 2015
Act No. 13535, Dec. 1, 2015
Act No. 13534, Dec. 1, 2015
Act No. 13550, Dec. 15, 2015
Act No. 13603, Dec. 22, 2015
Act No. 13879, Jan. 27, 2016
Act No. 13886, Jan. 27, 2016
Act No. 13872, Jan. 27, 2016
Act No. 13873, Jan. 27, 2016
Act No. 13883, Jan. 27, 2016
Act No. 13889, Jan. 27, 2016
Act No. 13894, Jan. 27, 2016
Act No. 14229, May 29, 2016
Act No. 14494, Dec. 27, 2016
Act No. 14532, Jan. 17, 2017
Act No. 16096, Dec. 31, 2018
Act No. 16267, Jan. 15, 2019
Act No. 16305, Apr. 2, 2019
Act No. 16619, Nov. 26, 2019
Act No. 16861, Dec. 31, 2019
Act No. 17326, May 26, 2020
Act No. 17797, Dec. 29, 2020

KLRI KOREA LEGISLATION RESEARCH INSTITUTE

Act No. 17857, Jan. 5, 2021
Act No. 18283, jun. 15, 2021
Act No. 18469, Sep. 24, 2021
Act No. 18584, Dec. 21, 2021
Act No. 18918, jun. 10, 2022

CHAPTER I GENERAL PROVISIONS

Article 1 (Purpose)

The purpose of this Act is to ensure that all citizens enjoy a healthy and pleasant life by preventing environmental pollution and environmental damage and by managing and preserving the environment in an appropriate and sustainable manner through defining the rights and obligations of citizens and the responsibilities of the State with regard to environmental conservation and determining the fundamental matters for environmental policies.

Article 2 (Fundamental Concepts)

(1) The State, local governments, business entities and citizens shall ensure that the current generation of citizens can fully enjoy environmental benefits and future generations will continue to enjoy such benefits by endeavoring to maintain and create a better environment, by considering environmental conservation first while engaging in any activities utilizing the environment and by combining their efforts to prevent any environmental harms on the earth, such as climate changes, in view of the fact that the creation of a delightful environment through a qualitative improvement and conservation of the environment and the maintenance of harmony and balance between human beings and the environment therethrough are indispensable elements for citizens' health and enjoyment of a cultural life, for the maintenance of the territorial integrity and for the everlasting development of the nation. *<Amended on Feb. 1, 2012; Jan. 15, 2019>*

(2) The State and local governments shall endeavor to realize environmental justice by ensuring all citizens' substantial participation in the enactment or amendment of environmental statutes, regulations, ordinances and rules or the formulation or implementation of policies, access to information about environment, equitable sharing of environmental benefits and burdens, and fair compensation for losses caused by environmental pollution or environmental damage. *<Amended on Jan. 15, 2019>*

Article 3 (Definitions)

The terms used in this Act are defined as follows: *<Amended on Jan. 27, 2016; Jan. 15, 2019>*

1. The term "environment" means the natural environment and the living environment;

2. The term “natural environment” means the natural conditions (including ecosystem and natural scenery) that include both all living things in the underground, on the earth’s surface (including the seas) and above the ground and inanimate matters surrounding them;

3. The term “living environment” means the environment related to the daily life of human beings, such as air, water, soil, waste, noise, vibration, malodor, sunshine, artificial lighting, and chemical substances;

4. The term “environmental pollution” means air pollution, water pollution, soil pollution, sea pollution, radioactive contamination, noise, vibration, malodor, sunshine obstruction, light pollution from artificial lighting and other similar pollution caused by industrial activities and other human activities, such as inflicting damage on human health or the environment;

5. The term “environmental damage” means the conditions that inflict serious damage on intrinsic functions of the natural environment by overhunting or overgathering wild animals or plants, destroying their habitats, disturbing the order of the ecosystem, impairing the natural scenery, washing away the topsoil, etc.;

6. The term “environmental conservation” means any activity conducted to protect the environment from pollution and damage and to improve any polluted or damaged environment, as well as to maintain and create more delightful environmental conditions;

7. The term “environmental capacity” means the limit in which the environment can keep its quality by absorbing, purifying and restoring environmental pollution or environmental damage on its own within a certain area;

8. The term “environmental standards” means desirable environmental conditions or quality levels that the State should achieve and maintain to protect the health of citizens and create a delightful environment.

Article 4 (Responsibilities of the State and Local Governments)

(1) In order to prevent any environmental pollution and environmental damage and any potential harms caused thereby and to properly manage and preserve the environment, the State shall be responsible for the development and implementation of an environmental plan. *<Amended on Jan. 5, 2021>*

(2) A local government shall be responsible for the formulation and implementation of its own environmental plan according to the environmental plan of the State, taking into consideration the regional characteristics of its jurisdiction. *<Amended on Jan. 5, 2021>*

(3) When formulating an environmental plan under paragraph (1) and an environmental plan of a local government under paragraph (2) to maintain the national land at a sustainable level, the State and local governments shall devise a measure to interlink such plan with a national land plan under the Framework Act on the National Land. *<Newly Inserted on Dec. 1, 2015; Jan. 5, 2021>*

(4) Where necessary to interlink the environmental plan and the national land plan under paragraph (3), the Minister of Environment may jointly determine matters, such as the scope of application and the methods and procedures for the interlinking, with the Minister of Land, Infrastructure and Transport. *<Newly Inserted on Dec. 1, 2015; Jan. 5, 2021>*

Article 5 (Responsibilities of Business Entities)

Any business entity shall voluntarily take measures required for preventing any environmental pollution and environmental damage that may result from his or her business activities and shall be responsible for participating and cooperating in environmental conservation policies of the State or local governments.

Article 6 (Rights and Obligations of Citizens)

(1) All citizens shall have the right to live in a healthy and agreeable environment.

(2) All citizens shall cooperate in environmental conservation policies of the State and local governments.

(3) All citizens shall endeavor to reduce any environmental pollution and environmental damage that may result from their daily lives and to preserve the national land and natural environment.

Article 6-2 (Relationship to Other Statutes)

Enactments or amendments of other statutes or regulations related to environmental policies shall conform to the purpose and fundamental concepts of this Act.

Article 7 (Principle of Liability of Persons Causing Pollution)

Any person who causes any environmental pollution or environmental damage due to his or her business or other activities shall, in principle, be liable to prevent the relevant pollution or damage and to recover and restore the polluted or damaged environment, as well as to bear expenses incurred in restoring the damage resulting from the environmental pollution or environmental damage.

Article 7-2 (Benefit Principle)

Where a person other than the State or a local government gains significant benefits from a project for environmental conservation, the State or a local government may require the person who gains benefits to fully or partially bear the cost of the project for environmental conservation within the limit of such benefits.

Article 8 (Prior Prevention of Environmental Pollution)

(1) The State and local governments shall exert preferential efforts for a prior preventive management of pollution through reducing pollutants and pollution sources of the environment at source and devise policies to promote voluntary efforts by business entities for the prevention of environmental pollution.

(2) Business entities shall endeavor to use raw materials with less environmental pollution and to improve their production processes at the entire phases of their business activities such as production, sale, distribution and destruction of products, and to reduce the generation of pollutants at source and to minimize any harmful impacts arising from the use and destruction of their products on the environment by means of saving resources and promoting recycling.

(3) The State, local governments and business entities shall endeavor to minimize any harmful impacts arising from their administrative plans and development projects on the environment with the aim of preventing such administrative plans and development projects from damaging the national land and natural environment.

Article 9 (Comprehensive Consideration of Environment and Economy)

(1) The Government shall develop methods by which the environment and economy can be evaluated in a comprehensive manner and shall utilize those methods when it formulates different types of policies.

(2) The Government shall assist in minimizing any harmful impacts on the environment through consultations between industries, regions and businesses within the environmental capacity.

Article 10 (Saving of Resources and Promotion of their Cyclical Use)

(1) The State and local governments shall develop policies necessary to economize on resources and energy and to promote the cyclical use of resources, including reuse and recycling of resources.

(2) Business entities shall cooperate with the State and local governments in implementing the policies under paragraph (1) when they conduct economic activities.

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Article 11 (Reporting)

(1) The Government shall submit each year to the National Assembly a report on the situation of promoting major environmental conservation policies.

(2) A report under paragraph (1) shall include the following:

1. Current status of environmental pollution and environmental damage;
2. Environmental trends at home and abroad;
3. Promotion status of environmental conservation policies;
4. Other important matters relating to environmental conservation.

(3) The Minister of Environment may request the head of a relevant central administrative agency to submit the data required for preparing a report under paragraph (1), and the head of the relevant central administrative agency shall comply with it unless there is a compelling reason not to do so.

CHAPTER II ESTABLISHMENT OF ENVIRONMENTAL PLANS

SECTION 1 Environmental Standards

Article 12 (Formulation of Environmental Standards)

(1) The State shall formulate environmental standards, based on the impacts, etc. on the ecosystem or human health and ensure that such standards maintain appropriateness according to changes in environmental conditions. *<Amended on Jan. 27, 2016>*

(2) The environmental standards shall be prescribed by Presidential Decree.

(3) The Special Metropolitan City, a Metropolitan City, a Special Self-Governing City, a Do, a Special Self-Governing Province (hereinafter referred to as "City/Do") may, by ordinance of the relevant City/Do, formulate separate environmental standards that are more expanded and strengthened than the environmental standards prescribed in paragraph (1) (hereinafter referred to as “local environmental standards”) or modify any existing environmental standards for such purposes, if deemed necessary in view of the unique environmental characteristics of the relevant area. *<Amended on Jan. 5, 2021>*

(4) If the Special Metropolitan City Mayor, a Metropolitan City Mayor, a Special Self-Governing City Mayor, a Do Governor, or a Special Self-Governing Province Governor (hereinafter referred to as a "Mayor/Do Governor") formulates or modifies any local environmental standards prescribed in paragraph (3), he or she shall, without delay, notify the Minister of Environment thereof. *<Amended on Jan. 5, 2021>*

Article 12-2 (Publication of Environmental Standards)

(1) The Minister of Environment shall publish the environmental standards formulated under Article 12 and grounds for the formulation thereof.

(2) The standards and methods for publication prescribed in paragraph (1) shall be prescribed by Ordinance of the Ministry of Environment.

Article 12-3 (Evaluation of Environmental Standards)

(1) The Minister of Environment shall evaluate environmental standards prescribed in Article 12 on a five-year basis to maintain the adequacy of the environmental standards.

(2) Upon the evaluation of environmental standards prescribed in paragraph (1), the Minister of Environment shall report, without delay, the results without delay to the competent standing committee of the National Assembly.

(3) The State and local governments shall reflect the evaluation result prescribed in paragraph (1) in formulating or modifying the environmental standards prescribed in Article 12 (1) and (3).

(4) Other matters necessary for evaluating environmental standards shall be prescribed by Presidential Decree.

Article 13 (Maintenance of Environmental Standards)

If the State or a local government enacts or amends any statute or regulation related to the environment, establishes any administrative plan, or executes any project, he or she shall ensure that the environmental standards under Article 12 are appropriately maintained, in consideration of the following:

1. Prevention of the environmental deterioration and elimination of the factors thereof;
2. Restoration to the original state of any area the environment of which is polluted;
3. Prevention of environmental pollution and environmental damage following the use of any new scientific technology;
4. Proper distribution of financial resources for the prevention of environmental pollution.

SECTION 2 Fundamental Policies

Article 14 (Development of Comprehensive National Environmental Plan)

(1) The Minister of Environment shall develop a comprehensive plan to preserve the environment at the national level (hereinafter referred to as "comprehensive national environmental plan"), every 20 years, after consultation with the heads of relevant central administrative agencies. *<Amended on Dec. 1, 2015>*

(2) If the Minister of Environment intends to develop or modify a comprehensive national environmental plan, he or she shall prepare a draft therefor and finalize it subject to deliberation by the State Council after hearing opinions from citizens, related experts, etc. through a public hearing, etc.

(3) If it is intended to modify any minor matter prescribed by Presidential Decree with respect to a comprehensive national environmental plan, the procedure under paragraph (2) may be omitted.

Article 15 (Details of Comprehensive National Environmental Plans)

A comprehensive national environmental plan shall include the following: *<Amended on Dec. 27, 2016; Jan. 15, 2019; Jan. 5, 2021>*

1. Matters concerning the given conditions for environmental changes, such as population, industry, economy, and utilization of land and sea;
2. Prediction of the sources of environment pollution, environmental pollution level and pollutant discharge quantity, and prospects of changes in environmental quality due to environmental pollution and environmental damage;
3. Current status of and prospects for the environment;
4. Goal-setting for realizing environmental justice, and measures to achieve the goals;
5. Setting the targets of environmental conservation and the phased measures and project programs on the following matters to attain such targets:
   (a) Matters concerning the conservation of natural environment, such as biodiversity, ecosystem, ecological axis (referring to an ecological habitation space that links ecologically important areas or areas that need upkeep of ecological functions for the enhancement of biodiversity and continuity of

ecosystem functions) and scenery;

(b) Matters concerning the conservation of the soil environment and groundwater quality;

(c) Matters concerning the conservation of the marine environment;

(d) Matters concerning the conservation of the national land environment;

(e) Matters concerning the conservation of the air environment;

(f) Matters concerning the conservation of the water environment;

(g) Matters concerning the efficient use and management of water resources;

(h) Matters concerning the wider availability of waterworks and sewerage systems;

(i) Matters concerning wastes control and recycling;

(j) Matters concerning chemical substances control;

(k) Matters concerning the control of radioactive contaminants;

(l) Matters concerning climate changes;

(m) Other matters concerning the management of the environment;

6. Computation of expenses incurred in executing projects, and methods for securing financial resources therefor;

7. Appraisal of the preceding comprehensive plan;

8. Other matters incidental to those listed in subparagraphs 1 through 6.

Article 16 (Implementation of Comprehensive National Environmental Plan)

(1) The Minister of Environment shall, without delay, notify the heads of relevant central administrative agencies of a comprehensive national environmental plan developed or modified under Article 14.

(2) The heads of relevant central administrative agencies shall take measures necessary to implement a comprehensive national environmental plan.

Article 16-2 (Adjustment of Comprehensive National Environmental Plan)

(1) The Minster of Environment shall re-examine the appropriateness of the comprehensive national environmental plan every five years, taking into consideration matters such as changes in environmental and social conditions, and shall adjust it if necessary. *<Amended on Jan. 5, 2021>*

(2) If the Minister of Environment intends to adjust the comprehensive national environmental plan under paragraph (1), he or she shall prepare a draft thereof and finalize it subject to consultation with the heads of relevant central administrative agencies after gathering consensus from citizens, related experts, etc. through a public hearing, etc. *<Newly Inserted on Jan. 5, 2021>*

(3) The Minister of Environment shall notify the head of a relevant central administrative agency, a Mayor/Do Governor, or the head of a Si/Gun/Gu (referring to the head of an autonomous Gu; hereinafter the same shall apply) of the comprehensive national environmental plan adjusted under paragraphs (1) and (2). *<Newly Inserted on Jan. 5, 2021>*

Article 17 Deleted. <*Jan. 5, 2021*>

Article 18 (Formulation of City/Do Environmental Plans)

(1) A Mayor/Do Governor shall formulate and implement an environmental plan for the relevant City/Do (hereinafter referred to as "City/Do environmental plan") according to the comprehensive national environmental plan (including the comprehensive national environmental plan adjusted under Article 16-2 (1); hereafter in Articles 19 through 21 the same shall apply), taking into consideration the regional characteristics of his or her jurisdiction. <*Amended on Jan. 5, 2021*>

(2) If a Mayor/Do Governor intends to formulate or modify a City/Do environmental plan, he or she shall prepare a draft thereof and gather consensus from residents, related experts, etc. through a public hearing, etc.: Provided, That this shall not apply to any modification of minor matters prescribed by Presidential Decree. <*Amended on Jan. 5, 2021*>

(3) Deleted. <*Jan. 5, 2021*>

(4) If necessary for the environmental management by affected zone provided in Article 39, the Minister of Environment may request the relevant Mayor/Do Governor to modify his or her City/Do environmental plan.

(5) A Mayor/Do Governor shall manage spatial environmental information on the environmental status by field, such as water, air, and natural ecology, as prescribed by Presidential Decree so that he or she can utilize such information when formulating or formulating or modifying a City/Do environmental plan. <*Newly Inserted on Jan. 5, 2021*>

(6) Matters necessary for the criteria for formulating a City/Do environmental plan and the methods for preparation thereof, etc. shall be prescribed by Ordinance of the Ministry of Environment. <*Newly Inserted on Jan. 5, 2021*>

Article 18-2 (Approval of City/Do Environmental Plans)

(1) If a Mayor/Do Governor intends to formulate or modify a City/Do environmental plan under Article 18, he or she shall obtain approval from the Minister of Environment: Provided, That this shall not apply to any modification of minor matters prescribed by Presidential Decree.

(2) If the Minister of Environment intends to approve a City/Do environmental plan under paragraph (1), he or she shall have a prior consultation with the head of a relevant central administrative agency.

(3) Upon obtaining approval under paragraph (1), a Mayor/Do Governor shall publicly announce the major content thereof without delay and notify the head of a Si/Gun/Gu of the same.

Article 19 (Formulation of Si/Gun/Gu Environmental Plans)

(1) The head of a Si/Gun/Gu shall formulate and implement an environmental plan for the relevant Si/Gun/Gu (hereinafter referred to as "Si/Gun/Gu environmental plan") according to the comprehensive

national environmental plan and City/Do environmental plan, taking into consideration the regional characteristics of his or her jurisdiction. *<Amended on Jan. 5, 2021>*

(2) Deleted. *<Jan. 5, 2021>*

(3) If it is necessary for the environmental management by affected zone under Article 39, the head of a local environmental agency or a Mayor/Do Governor may request the head of the relevant Si/Gun/Gu to modify his or her Si/Gun/Gu environmental plan.

(4) If the head of a Si/Gun/Gu intends to formulate or modify a Si/Gun/Gu environmental plan, he or she shall prepare a draft thereof and gather consensus from residents, related experts, etc. through a public hearing, etc.: Provided, That this shall not apply to any modification of minor matters prescribed by Presidential Decree. *<Newly Inserted on Jan. 5, 2021>*

(5) The head of a Si/Gun shall manage spatial environmental information on the environmental status by field, such as water, air, natural ecology, etc., as prescribed by Presidential Decree, so that he or she can utilize the environmental plan when formulating or modifying an environmental plan of the relevant Si/Gun. *<Newly Inserted on Jan. 5, 2021>*

(6) Matters necessary for the criteria for formulating a Si/Gun/Gu environmental plan and the methods for preparation thereof, etc. shall be prescribed by Ordinance of the Ministry of Environment. *<Newly Inserted on Jan. 5, 2021>*

Article 19-2 (Approval of Si/Gun/Gu Environmental Plans)

(1) Where the head of a Si/Gun/Gu intends to formulate or modify a Si/Gun/Gu environmental plan pursuant to Article 19, he or she shall obtain approval from the Mayor/Do Governor: Provided, That this shall not apply to any modification of minor matters prescribed by Presidential Decree.

(2) Where a Mayor/Do Governor intends to approve a Si/Gun/Gu environmental plan pursuant to paragraph (1), he or she shall have a prior consultation with the head of the relevant local environmental agency.

(3) Upon obtaining approval under paragraph (1), the head of a Si/Gun/Gu shall publicly announce the main content thereof without delay.

Article 20 (Disclosure of Comprehensive National Environmental Plan)

The Minister of Environment, a Mayor/Do Governor, and the head of a Si/Gun/Gu shall disclose through his or her agency’s website, etc. a comprehensive national environmental plan formulated or modified under Article 14 or 16-2, a City/Do environmental plan formulated or modified under Article 18 or 18-2, and a Si/Gun/Gu environmental plan formulated or modified under Article 19 or 19-2. *<Amended on Jan. 5, 2021>*

Article 21 (Environmental Consideration for Development Plans and Projects)

(1) Where the State or the head of a local government develops a plan for the utilization or development of land, it or he or she shall take into consideration the relevant comprehensive national environmental plan, City/Do environmental plan and Si/Gun/Gu environmental plan (hereinafter referred to as "comprehensive national environmental plan, etc.") and the environmental capacity of the relevant area.

(2) Where the head of a relevant central administrative agency, a Mayor/Do Governor, or the head of a Si/Gun/Gu grants permission, etc. for any project involving the utilization or development of land, he or she shall take into consideration the relevant comprehensive national environmental plan, etc.

Article 22 (Survey and Evaluation of Environmental Conditions)

(1) The State and local governments shall survey and evaluate the following on a regular basis: <*Amended on Jan. 15, 2019*>

1. Current status of the natural environment and living environment;
2. Actual status of environmental pollution and environmental damage;
3. Sources of environmental pollution and the main causes of environmental damage;
4. Changes in the quality of the environment, such as climate changes;
5. Other matters needed to develop and implement a comprehensive national environmental plan, etc.

(2) The State and local governments shall maintain a system for research, monitoring, measurement, testing, and analysis to properly conduct the survey and evaluation referred to in paragraph (1).

(3) Matters necessary for the survey and evaluation referred to in paragraph (1) and the system of conducting research, monitoring, measurement, testing, and analysis referred to in paragraph (2) shall be prescribed by Presidential Decree.

Article 23 (Development and Dissemination of Environment-Friendly Planning Techniques)

(1) The Government may develop and disseminate environment-friendly planning techniques and standards for the utilization and development of land (hereinafter referred to as "environment-friendly planning techniques, etc.") to ensure that administrative plans and development projects affecting the environment are designed, developed and implemented in an environmentally sound and sustainable manner.

(2) The Minister of Environment may develop and disseminate an environmental assessment map that indicates the current environmental state by grade after assessing the environmental value of the national land with the aim of efficiently preserving the environment of the national land and making use of the national land in an environment-friendly manner.

(3) The methods of developing environment-friendly planning techniques, etc. and environmental assessment maps, the details thereof, and other necessary matters shall be prescribed by Presidential Decree.

Article 24 (Propagation of Environmental Information)

(1) The Minister of Environment shall endeavor to propagate knowledge and information on environmental conservation to all citizens and to make information on the environment easily accessible to citizens.

(2) The Minister of Environment may set up and operate an environmental information network to produce and propagate smoothly the knowledge and information on environmental conservation referred to in paragraph (1).

(3) The Minister of Environment may request the head of a relevant administrative agency to submit materials necessary to set up and operate an environmental information network. In such cases, the head of the relevant administrative agency shall comply with the request unless there is a compelling reason not to do so.

(4) If it is necessary to efficiently set up and operate an environmental information network under paragraph (2), the Minister of Environment may commission a specialized institution to survey the current state of the environment or entrust a specialized institution with the setup and operation of an environmental information network.

(5) The setup and operation of an environmental information network under paragraph (2), the commission of the survey on the current state of the environment and the entrustment of the setup and operation of an environmental information network under paragraph (4), and other necessary matters shall be prescribed by Presidential Decree.

Article 25 (Education on Environmental Conservation)

The State and local governments shall develop and execute policies necessary to deepen citizens' understanding of environmental conservation through education, publicity, etc. on environmental conservation and to inspire citizens to voluntarily participate in environmental conservation efforts and put them into practice in their daily lives.

Article 26 (Encouragement of Environmental Conservation Activities by Civil Environmental Organizations)

(1) The State and local governments shall devise necessary policies, such as the provision of information, to encourage voluntary environmental conservation activities carried out by civil environmental organizations, etc.

(2) Where a civil environmental organization, etc. carries out activities designed to preserve the environment such as the purchase and control of any area the scenery and ecosystem of which are highly valued, the State and the relevant local government may provide such civil environmental organization, etc. with necessary administrative assistance.

Article 27 (International Cooperation and Conservation of Global Environment)

The State and local governments shall actively participate in international efforts to preserve the global environment from any climate change, destruction of ozone layer, marine pollution, desertification, decrease of biological resources, etc. and to prevent damage due to long-range transport of air pollutants, such as fine dust and ultrafine dust, as follows: *<Amended on Nov. 26, 2019>*

1. Mutual cooperation concerning the monitoring, observation and protection of the global environment;
2. Cooperation with foreign countries or international organizations to reduce damage from environmental pollution, such as air pollution;
3. Exchange of environmental information and technology, and fostering of specialized human resources;
4. Other matters necessary for preserving the global environment.

Article 27-2 (Designation of International Environmental Cooperation Centers)

(1) The Minister of Environment may designate as an international environmental cooperation center an institution, a corporation or an organization with specialized human resources and facilities necessary for systematically promoting international cooperation prescribed in Article 27.

(2) An international environmental cooperation center prescribed in paragraph (1) (hereafter in this Article referred to as "international environmental cooperation center") shall perform the following activities:

1. Research and studies on policies and the development of cooperation projects for international environmental cooperation;
2. Collection, analysis and dissemination of information on international environmental conventions and international environmental regulation;
3. Exchange of environmental information and technology and holding of exhibitions and academic conferences for international environmental cooperation;
4. Assistance in concluding memorandums of understanding with foreign governments and international organizations for international environmental cooperation;
5. Fostering of specialized human resources and international exchange for international environmental cooperation;
6. Assistance in building and operating an international environmental cooperation information system;
7. Other activities necessary for promoting international environmental cooperation.

(3) The Minister of Environment may, within the budgetary limits, reimburse all or some of expenses incurred by international environmental cooperation centers in performing their activities.

(4) The Minister of Environment may revoke the designation of an international environmental cooperation center or suspend its business in whole or in part for a fixed period of up to six months if it falls under any of the following subparagraphs: Provided, That when it falls under subparagraph 1, the designation thereof shall be revoked:

1. Where the trading agency has obtained the designation by fraud or other improper means;

2. Where the support organization has performed any affairs in violation of any matter designated thereto;

3. Where the institution no longer complies with the standards for designation of specialized manpower fostering institutions under paragraph (5);

4. Where any event occurs similar to those under subparagraphs 1 through 3 and specified by Presidential Decree.

(5) Matters necessary for standards, periods, procedures for designation and revocation of designation of international environmental cooperation centers, and for the operation thereof, shall be prescribed by Presidential Decree.

Article 27-3 (Inter-Korean Exchange and Cooperation in Environmental Sector)

The Government shall endeavor to reactivate exchanges and cooperation in the environmental sector, such as fact-finding surveys and joint research on the environment and ecology between South and North Korea.

Article 28 (Promotion of Environmental Science and Technology)

The State and local governments shall devise policies necessary for promoting environmental science and technology, such as experiments, research, studies, technology development, and fostering of specialized human resources for environmental conservation.

Article 29 (Installation and Management of Environmental Conservation Facilities)

The State and local governments shall take measures necessary for installing and managing public facilities for environmental conservation, such as the green zones to reduce environmental pollution, the facilities for treating waste water, sewage and wastes, the facilities for preventing noise, vibration and malodor, the facilities for protecting and restoring wild animals and plants and ecosystems, and the facilities for purifying polluted soil and groundwater.

Article 30 (Regulation for Environmental Conservation)

(1) The Government shall keep necessary regulation, for the purpose of environmental conservation, over the discharge of substances causing the pollution of air, water, soil or sea, the generation of noise, vibration or malodor, the treatment of wastes, the obstruction of sunshine, and damage to the natural environment.

(2) With respect to a place of business that holds in two or more fields of operations facilities which discharge substances causing environmental pollution, the Minister of Environment or the head of the relevant local government may coordinate the visitation and inspections of those facilities in conducting them pursuant to related statutes.

(3) If the Minister of Environment or the head of a local government has made an administrative disposition against a business entity for a violation of any statute or regulation governing environmental conservation, he or she may disclose such fact: Provided, That this shall not apply where it is deemed that the disclosure of such fact is likely to infringe remarkably on the business entity's legitimate interests because it contains the business entity's trade secrets. *<Amended on May 26, 2020>*

(4) Matters necessary for the content of and methods for disclosure, etc. under paragraph (3) shall be prescribed by Presidential Decree. *<Newly Inserted on Jan. 5, 2021>*

Article 31 (Prior Notification of Permissible Emission Levels)

If the State sets or alters any permissible emission levels with respect to environmental pollution in accordance with the relevant statutes or regulations, it shall notify such levels in advance through relevant agencies' websites, etc.

Article 32 (Economic Incentives)

The Government shall devise incentives necessary for promoting the efficient utilization of resources and for inducing those who have given rise to environmental pollution to voluntarily reduce the discharge of pollutants.

Article 33 (Control of Chemical Substances)

The Government shall devise policies to properly control chemical substances in order to prevent chemicals from causing any environmental pollution and damage to health. *<Amended on Jan. 15, 2019>*

Article 34 (Prevention of Environmental Pollution by Radioactive Substances)

(1) The Government shall take appropriate measures with regard to environmental pollution by radioactive substances, the prevention of such pollution, etc.

(2) The measures under paragraph (1) shall be governed by the Nuclear Safety Act and other relevant Acts.

Article 35 (Evaluation of Harmful Impacts of Science and Technology)

Where it is deemed necessary to prevent any harmful impact arising from the development of science and technology on the ecosystem and human health, the Government shall take appropriate measures to analyze such harmful impact and evaluate its danger.

Article 36 (Countermeasures against Environment-Caused Diseases)

The State and local governments shall find out how environmental pollution causes damage to citizens' health and prepare countermeasures to address diseases caused by environmental pollution.

Article 37 (Promotion of Environment-Friendliness in State Policies)

(1) The State and local governments shall formulate policies necessary to build an environment-friendly traffic system to minimize environmental pollution or environmental damage in the traffic sector.

(2) The State and local governments shall formulate policies necessary to use energy rationally and efficiently and to develop and disseminate environment-friendly energy so as to minimize environmental pollution or environmental damage arising from energy use.

(3) The State and local governments shall formulate policies necessary to develop environment-friendly agriculture, forestry and fisheries to minimize environmental pollution or environmental damage in the agricultural, forestry and fishery sectors.

Article 38 (Establishment of Special Comprehensive Measures)

(1) The Minister of Environment may designate as a special measures area for environmental conservation an area where any environmental pollution, environmental damage or change in the natural ecosystem is remarkable or likely to become remarkable and an area where the environmental standards are often exceeded and publicly notify the designation, in consultation with the head of the relevant central administrative agency and the competent Mayor/Do Governor, and devise special comprehensive measures for environmental conservation in the relevant area to have the competent Mayor/Do Governor implement them.

(2) The Minister of Environment may restrict the utilization of land and the installation of facilities in a special measures area, as prescribed by Presidential Decree, if it is particularly required for environmental improvement in the special measures area under paragraph (1).

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Article 39 (Environmental Management by Affected Zone)

(1) In order to grasp the situation of environmental pollution and to devise preventive measures thereagainst, the Minister of Environment shall manage the air pollution by affected zone, the water pollution by water-system zone, and the pollution of the ecosystem by affected zone.

(2) The head of a local government may manage the environment by affected zone according to circumstances of his or her jurisdictional area to effectively manage the air pollution, water pollution, or ecosystem of his or her jurisdictional area.

SECTION 3 Conservation of Natural Environment and Environmental Impact Assessment

Article 40 (Conservation of Natural Environment)

The State and citizens shall endeavor to maintain and preserve the order and balance of nature, in view of the fact that the conservation of the natural environment is fundamental for human survival and living.

Article 41 (Environmental Impact Assessment)

(1) The State shall conduct strategic environmental impact assessment, environmental impact assessment, and small-scale environmental impact assessment in order to enable any plan and development project that have impacts on the environment to be developed and implemented in an environmentally sustainable manner with the eventual aim of maintaining the appropriateness of the environmental standards and preserving the natural environment.

(2) Matters regarding the targets, procedures, methods, etc. for the strategic environmental impact assessment, environmental impact assessment and small-scale environmental impact assessment under paragraph (1) shall be prescribed by other Acts.

SECTION 4 Mediation of Disputes and Relief of Damage

Article 42 (Mediation of Disputes)

In preparation for any disputes caused by environmental pollution or environmental damage or other environment-related disputes, the State and local governments shall devise policies necessary to settle such disputes in a rapid and fair manner.

Article 43 (Relief of Damage)

The State and local governments shall devise policies necessary to smoothly relieve any sufferings caused by environmental pollution or environmental damage.

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Article 44 (Absolute Liability for Sufferings by Environmental Pollution)

(1) If any suffering is caused by environmental pollution or environmental damage, the person who has caused the environmental pollution or environmental damage shall compensate for the suffering.

(2) If the persons who have caused environmental pollution or environmental damage are two or more, they shall compensate for the suffering under paragraph (1) jointly where it is impossible to find out which person has caused the suffering.

SECTION 5 Establishment of Special Account for Environmental Improvement

Article 45 (Establishment of Special Account for Environmental Improvement)

(1) The Government shall establish a special account for environmental improvement (hereinafter referred to as the “account”) in order to increase investments in environmental improvement projects and to efficiently manage and operate such projects.

(2) The account shall be managed and operated by the Minister of Environment.

Article 46 (Revenues of Account)

The revenues of the account shall be as follows: *<Amended on Jul. 28, 2011; Feb. 1, 2012; Apr. 5, 2013; Jul. 16, 2013; Jul. 30, 2013; Jul. 20, 2015; Dec. 22, 2015; Jan. 27, 2016; May 29, 2016; Jan. 17, 2017; Apr. 2, 2019>*

1. Revenues from loans prescribed in the Introduction and Management of Public Loans Act;

2. Penalties for excess total pollutant load, additional charges, and penalty surcharges prescribed in Articles 8-5 and 8-6 of the Act on the Improvement of Water Quality and Support for Residents of the Han River Basin; penalties for excess total pollutant load, additional charges, and penalty surcharges prescribed in Articles 13 and 14 of the Act on Water Management and Resident Support in the Nakdong River Basin; penalties for excess total pollutant load, additional charges, and penalty surcharges prescribed in Articles 13 and 14 of the Act on Water Management and Resident Support in the Geum River Basin; and penalties for excess total pollutant load, additional charges, and penalty surcharges prescribed in Articles 13 and 14 of the Act on Water Management and Resident Support in the Yeongsan and Seomjin River Basins;

3. Emission dues and additional charges prescribed in Article 35 of the Clean Air Conservation Act, and penalty surcharges for release in excess of the total volume and additional charges prescribed in Article 22 of the Special Act on the Improvement of Air Quality in Air Control Zones;

3-2. Inspection fees for verification of defects prescribed in Article 51 of the Clean Air Conservation Act and fees prescribed in subparagraph 2 of Article 86 of that Act;

3-3. Deleted; *<Dec. 29, 2020>*

4. Charges for water quality improvement and additional charges prescribed in Article 31 of the Drinking Water Management Act;

5. Fees prescribed in Article 31 of the Noise and Vibration Control Act and expenses incurred in conducting inspections prescribed in Article 33 of that Act;

6. Effluent charges and additional charges prescribed in Article 41 of the Water Environment Conservation Act;

7. Charges for the public wastewater treatment facilities prescribed in Article 48-2 (1) and the latter part of Article 49-6 (1) of the Water Environment Conservation Act (limited to cases where the executor is the State) and additional charges;

7-2. Effluent charges and additional charges prescribed in Article 15 of the Act on the Integrated Control of Pollutant-Discharging Facilities and penalty surcharges prescribed in Article 23 of that Act;

7-3. Fees for the use of public wastewater treatment facilities prescribed in Article 48-3 (1) and the latter part of Article 49-6 (1) of the Water Environment Conservation Act (limited to cases where the operator is the State, and excluding cases of entrusting installation or operation to any of the persons falling under any subparagraph of Article 48 (1) of the Water Environment Conservation Act) and additional surcharges;

8. Fees for the use of hunting grounds prescribed in Article 50 of the Wildlife Protection and Management Act;

9. Cooperation charges on the conservation of ecosystem prescribed in Article 46 of the Natural Environment Conservation Act and additional charges prescribed in Article 48 of that Act;

9-2. Waste disposal charges and additional charges prescribed in Article 21 of the Framework Act on Resources Circulation;

10. Waste charges and additional charges prescribed in Article 12 of the Act on the Promotion of Saving and Recycling of Resources; recycling dues and additional charges prescribed in Article 19 of that Act; and the principal and interest on loans provided as a part of assistance prescribed in Article 20 of that Act;

11. Recycling charges for electrical and electronic equipment prescribed in Article 18, collection charges for electrical and electronic equipment prescribed in Article 18-2, and additional charges prescribed in Article 18-3, of the Act on Resource Circulation of Electrical and Electronic Equipment and Vehicles;

12. Guarantee for the performance of follow-up management prescribed in Article 51 of the Wastes Control Act and advance reserves prescribed in Article 52 of that Act;

13. Fees prescribed in Article 23 of the Act on the Transboundary Movement of Hazardous Wastes and Their Disposal;

14. Environmental improvement charges and additional charges prescribed in Articles 9 and 20 of the Environment Improvement Cost Liability Act;

15. Principal and interest on loans prescribed in Article 11 of the Environment Improvement Cost Liability Act;

16. Penalty surcharges prescribed in Article 12 of the Act on Control and Aggravated Punishment of Environmental Offenses;

17. Principal and interest on loans prescribed in Article 47 (1) 14;

18. Transfers from general accounts under Article 48;

19. Borrowings prescribed in Article 49 (1) and (2);

20. Surplus of the account at closing prescribed in Article 51;

21. Transfers and deposits from other special accounts or other funds;

22. Proceeds transferred to the account prescribed in other Acts;

23. Proceeds from the sale or management of property belonging to the account;

24. Other proceeds accruing from the management and operation of environmental improvement projects.

Article 47 (Expenditures from Account)

(1) Expenditures from the account shall be as follows: Provided, That financial resources consisting of the charges for water quality improvement and additional charges under subparagraph 4 of Article 46 shall be

used only for the purpose of subparagraph 3; financial resources consisting of the charges for the installation of public wastewater treatment facilities and additional charges under subparagraph 7 of that Article and fees for the use of public wastewater treatment facilities and additional charges under subparagraph 7-3 of that Article, only for the purpose of subparagraph 4; financial resources consisting of the cooperation charges on the conservation of ecosystem and additional charges under subparagraph 9 of that Article, only for the purpose of subparagraph 6; financial resources consisting of the waste disposal charges and additional charges under subparagraph 9-2 of that Article, only for the purpose of subparagraph 6-2; financial resources consisting of the waste charges, recycling dues, and additional charges under subparagraph 10 of that Article, only for the purpose of subparagraph 7; financial resources consisting of the recycling charges and additional charges under subparagraph 11 of that Article, only for the purpose of subparagraph 8; financial resources consisting of the guarantee for the performance of follow-up management and advance reserves under subparagraph 12 of that Article, only for the purpose of subparagraph 9; and financial resources consisting of the environmental improvement charges and additional charges under subparagraph 14 of that Article, only for the purpose of subparagraph 12, respectively: *<Amended on Jul. 28, 2011; Apr. 5, 2013; Jul. 30, 2013; Jan. 27, 2016; May 29, 2016; Jan. 17, 2017>*

1. Projects to improve the national environment;
2. Support for the environmental improvement projects by local governments;
2-2. Deleted; *<Dec. 29, 2020>*
3. The purposes under Articles 31 (7) and 33 of the Drinking Water Management Act;
4. Expenditure to cover expenses needed for the installation or operation of public wastewater treatment facilities by the State under Article 48 (1) of the Water Quality and Aquatic Ecosystem Conservation Act;
5. The use under each subparagraph of Article 58 of the Wildlife Protection and Management Act;
6. The use under Article 49 of the Natural Environment Conservation Act;
6-2. The use under Article 22 of the Framework Act on Resources Circulation;
7. The usage under Article 20 of the Act on the Promotion of Saving and Recycling of Resources;
8. The use under Article 19 of the Act on Resource Circulation of Electrical and Electronic Equipment and Vehicles;
9. The purposes of use under Article 53 of the Wastes Control Act;
10. The reimbursement of expenses incurred, by the State, in performing its responsibilities under Article 4 of the Act on the Transboundary Movement of Hazardous Wastes and Their Disposal and in conducting the vicarious execution under Article 21 of that Act;
11. Contributions to reimburse the project expenses and operational expenses incurred by the Korea Environment Corporation established under the Korea Environment Corporation Act (hereinafter referred to as the “Korea Environment Corporation”);
12. The use under Article 11 of the Environmental Improvement Cost Liability Act;

13. The payment of monetary rewards under Article 15 of the Act on Control and Aggravated Punishment of Environmental Offenses;

14. Redemption of the principal and interest on loans, borrowings, and deposits under subparagraphs 1, 19, and 21 of Article 46;

15. Provision of loans needed by local governments for the installation of environmental infrastructure or needed in the private sector for the installation of environmental pollution prevention facilities or for the installation of and technology development for low-polluting product manufacturing facilities;

16. Support for the private sector regarding environmental policy research, technology development, publicity activities, investigations and research, and environment research institutes;

17. Reimbursement of expenses for collection of the account revenue;

18. Other costs incurred in operating the accounts.

(2) Matters regarding the eligible persons, and conditions of and procedures for loans provided pursuant to paragraph (1) 7, 12, and 15 shall be determined and publicly notified by the Minister of Environment. In such cases, the interest rates and terms for loans shall be determined by the Minister of Environment in consultation with the Minister of Economy and Finance.

(3) Performance of affairs concerning the loans under paragraph (1) 7, 12 and 15 may be entrusted to the Korea Environment Corporation or the Korea Environmental Industry and Technology Institute established under the Korea Environmental Industry and Technology Institute Act. *<Amended on Apr. 5, 2013; Jul. 16, 2013; Dec. 1, 2015>*

Article 48 (Transfers from General Accounts)

Transfers may be made from the general account to the account, as provided in the budget, so that the account can secure financial resources available for its expenditure.

Article 49 (Loans)

(1) If the account is in need of financial resources available for its expenditure, long-term borrowings may be made for the account within the limits of the amount of money determined by a resolution of the National Assembly.

(2) If the account is temporarily in need of its working funds, temporary borrowings may be made for the account.

(3) The principal of the temporary loans under paragraph (2) and interest thereon shall be paid off within the pertinent fiscal year.

Article 50 (Carry-forward of Expenditure Budget)

The expenditure budget of the account not spent during the fiscal year for which such budget is earmarked may be carried forward to the next fiscal year, notwithstanding Article 48 of the National Finance Act.

Article 51 (Disposal of Surplus)

Any surplus remaining after the closing of accounts shall be appropriated as the revenues of the following year.

Article 52 (Reserve Funds)

The account may include a considerable sum of money in its expenditure budget as a reserve fund to cover any unexpected expenditures not included in the appropriated budget or any expenditures exceeding the appropriated budget.

Article 53 (Direct Use of Excess Revenues)

(1) If there are any emission dues, discharge imposition amounts, penalty surcharges for release in excess of the total volume and additional charges under subparagraphs 3 and 6 of Article 46, any charges for water quality improvement and additional charges under subparagraph 4 of that Article, any charges for the installation of public wastewater treatment facilities and additional charges under subparagraph 7 of that Article, fees for the use of public wastewater treatment facilities and additional charges under subparagraph 7-3 of that Article, and any environmental improvement charges and additional charges under subparagraph 14 of that Article that exceed or are expected to exceed the revenue budget of the account (hereinafter referred to as “excess revenues”), the Minister of Environment may directly use such excess revenues to reimburse expenses for collection of the emission dues and discharge imposition amounts exceeding the expenditure budget of the account, charges for water quality improvement and additional charges under Article 31 (7) of the Drinking Water Management Act, expenses for collection of charges for water quality improvement, expenses for the installation or operation of public wastewater treatment facilities, and expenses for collection of environmental improvement charges, respectively. *<Amended on Jul. 20, 2015; Jan. 27, 2016>*

(2) If the Minister of Environment intends to use any excess revenues under paragraph (1), he or she shall obtain approval in advance from the Minister of Strategy and Finance.

(3) If the Minister of Environment intends to obtain approval under paragraph (2), he or she shall prepare a specification stating the reasons therefor and necessary amounts of money and submit it to the Minister of Economy and Finance.

(4) If the Minister of Economy and Finance approves the use of excess revenues under paragraph (2), he or she shall notify the Minister of Environment and the Board of Audit and Inspection of such fact.

CHAPTER III LEGISLATIVE AND FINANCIAL MEASURES

Article 54 (Legislative Measures)

The State and local governments shall take legislative and financial measures and other administrative measures necessary for implementing the policies for environmental conservation.

Article 55 (Financial Support to Local Governments)

(1) The State may reimburse from the national treasury all or some of the expenses required for environmental conservation projects of local governments.

(2) In order to enhance the capability of local governments to manage the environment and to promote environment-friendly local administration, the Minister of Environment may designate a local government as a model for environmental management and take measures necessary for supporting it.

Article 56 (Support for Business Entities' Environmental Management)

(1) The State and local governments may take any tax measures and grant other financial supports necessary for supporting the installation and operation of facilities for the environmental conservation conducted by business entities.

(2) The State and local governments may grant administrative and financial supports necessary for the settlement and expansion of systems for voluntary environmental management under which business entities endeavor toward the voluntary management of the environment.

Article 57 (Financial Support for Research, Studies and Technology Development)

The State and local governments may grant financial supports necessary for scientific research and studies and technology development related to environmental conservation.

CHAPTER IV ENVIRONMENTAL POLICY COMMITTEE

Article 58 (Environmental Policy Committee)

(1) The Minister of Environment may establish a Central Environmental Policy Committee that deliberates and gives advice on the following matters: *<Amended on Dec. 22, 2015; Jan. 27, 2016; Jan. 5, 2021; Jun. 15, 2021>*

1. Matters concerning the formulation and modification of a comprehensive national environmental plan under Article 14;

1-2. Matters concerning the adjustment of a comprehensive national environmental plan under Article 16-2;

2. Matters concerning environmental standards, permissible emission levels for pollutants, water quality standards for discharged water, etc.;

3. Matters concerning the designation of a special measures area and the establishment of special comprehensive measures prescribed in Article 38;

4. Matters concerning basic plans for the management of livestock excreta prescribed in Article 5 of the Act on the Management and Use of Livestock Excreta and other basic policies for the disposal and recycling of livestock excreta;

5. Matters concerning basic plans for encouraging the purchase of green products prescribed in Article 4 of the Act on the Promotion of Purchase of Green Products and other basic policies to encourage the purchase of green products;

6. Matters concerning master plans for the control of persistent pollutants prescribed in Article 5 of the Persistent Pollutants Control Act and other basic policies to control persistent pollutants;

7. Matters concerning master plans for the development of environmental examination and inspection prescribed in Article 3 of the Environmental Testing and Inspection Act and other basic policies regarding the fields of environmental examination, inspection and environmental technology;

8. Matters concerning the formulation of the standards for the contents of hazardous substances, the improvement of materials and structure, mandatory recycling rates, etc. prescribed in Articles 9 (1), 10 (1) and (2), 12 (3), 16 (1) and 25 (1) of the Act on Resource Circulation of Electrical and Electronic Equipment and Vehicles;

8-2. Matters concerning best available techniques prescribed in Article 24 (1) of the Act on the Integrated Control of Pollutant-Discharging Facilities and the standard for best available techniques prescribed in paragraph (2) of that Article;

8-3. Matters concerning the master plans and development plans for green convergence clusters under Articles 6 and 9 of the Act on the Creation and Fostering of Green Convergence Clusters;

9. Matters concerning the formulation and modification of any master plans and measures for environmental conservation by specific areas including environmental policy, natural environment, climate and air, water, water supply and sewerage, natural circulation and global environment, and other matters on which the chairperson of the Central Environmental Policy Committee or of any subcommittee thereof requests the Central Environmental Policy Committee to deliberate or advise.

(2) In order to deliberate and advise on any regional environmental policy, a City/Do environmental policy committee shall be set up under the jurisdiction of a Mayor/Do Governor, and a Si/Gun/Gu environmental policy committee may be set up under the jurisdiction of the head of a Si/Gun/Gu.

(3) The Central Environmental Policy Committee prescribed in paragraph (1) shall consist of up to 200 members, including the chairperson thereof and not more than 10 chairpersons of subcommittees in consideration of the gender. *<Amended on Jan. 5, 2021>*

(4) The Central Environmental Policy Committee prescribed in paragraph (3) shall be co-chaired by the Minister of Environment and a person elected from among such Committee members who are commissioned by the Minister of Environment from the private sector, and the chairpersons of subcommittees shall be persons who are nominated by the Minister of Environment by specific areas of environmental management including environmental policy, natural environment, climate and air, water, water supply and sewerage, and resource circulation.

(5) Matters necessary for the constitution and operation of the Central Environmental Policy Committee prescribed in paragraph (1) shall be prescribed by Presidential Decree, and other matters necessary for the constitution, operation, etc. of City/Do environmental policy committees and Si/Gun/Gu environmental policy committees prescribed in paragraph (2) shall be prescribed by ordinances of the relevant Cities/Dos and Sis/Guns/Gus.

Article 59 (Korea Environmental Conservation Institute)

(1) For purposes of maintaining pleasant environments and contributing to the improvement of citizens' life by efficiently conducting any research, studies, technology development, education, publicity, ecosystem restoration, etc. regarding environmental conservation, the Korea Environmental Conservation Institute (hereinafter referred to as the “Institute”) shall be established. *<Amended on Jun. 10, 2022>*

(2) The Institute shall be a corporation. *<Amended on Jun. 10, 2022>*

(3) The State and local governments may provide contributions or subsidies to cover expenses incurred in the operation and programs of the Institute within the budget. *<Amended on Jun. 10, 2022>*

(4) Funds necessary for the operation and programs of the Institute shall be appropriated from contributions and subsidies referred to in paragraph (3), revenues and fees relating to the programs referred to in the subparagraphs of paragraph (5), donations from persons other than the Government, loans, and other financial resources prescribed by the articles of incorporation. In such cases, matters necessary for the payment, management, and use of contributions or subsidies shall be prescribed by Presidential Decree. *<Amended on Jun. 10, 2022>*

(5) The Institute may, upon entrustment by the State, local governments, or other persons (hereinafter referred to as the "State, etc."), conduct the following programs: *<Amended on Jun. 10, 2022>*

1. Environmental education programs for environmental engineers and others and programs to strengthen and support environmental education of the State and local governments;
2. Water environment conservation programs, such as the management and utilization of purchased land, etc. by river system for the improvement of water quality and the restoration of waterside ecosystems, and the investigation of water quality and flow;
3. Programs to restore damaged natural environments and ecosystems;
4. Programs for measuring, investigating, inspecting, evaluating, and researching environmental pollution;
5. Programs for diagnosing, improving, or supporting facilities, etc. for the prevention of environmental pollution;
6. Public relations and domestic and international exchange, cooperation, and support programs regarding environmental conservation or climate change;
7. Programs that may be performed by the Institute under other statutes or regulations or those entrusted by the State, etc.;

8. Other programs prescribed by Presidential Decree to achieve the objectives of the establishment of the Institute or programs incidental to those referred to in subparagraphs 1 through 7 as prescribed by the articles of incorporation.

(6) The Minister of Environment shall guide and supervise the operation, programs, etc. of the Institute and submit a business plan, budget, program performance, and the closing of accounts for each fiscal year to the Minister of Environment, as prescribed by Presidential Decree. *<Amended on Jun. 10, 2022>*

(7) The president of the Institute shall be a full-time executive officer appointed by the Minister of Environment, who represents the Institute, have general supervision and control of its affairs and employees. *<Newly Inserted on Jun. 10, 2022>*

(8) Matters regarding the appointment, dismissal, etc. of executive officers and employees, other than the president of the Institute, shall be prescribed by the articles of incorporation. *<Newly Inserted on Jun. 10, 2022>*

(9) No person, other than the Institute under this Act, shall use the name "Korea Environmental Conservation Institute" or any similar name. *<Amended on Jun. 10, 2022>*

(10) Except as provided in this Act, the provisions of the Civil Act governing incorporated foundations shall apply mutatis mutandis to the Institute.

CHAPTER V SUPPLEMENTARY PROVISIONS

Article 60 (Delegation and Entrustment of Authority)

(1) The authority of the Minister of Environment provided in this Act may be delegated in part to Mayors/Do Governors or to the heads of regional environmental agencies, as prescribed by Presidential Decree.

(2) The Minister of Environment may entrust the heads of relevant specialized institutions with some of his or her services provided in this Act, as prescribed by Presidential Decree.

Article 61 (Legal Fiction as Public Officials for Purposes of Applying Penalty Provisions)

A person who performs affairs entrusted pursuant to Article 60 (2) shall be deemed a public official for purposes of applying Articles 129 through 132 of the Criminal Act.

ADDENDA *<Act No. 10893, Jul. 21, 2011>*

Article 1 (Enforcement Date)

This Act shall enter into one year after the date of its promulgation.

Article 2 (Repeal of Other Acts)

The Act on Special Accounts for Environmental Improvement is hereby repealed.

Article 3 (General Transitional Measures)

Any designation, publication or other act done by or any act done in relation to an administrative agency under the previous provisions as at the time when this Act enters into force shall be deemed any designation, publication or other act done by or any act done in relation to an administrative agency under this Act.

Article 4 (Transitional Measures concerning Special Accounts for Environmental Improvement)

Any special account for environmental improvement established pursuant to the Act on Special Accounts for Environmental Improvement repealed by the enforcement of this Act shall be deemed any special account for environmental improvement under this Act.

Article 4-2 (Transitional Measures concerning Transfer from General Account to Special Account for Environmental Improvement)

Notwithstanding the amended provisions of Article 48, the traffic, energy and environment tax shall be transferred in accordance with the following until December 31, 2021: *<Amended on Jan. 1, 2013; Dec. 15, 2015; Dec. 31, 2018; Dec. 31, 2019>*

1. The Government shall transfer an amount corresponding to 250/1000 of the traffic, energy and environment tax prescribed in the Traffic, Energy and Environment Tax Act (hereinafter referred to as "amount transferred from the traffic, energy and environment tax") every fiscal year from the general account to the special account for environmental improvement;
2. Any transfer may be made from the general account to the special account for environmental improvement, as provided in the budget excluding the amounts transferred from the traffic, energy and environment tax, so that the special account can secure financial resources available for its expenditure;
3. If there is any difference between the estimated amount and amount at closing with regard to amounts transferred from the traffic, energy and environment tax, such difference shall be adjusted by appropriating it in the budget for the next settlement year.

Article 5 Omitted.

Article 6 (Relationships with other Acts)

As at the time when this Act enters into force, references in other statutes to the provisions of the previous Framework Act on Environmental Policy or to the Act on Special Accounts for Environmental Improvement or the provisions thereof, if this Act includes any provisions corresponding thereto, shall be deemed references to this Act or the corresponding provisions thereof in lieu of the previous provisions.

ADDENDA *<Act No. 10911, Jul. 25, 2011>*

Article 1 (Enforcement Date)

This Decree shall enter into force three months after the date of its promulgation.

Articles 2 through 5 Omitted.

ADDENDA <*Act No. 10977, Jul. 28, 2011*>

Article 1 (Enforcement Date)

This Act shall enter into one year after the date of its promulgation.

Articles 2 through 11 Omitted.

ADDENDA <*Act No. 11256, Feb. 1, 2012*>

Article 1 (Enforcement Date)

This Act shall enter into force one year after the date of its promulgation. (Proviso Omitted.)

Articles 2 through 6 Omitted.

ADDENDUM <*Act No. 11268, Feb. 1, 2012*>

This Act shall enter into force on July 22, 2012.

ADDENDA <*Act No. 11603, Jan. 1, 2013*>

Article 1 (Enforcement Date)

This Act shall enter into force on January 1, 2013.

Articles 2 and 3 Omitted.

KLRI KOREA LEGISLATION RESEARCH INSTITUTE

ADDENDUM <*Act No. 11751, Apr. 5, 2013*>

This Act shall enter into force on the date of its promulgation: Provided, That the amended provisions of subparagraph 3-3 of Article 46 and subparagraph 2-2 of Article 47 (1) shall enter into force on January 1, 2015.

ADDENDA <*Act No. 11913, Jul. 16, 2013*>

Article 1 (Enforcement Date)

This Act shall enter into force on January 1, 2014. (Proviso Omitted.)

Articles 2 through 6 Omitted.

ADDENDA <*Act No. 11917, Jul. 16, 2013*>

Article 1 (Enforcement Date)

This Article shall enter into force six months after the date of its promulgation.

Articles 2 through 4 Omitted.

ADDENDA <*Act No. 11980, Jul. 30, 2013*>

Article 1 (Enforcement Date)

This Act shall enter into force on the date of its promulgation. (Proviso Omitted.)

Articles 2 and 3 Omitted.

ADDENDA <*Act No. 13410, Jul. 20, 2015*>

Article 1 (Enforcement Date)

This Decree shall enter into force three months after the date of its promulgation.

Articles 2 and 3 Omitted.

ADDENDA <*Act No. 13534, Dec. 1, 2015*>

Article 1 (Enforcement Date)

This Act shall enter into one year after the date of its promulgation.

Articles 2 through 5 Omitted.

KLRI KOREA LEGISLATION RESEARCH INSTITUTE

ADDENDA <*Act No. 13535, Dec. 1, 2015*>

This Act shall enter into force on January 1, 2016.

ADDENDA <*Act No. 13550, Dec. 15, 2015*>

Article 1 (Enforcement Date)

This Act shall enter into force on Dec. 31, 2015.

Article 2 Omitted.

ADDENDA <*Act No. 13603, Dec. 22, 2015*>

Article 1 (Enforcement Date)

This Act shall enter into force on January 1, 2017.

Articles 2 through 5 Omitted.

ADDENDA <*Act No. 13872, Jan. 27, 2016*>

Article 1 (Enforcement Date)

This Act shall enter into force on the date of its promulgation: Provided, That the proviso to the main body of Article 11 (1) and the amended provisions of Articles 13, 14 (5) and (6), 16-2, 40 and 40-2 shall enter into force six months after the date of its promulgation.

Articles 2 through 4 Omitted.

ADDENDA <*Act No. 13873, Jan. 27, 2016*>

Article 1 (Enforcement Date)

This Act shall enter into force on the date of its promulgation: Provided, That the amended provisions of Articles 13, 14 (5) and (6), 43, and 43-2 shall enter into force six months after the date of its promulgation.

Articles 2 through 4 Omitted.

ADDENDA <*Act No. 13879, Jan. 27, 2016*>

Article 1 (Enforcement Date)

This Act shall enter into force one year after the date of its promulgation. (Proviso Omitted.)

Articles 2 through 12 Omitted.

ADDENDA <*Act No. 13883, Jan. 27, 2016*>

Article 1 (Enforcement Date)

This Act shall enter into force on the date of its promulgation: Provided, That the amended provisions of Articles 13, 14 (5) and (6), 40, and 40-2 shall enter into force six months after the date of its promulgation.

Articles 2 through 4 Omitted.

ADDENDA <*Act No. 13886, Jan. 27, 2016*>

Article 1 (Enforcement Date)

This Act shall enter into force on the date when the Minamata Convention becomes effective in the Republic of Korea.

Articles 2 through 5 Omitted.

ADDENDA *<Act No. 13889, Jan. 27, 2016>*

Article 1 (Enforcement Date)

This Act shall enter into force on the date of its promulgation: Provided, That the amended provisions of Articles 8-5, 29 and 29-2 shall enter into force six months after the date of its promulgation.

Articles 2 through 4 Omitted.

ADDENDUM *<Act No. 13894, Jan. 27, 2016>*

This Act shall enter into force six months after the date of its promulgation: Provided, That the amended provisions of Article 12 (1) shall enter into force on the date of its promulgation.

ADDENDA *<Act No. 14229, May 29, 2016>*

Article 1 (Enforcement Date)

This Act shall enter into force on January 1, 2018.

Articles 2 and 3 Omitted.

KLRI KOREA LEGISLATION RESEARCH INSTITUTE

ADDENDUM *<Act No. 14494, Dec. 27, 2016>*

This Decree shall enter into force three months after the date of its promulgation.

ADDENDA *<Act No. 14532, Jan. 17, 2017>*

Article 1 (Enforcement Date)

This Act shall enter into one year after the date of its promulgation: Provided, That the amended provisions of any Act, which is amended pursuant to Article 6 of the Addenda and promulgated before this Act enters into force but the enforcement date of which has yet to arrive, shall enter into force on the enforcement date of such Act.

Articles 2 through 7 Omitted.

ADDENDA <*Act No. 16096, Dec. 31, 2018*>

Article 1 (Enforcement Date)

This Act shall enter into force on January 1, 2019.

Article 2 Omitted.

ADDENDUM <*Act No. 16267, Jan. 15, 2019*>

This Article shall enter into force six months after the date of its promulgation.

ADDENDA <*Act No. 16305, Apr. 2, 2019*>

Article 1 (Enforcement Date)

This Act shall enter into force one year after the date of its promulgation. (Proviso Omitted.)

Articles 2 through 10 Omitted.

ADDENDUM <*Act No. 16619, Nov. 26, 2019*>

This Article shall enter into force six months after the date of its promulgation.

ADDENDUM <*Act No. 16861, Dec. 31, 2019*>

This Act shall enter into force on January 1, 2020.

KLRI KOREA LEGISLATION RESEARCH INSTITUTE

ADDENDUM <*Act No. 17326, May. 26, 2020*>

This Act shall enter into force on the date of its promulgation. (Proviso Omitted.)

ADDENDA <*Act No. 17797, Dec. 29, 2020*>

Article 1 (Enforcement Date)

This Act shall enter into force six months after the date of its promulgation. (Proviso Omitted.)

Articles 2 through 11 Omitted.

ADDENDA <*Act No. 17857, Jan. 5, 2021*>

Article 1 (Enforcement Date)

This Act shall enter into force six months after the date of its promulgation.

Article 2 (Applicability to Comprehensive National Environmental Plan)

The amended provisions of Article 15 shall begin to apply to the formulation or modification of a comprehensive national environmental plan under Article 14 or the adjustment thereof under Article 16-2 (1) after this Act enters into force.

Article 3 (Transitional Measures concerning Formulation of City/Do Environmental Plans and Si/Gun/Gu Environmental Plans)

A City/Do environmental conservation plan and a Si/Gun/Gu environmental conservation plan formulated under the previous provisions as at the time this Act enters into force shall be deemed a City/Do environmental plan and a Si/Gun/Gu environmental plan formulated under the amended provisions of Articles 18, 18-2, 19, and 19-2, respectively.

Article 4 Omitted.

ADDENDA *<Act No. 18283, Jun. 15, 2021>*

Article 1 (Enforcement Date)

This Act shall enter into force six months after the date of its promulgation.

Articles 2 through 4 Omitted.

ADDENDA *<Act No. 18469, Sep. 24, 2021>*

Article 1 (Enforcement Date)

This Act shall enter into force six months after the date of its promulgation. (Proviso Omitted.)

Articles 2 through 10 Omitted.

ADDENDA *<Act No. 18584, Dec. 21, 2021>*

Article 1 (Enforcement Date)

This Act shall enter into force on January 1, 2022.

Article 2 Omitted.

ADDENDA *<Act No. 18918, Jun. 10, 2022>*

Article 1 (Enforcement Date)

This Act shall enter into force one year after the date of its promulgation.

Article 2 (Transitional Measures concerning Korea Environmental Preservation Association)

(1) The Korea Environmental Preservation Association established under the previous provisions as at the time this Act enters into force shall be deemed the Korea Environmental Conservation Institute established under this Act, and shall be deemed dissolved simultaneously with the establishment of the Korea Environmental Conservation Institute, notwithstanding the provisions of the Civil Act governing the dissolution and liquidation of corporations.

(2) The conduct of the Korea Environmental Preservation Association and other legal relations as at the time this Act enters into force shall be deemed done by the Korea Environmental Conservation Institute.

(3) The name of the Korea Environmental Preservation Association on the register and other public records as at the time this Act enters into force shall be deemed the name of the Korea Environmental Conservation Institute.

(4) The property, rights, and obligations of the Korea Environmental Preservation Association as at the time this Act enters into force shall be comprehensively taken over by the Korea Environmental Conservation Institute at the same time the Korea Environmental Conservation Institute is established. In such cases, the value of the property the Korea Environmental Conservation Institute has succeeded to shall be the book value as at the time the Korea Environmental Preservation Association acquires such property.

(5) Executive officers or employees of the Korea Environmental Preservation Association as at the time this Act enters into force shall be deemed selected or appointed as executive officers or employees of the Korea Environmental Conservation Institute. In such cases, the term of office of the executive officer shall be counted from the date he or she was appointed as an executive officer of the Korea Environmental Preservation Association.

Article 3 Omitted.

Article 4 (Relationship to Other Statutes or Regulations)

A citation of the Korea Environmental Preservation Association in other statutes or regulations as at the time this Act enters into force shall be deemed a citation of the Korea Environmental Conservation Institute in lieu of the Korea Environmental Preservation Association.

Last updated : 2023-04-21

Annex 577

Dutch Civil Code 1990, 20 February 1990, as amended from time to time and updated in 2024, Articles 6:175(1) and 6:175(4) (Dutch original and English translation)

Translated Extract of Dutch Civil Code 1990, Articles 6:175(1) and 6:175(4)

[. . .]

Book 6: Title 3. Torts Section 1. General

[. . .]

Article 175

1. The person who uses or has in his possession a substance in the course of his profession or business, where it is known that this substance has such properties that it presents a special danger of a serious nature to persons or property, shall be liable if this danger materializes. A person carrying on a business shall include any legal person who uses or has in his possession the substance in the course of his duties. A special danger of a serious nature shall in any case mean that the substance is explosive, oxidizing, flammable, highly flammable or extremely flammable, or poisonous or extremely poisonous if the substance is classified as such in accordance with Articles 3 and 4 and Title II of Regulation (EC) No. .... 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labeling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (OJEU L 353).

[. . .]

4. If the damage is a result of contamination with the substance of air, water or soil, the liability from subsection 1 to the person who was designated as liable by this article at the beginning of the event causing pollution. If the contamination occurred because the substance entered water or soil in a packaged state or was left on the soil, that event shall be deemed to have already commenced at that time.

[. . .]

Boek 6: Titel 1. Verbintenissen in het algemeen Afdeling 1. Algemene bepalingen

[. . .]

Artikel 175

1 Degene die in de uitoefening van zijn beroep of bedrijf een stof gebruikt of onder zich heeft, terwijl van deze stof bekend is dat zij zodanige eigenschappen heeft, dat zij een bijzonder gevaar van ernstige aard voor personen of zaken oplevert, is aansprakelijk, wanneer dit gevaar zich verwezenlijkt. Onder degene die een bedrijf uitoefent, wordt mede begrepen elke rechtspersoon die de stof in de uitoefening van zijn taak gebruikt of onder zich heeft. Als bijzonder gevaar van ernstige aard geldt in elk geval dat de stof ontplofbaar, oxyderend, ontvlambaar, licht ontvlambaar of zeer licht ontvlambaar, dan wel vergiftig of zeer vergiftig is indien de stof als zodanig is ingedeeld overeenkomstig de artikelen 3 en 4 en titel II van verordening (EG) nr. 1272/2008 van het Europees Parlement en de Raad van de Europese Unie van 16 december 2008 betreffende de indeling, etikettering en verpakking van stoffen en mengsels tot wijziging en intrekking van de Richtlijnen 67/548/EEG en 1999/45/EG en tot wijziging van Verordening (EG) nr. 1907/2006 (PbEU L 353).

[. . .]

4 Is de schade een gevolg van verontreiniging met de stof van lucht, water of bodem, dan rust de aansprakelijkheid uit het eerste lid op degene die bij de aanvang van de tot verontreiniging leidende gebeurtenis door dit artikel als aansprakelijke persoon werd aangewezen. Heeft de verontreiniging plaatsgevonden doordat de stof in verpakte toestand in water of bodem is gekomen of op de bodem is achtergelaten, dan wordt die gebeurtenis geacht op dit tijdstip reeds te zijn aangevangen.

[. . .]

Annex 578

Constitution of the Russian Federation, 12 December 1993, as amended from time to time and updated in 2022

THE CONSTITUTION OF THE RUSSIAN FEDERATION

adopted by popular vote on 12 December 1993,
with amendments approved by all-Russian vote on 1 July 2020

We, the multinational people of the Russian Federation, united by a common fate on our land, establishing human rights and freedoms, civil peace and accord, preserving the historically established State unity, proceeding from universally acknowledged principles of equality and self-determination of peoples, proceeding from universally acknowledged principles of equality and self-determination of peoples, revering the memory of ancestors who have passed on to us their love for the Fatherland and faith in good and justice, reviving the sovereign statehood of Russia and asserting the firmness of its democratic basis, striving to ensure the well-being and prosperity of Russia, proceeding from the responsibility for our Fatherland before present and future generations, recognizing ourselves to be a part of the world community, do hereby adopt THE CONSTITUTION OF THE RUSSIAN FEDERATION.

SECTION ONE

CHAPTER 1 THE BASIS OF THE CONSTITUTIONAL SYSTEM

Article 1

1. The Russian Federation – Russia is a democratic federative law-governed state with a republican form of government.

2. The names Russian Federation and Russia are equipollent.

Article 2

Man, his rights and freedoms shall be the supreme value. The recognition, observance and protection of human and civil rights and freedoms shall be an obligation of the State.

Article 3

1. The bearer of sovereignty and the sole source of power in the Russian Federation shall be its multinational people.

2. The people shall exercise its power directly, as well as through State government bodies and local self-government bodies.

3. The supreme direct expression of the power of the people shall be

referendum and free elections.

4. Nobody may usurp power in the Russian Federation. The seizure of power or usurpation of State authority shall be prosecuted under federal law.

Article 4

1. The sovereignty of the Russian Federation shall extend to the entirety of its territory.

2. The Constitution of the Russian Federation and federal laws shall have supremacy on the entire territory of the Russian Federation.

3. The Russian Federation shall ensure the integrity and inviolability of its territory.

Article 5

1. The Russian Federation shall consist of republics, krays, oblasts, cities of federal significance, an autonomous oblast and autonomous okrugs, which shall have equal rights as constituent entities of the Russian Federation.

2. A republic (state) shall have its own constitution and legislation. A kray, oblast, city of federal significance, autonomous oblast and autonomous okrug shall have its own charter and legislation.

3. The federal structure of the Russian Federation shall be based on its State integrity, the unity of the system of State power, the division of matters of authority and powers between State government bodies of the Russian Federation and State government bodies of constituent entities of the Russian Federation, the equality and self-determination of peoples in the Russian Federation.

4. All constituent entities of the Russian Federation shall be equal with one another in relations with federal State government bodies.

Article 6

1. Citizenship of the Russian Federation shall be acquired and terminated in accordance with federal law, and shall be one and equal, irrespective of the grounds on which it is acquired.

2. Every citizen of the Russian Federation shall enjoy all rights and freedoms on its territory and shall bear equal responsibilities as envisaged in the Constitution of the Russian Federation.

3. A citizen of the Russian Federation may not be deprived of his (her)

citizenship or of the right to change it.

Article 7

1. The Russian Federation shall be a social state whose policy is aimed at creating conditions ensuring a worthy life and a free development of Man.

2. In the Russian Federation the labour and health of people shall be protected, a guaranteed minimum wage shall be established, State support shall be provided for the family, maternity, fatherhood and childhood, to the disabled and to elderly citizens, the system of social services shall be developed and State pensions, allowances and other social security guarantees shall be established.

Article 8

1. In the Russian Federation the integrity of economic space, free flow of goods, services and financial resources, support of competition, and the freedom of economic activity shall be guaranteed.

2. In the Russian Federation private, State, municipal and other forms of property shall be recognized and shall be protected on an equal basis.

Article 9

1. Land and other natural resources shall be utilized and protected in the Russian Federation as the basis of the life and activity of the peoples living on the territories concerned.

2. Land and other natural resources may be subject to private, State, municipal and other forms of ownership.

Article 10

State power in the Russian Federation shall be exercised on the basis of its division into legislative, executive and judicial authority. Bodies of legislative, executive and judicial authority shall be independent.

Article 11

1. State power in the Russian Federation shall be exercised by the President of the Russian Federation, the Federal Assembly (the Council of Federation and the State Duma), the Government of the Russian Federation, and the courts of the Russian Federation.

2. State power in constituent entities of the Russian Federation shall be exercised by bodies of State government formed by those constituent entities.

3. The division of authorities and powers among State government bodies of the Russian Federation and State government bodies of constituent entities of the Russian Federation shall be established by this Constitution, the Federation Treaty and other treaties on the division of authorities and powers.

Article 12

Local self-government shall be recognized and guaranteed in the Russian Federation. Local self- government shall be independent within the limits of its competence. Bodies of local self-government shall not form part of the system of State government bodies.

Article 13

1. Ideological diversity shall be recognized in the Russian Federation.

2. No ideology shall be proclaimed as State ideology or as obligatory.

3. Political diversity and the multi-party system shall be recognized in the Russian Federation.

4. Public associations shall be equal before the law.

5. The establishment and activities of public associations whose goals and activities are aimed at the forcible changing of the basis of the constitutional order and at violating the integrity of the Russian Federation, at undermining its security, at creating armed units, and at instigating social, racial, national and religious strife shall be prohibited.

Article 14

1. The Russian Federation shall be a secular state. No religion may be established as the State religion or as obligatory.

2. Religious associations shall be separate from the State and shall be equal before the law.

Article 15

1. The Constitution of the Russian Federation shall have supreme legal force, direct effect and shall be applicable on the entire territory of the Russian Federation. Laws and other legal acts, which are adopted in the Russian Federation, must not contradict the Constitution of the Russian Federation.

2. State government bodies, local self-government bodies, officials, citizens and their associations shall be obliged to observe the Constitution of the Russian Federation and laws.

3. Laws must be officially published. Unpublished laws shall not have force. Any normative legal acts concerning human and civil rights, freedoms and obligations shall not have force unless they have been officially published for the information of the general public.

4. Universally recognized principles and norms of international law as well as international agreements of the Russian Federation should be an integral part of its legal system. If an international agreement of the Russian Federation establishes rules, which differ from those stipulated by law, then the rules of the international agreement shall be applied.

Article 16

1. The provisions of this Chapter of the Constitution shall constitute the fundamental principles of the constitutional order of the Russian Federation and may not be changed except in accordance with the procedure established by this Constitution.

2. No other provisions of this Constitution may conflict with the fundamental principles of the constitutional order of the Russian Federation.

CHAPTER 2 HUMAN AND CIVIL RIGHTS AND FREEDOMS

Article 17

1. In the Russian Federation human and civil rights and freedoms shall be recognized and guaranteed according to the universally recognized principles and norms of international law and this Constitution.

2. Basic human rights and freedoms shall be inalienable and shall be enjoyed by everyone from birth.

3. The exercise of human and civil rights and freedoms must not violate the rights and freedoms of other people.

Article 18

Human and civil rights and freedoms shall have direct force. They shall determine the meaning, content and implementation of laws, the functioning of legislative and executive authority and of local self-government, and shall be guaranteed by law.

Article 19

1. All persons shall be equal before the law and the court.

2. The State guarantees the equality of human and civil rights and freedoms

regardless of sex, race, nationality, language, origin, material and official status, place of residence, attitude to religion, convictions, membership of public associations, or of other circumstances. All forms of limitations of human rights on social, racial, national, language or religious grounds shall be prohibited.

3. Men and women shall enjoy equal rights and freedoms and equal opportunities to exercise them.

Article 20

1. Everyone shall have the right to life.

2. Capital punishment until its complete abolition may be established by federal law as an exclusive form of punishment for particularly grave crimes against life, and the accused shall be granted the right to have his case examined by a court with the participation of a jury.

Article 21

1. Human dignity shall be protected by the State. Nothing may serve as a basis for its derogation.

2. Nobody should be subjected to torture, violence, or other severe or humiliating treatment or punishment. Nobody may be subjected to medical, scientific or other experiments without voluntary consent.

Article 22

1. Everyone shall have the right to freedom and personal inviolability.

2. Arrest, detention and keeping in custody shall be permissible only under a court order. A person may not be detained for more than 48 hours without a court order.

Article 23

1. Everyone shall have the right to the inviolability of his (her) private life, personal and family privacy, and protection of his (her) honour and good name.

2. Everyone shall have the right to privacy of correspondence, of telephone conversations and of postal, telegraph and other communications. This right may be limited only on the basis of a court order.

Article 24

1. Collecting, keeping, using and disseminating information about the private life of a person shall not be permitted without his (her) consent.

2. State government bodies and local self-government bodies and their officials shall be obliged to provide everyone with access to documents and materials directly affecting his (her) rights and freedoms, unless otherwise envisaged by law.

Article 25

The home shall be inviolable. Nobody shall have the right to enter a dwelling place against the will of those residing therein, except in those cases provided for by federal laws or on the basis of a court order.

Article 26

1. Everyone shall have the right to determine and declare his (her) nationality. Nobody shall be forced to determine and declare his (her) nationality.

2. Everyone shall have the right to use his (her) native language and to a free choice of the language of communication, upbringing, education and creative work.

Article 27

1. Everyone who is legally present on the territory of the Russian Federation shall have the right to travel freely and freely to choose the place of temporary or permanent residence.

2. Everyone may freely leave the Russian Federation. Citizens of the Russian Federation shall have the right freely to return to the Russian Federation.

Article 28

Everyone shall be guaranteed freedom of conscience and religion, including the right to profess individually or collectively any religion or not to profess any religion, and freely to choose, possess and disseminate religious and other convictions and act in accordance with them.

Article 29

1. Everyone shall be guaranteed freedom of thought and speech.

2. Propaganda or agitation, which arouses social, racial, national or religious hatred and hostility, shall be prohibited. Propaganda of social, racial, national, religious or linguistic supremacy shall also be prohibited.

3. Nobody shall be forced to express his thoughts and convictions or to deny them.

4. Everyone shall have the right freely to seek, receive, transmit, produce and disseminate information by any legal means. The list of types of information, which

constitute State secrets, shall be determined by federal law.

5. The freedom of the mass media shall be guaranteed. Censorship shall be prohibited.

Article 30

1. Everyone shall have the right of association, including the right to establish trade unions for the protection of his (her) interests. The freedom of activity of public associations shall be guaranteed.

2. Nobody may be compelled to join any association or to stay there.

Article 31

Citizens of the Russian Federation shall have the right to assemble peacefully, without weapons, hold rallies, mass meetings and demonstrations, marches and pickets.

Article 32

1. Citizens of the Russian Federation shall have the right to participate in managing State affairs both directly and through their representatives.

2. Citizens of the Russian Federation shall have the right to elect and be elected to State government bodies and local self-government bodies, as well as to participate in referendums.

3. Citizens who are recognized as incapable by a court, and citizens who are kept in places of imprisonment under a court sentence, shall not have the right to elect and be elected.

4. Citizens of the Russian Federation shall enjoy equal access to State service.

5. Citizens of the Russian Federation shall have the right to participate in administering justice.

Article 33

Citizens of the Russian Federation shall have the right to appeal in person and make individual and collective appeals to State bodies and local self-government bodies.

Article 34

1. Everyone shall have the right to use freely his (her) abilities and property for entrepreneurial and other economic activity not prohibited by law.

2. Economic activity aimed at monopolization and unfair competition shall not be permitted.

Article 35

1. The right of private property shall be protected by law.

2. Everyone shall have the right to have property and to possess, use and dispose of it both individually and jointly with other persons.

3. Nobody may be deprived of property except under a court order. Forced alienation of property for State requirements may take place only subject to prior and equal compensation.

4. The right of inheritance shall be guaranteed.

Article 36

1. Citizens and their associations shall have the right to possess land as private property.

2. Possession, utilisation and disposal of land and other natural resources shall be exercised by the owners freely provided that this is not detrimental to the environment and does not violate the rights and lawful interests of other people.

3. The conditions and procedure for the use of land shall be determined by federal law.

Article 37

1. Labour shall be free. Everyone shall have the right freely to use his (her) labour skills and to choose the type of activity and occupation.

2. Compulsory labour shall be forbidden.

3. Everyone shall have the right to work in conditions, which meet safety and hygiene requirements, and to receive remuneration for labour without any discrimination whatsoever and not below the minimum wage established by federal law, as well as the right of protection against unemployment.

4. The right of individual and collective labour disputes with the use of the methods for their resolution, which are provided for by federal law, including the right to strike, shall be recognized.

5. Everyone shall have the right to rest. For those working under labour contracts the duration of work time, days of rest and public holidays and annual paid

leave established by federal law shall be guaranteed.

Article 38

1. Maternity, childhood and family shall be protected by the State.

2. Care for children and their upbringing shall be the equal right and duty of parents.

3. Able-bodied children over 18 years of age must take care of disabled parents.

Article 39

1. Everyone shall be guaranteed social security for old age, in case of illness, disability and loss of the bread-winner, for the bringing up of children and in other cases specified by law.

2. State pensions and social benefits shall be established by law.

3. Voluntary social insurance, the creation of additional forms of social security and charity shall be encouraged.

Article 40

1. Everyone shall have the right to a home. Nobody may be arbitrarily deprived of his (her) home

2. State government bodies and local self-government bodies shall promote housing construction and create conditions for exercising the right to a home.

3. Low-income citizens and other citizens mentioned in law who are in need of a home may receive it either free of charge or for an affordable payment from State, municipal and other housing funds according to the norms established by law.

Article 41

1. Everyone shall have the right to health protection and medical care. Medical care in State and municipal health institutions shall be rendered to citizens free of charge at the expense of the appropriate budget, insurance premiums and other proceeds.

2. In the Russian Federation federal programmes for the protection and improvement of the health of the public shall be financed, measures shall be taken to develop State, municipal and private healthcare systems, and activities shall be encouraged which contribute to the improvement of human health, the development of

physical education and sport, and ecological, sanitary and epidemiological well-being.

3. The concealment by officials of facts and circumstances, which pose a threat to the life and health of people, shall result in liability according to federal law.

Article 42

Everyone shall have the right to a favourable environment, reliable information on the state of the environment and compensation for damage caused to his (her) health and property by violations of environmental laws.

Article 43

1. Everyone shall have the right to education.

2. General access and free pre-school, secondary and secondary vocational education in State and municipal educational institutions and at enterprises shall be guaranteed.

3. Everyone shall have the right to receive on a competitive basis free higher education in State and municipal educational institutions and at enterprises.

4. Basic general education shall be compulsory. Parents or guardians shall ensure that children receive a basic general education.

5. The Russian Federation shall establish federal State educational standards and shall support various forms of education and self-education.

Article 44

1. Everyone shall be guaranteed the freedom of literary, artistic, scientific, technical and other types of creative activity and teaching. Intellectual property shall be protected by law.

2. Everyone shall have the right to participate in cultural life and use cultural establishments, and the right of access to cultural valuables.

3. Everyone shall be obliged to care for the preservation of the cultural and historical heritage, and to protect monuments of history and culture.

Article 45

1. State protection of human and civil rights and freedoms in the Russian Federation shall be guaranteed.

2. Everyone shall have the right to protect his (her) rights and freedoms by all

means not prohibited by law.

Article 46

1. Everyone shall be guaranteed protection in court of his (her) rights and freedoms.

2. Decisions and actions (or inaction) of State government bodies, local self-government bodies, public organisations and officials may be appealed against in court.

3. Everyone shall have the right in accordance with international treaties of the Russian Federation to appeal to interstate bodies for the protection of human rights and freedoms if all available internal means of legal protection have been exhausted.

Article 47

1. Nobody may be deprived of the right to have his (her) case heard in the court and by the judge within whose competence the case is placed by law.

2. Any person accused of committing a crime shall have the right to have his (her) case examined by a court with the participation of a jury in the cases envisaged by federal law.

Article 48

1. Everyone shall be guaranteed the right to qualified legal assistance. In the cases envisaged by law, legal assistance shall be provided free of charge.

2. Any person detained, taken into custody or accused of committing a crime shall have the right to use the assistance of a lawyer (counsel for the defence) from the moment of being detained, placed in custody or accused.

Article 49

1. Any person accused of committing a crime shall be considered innocent until his (her) guilt is proven in accordance with the procedure stipulated by federal law and is confirmed by a court sentence which has entered into legal force.

2. The accused shall not be obliged to prove his (her) innocence.

3. Irremovable doubts about the guilt of a person shall be interpreted in favour of the accused.

Article 50

1. Nobody may be convicted twice for one and the same crime.

2. In administering justice it shall not be permitted to use evidence received through violating federal law.

3. Any person convicted of a crime shall have the right to appeal against the verdict to a higher court in accordance with the procedure established by federal law, as well as to request pardon or mitigation of the punishment.

Article 51

1. Nobody shall be obliged to testify against himself, his (her) spouse or close relatives, the range of whom shall be determined by federal law.

2. Federal law may establish other cases where the obligation to give evidence may be lifted.

Article 52

The rights of victims of crimes and of abuses of office shall be protected by law. The State shall provide the victims with access to justice and compensation for damage sustained.

Article 53

Everyone shall have the right to State compensation for damage caused by unlawful actions (inaction) of State government bodies and their officials.

Article 54

1. A law, which introduces or increases liability, shall not have retroactive force.

2. Nobody may bear liability for an action, which was not regarded as a crime when it was committed. If, after an offense has been committed, the extent of liability for it is lifted or mitigated, the new law shall be applied.

Article 55

1. The enumeration in the Constitution of the Russian Federation of the basic rights and freedoms should not be interpreted as a denial or diminution of other universally recognized human and civil rights and freedoms.

2. In the Russian Federation no laws must be adopted which abolish or diminish human and civil rights and freedoms.

3. Human and civil rights and freedoms may be limited by federal law only to the extent necessary for the protection of the basis of the constitutional order, morality, health, rights and lawful interests of other people, and for ensuring the

defence of the country and the security of the State.

Article 56

1. In the conditions of a state of emergency, in order to ensure the safety of citizens and the protection of the constitutional order and in accordance with federal constitutional law, certain restrictions may be imposed on human rights and freedoms with an indication of their limits and the period for which they have effect.

2. A state of emergency on the entire territory of the Russian Federation and in certain areas thereof may be introduced subject to the circumstances and in accordance with the procedure stipulated by federal constitutional law.

3. The rights and freedoms specified in Articles 20, 21, 23 (part 1), 24, 28, 34 (part 1), 40 (part 1), and 46—54 of the Constitution of the Russian Federation might not be restricted.

Article 57

Everyone shall be obliged to pay legally established taxes and levies. Laws, which establish new taxes or deteriorate the position of taxpayers, shall not have retroactive force.

Article 58

Everyone shall have a duty to preserve nature and the environment and to treat natural resources with care.

Article 59

1. Defence of the Fatherland shall be the duty and obligation of a citizen of the Russian Federation.

2. Citizens of the Russian Federation shall perform military service in accordance with federal law.

3. In the event that their convictions or religious beliefs run counter to military service and in other cases established by federal law, citizens of the Russian Federation shall have the right to replace it with alternative civilian service.

Article 60

A citizen of the Russian Federation may exercise all of his (her) rights and duties independently from the age of 18 years.

Article 61

1. A citizen of the Russian Federation may not be deported from the Russian Federation or extradited to another state.

2. The Russian Federation shall guarantee its citizens protection and patronage abroad.

Article 62

1. A citizen of the Russian Federation may have citizenship of a foreign state (dual citizenship) in accordance with federal law or an international treaty of the Russian Federation.

2. The possession of foreign citizenship by a citizen of the Russian Federation shall not diminish his (her) rights and freedoms and shall not release him from obligations stipulated for Russian citizenship, unless otherwise specified by federal law or an international treaty of the Russian Federation.

3. Foreign citizens and stateless persons shall enjoy rights and bear obligations in the Russian Federation on a par with citizens of the Russian Federation, except in those cases envisaged by federal law or by an international treaty of the Russian Federation.

Article 63

1. The Russian Federation shall grant political asylum to foreign citizens and stateless persons in accordance with the universally recognized norms of international law.

2. In the Russian Federation persons who are persecuted for their political convictions or for actions (or inaction) not recognized as a crime in the Russian Federation may not be extradited to other states. The extradition of persons accused of a crime, as well as the surrender of convicts to serve sentence in other states, shall be carried out on the basis of federal law or an international treaty of the Russian Federation.

Article 64

The provisions of this Chapter shall constitute the fundamental principles of the legal status of the individual in the Russian Federation and may not be changed otherwise than in accordance with the procedure which is established by this Constitution.

CHAPTER 3 THE FEDERAL STRUCTURE

Article 65

1. The Russian Federation shall be composed of the following constituent

entities of the Russian Federation:

Republic of Adygeya (Adygeya), Republic of Altai, Republic of Bashkortostan, Republic of Buryatia, Republic of Daghestan, Donetsk People's Republic, Republic of Ingushetia, Kabardino-Balkarian Republic, Republic of Kalmykia, Karachayevo-Cherkessian Republic, Republic of Karelia, Komi Republic, Republic of Crimea, Lugansk People's Republic, Republic of Marij El, Republic of Mordovia, Republic of Sakha (Yakutia), Republic of North Osetia – Alania, Republic of Tatarstan (Tatarstan), Republic of Tuva, Udmurtian Republic, Republic of Khakasia, Chechen Republic, Chuvashi Republic – Chuvashia;

Altai kray, Zabaikalie kray, Kamchatka kray, Krasnodar kray, Krasnoyarsk kray, Perm kray, Primorie kray, Stavropol kray, Khabarovsk kray;

Amur oblast, Arkhangelsk oblast, Astrakhan oblast, Belgorod oblast, Bryansk oblast, Vladimir oblast, Volgograd oblast, Vologda oblast, Voronezh oblast, Zaporozhye oblast, Ivanovo oblast, Irkutsk oblast, Kaliningrad oblast, Kaluga oblast, Kemerovo oblast - Kuzbass, Kirov oblast, Kostroma oblast, Kurgan oblast, Kursk oblast, Leningrad oblast, Lipetsk oblast, Magadan oblast, Moscow oblast, Murmansk oblast, Nizhni Novgorod oblast, Novgorod oblast, Novosibirsk oblast, Omsk oblast, Orenburg oblast, Oryol oblast, Penza oblast, Pskov oblast, Rostov oblast, Ryazan oblast, Samara oblast, Saratov oblast, Sakhalin oblast, Sverdlovsk oblast, Smolensk oblast, Tambov oblast, Tver oblast, Tomsk oblast, Tula oblast, Tyumen oblast, Ulyanovsk oblast, Kherson oblast, Chelyabinsk oblast, Yaroslavl oblast;

Moscow, St. Petersburg, Sevastopol’ - cities of federal significance;

the Jewish autonomous oblast;

Nenets autonomous okrug, Khanty-Mansijsk autonomous okrug – Yugra, Chukotka autonomous okrug, Yamalo-Nenets autonomous okrug.

2. Admission into the Russian Federation and creation of a new constituent entity shall take place in accordance with the procedure established by federal constitutional law.

Article 66

1. The status of a republic shall be determined by the Constitution of the Russian Federation and the constitution of the republic.

2. The status of a kray, oblast, city of federal significance, autonomous oblast, autonomous okrug shall be determined by the Constitution of the Russian Federation and the charter of the kray, oblast, city of federal significance, autonomous oblast and autonomous okrug which is adopted by the legislative (representative) body of the corresponding constituent entity of the Russian Federation.

3. On a submission from legislative and executive bodies of an autonomous oblast or autonomous okrug, a federal law concerning an autonomous oblast or autonomous okrug may be adopted.

4. Relations among autonomous okrugs within krays and oblasts may be regulated by federal law or by a treaty between State government bodies of the autonomous okrug and, accordingly, State government bodies of the kray or oblast.

5. The status of a constituent entity of the Russian Federation may be changed by mutual agreement between the Russian Federation and the constituent entity of the Russian Federation in accordance with federal constitutional law.

Article 67

1. The territory of the Russian Federation shall comprise the territories of its constituent entities, inland waters and territorial sea and the air space over them. Within the territory of the Russian Federation federal territories can be created in accordance with federal law. Organisation of public authority within federal territories is established by the aforementioned federal law.

2. The Russian Federation shall have sovereign rights and exercise jurisdiction on the continental shelf and in the exclusive economic zone of the Russian Federation in accordance with the procedure specified by federal law and norms of international law.

2^1. The Russian Federation ensures protection of its sovereignty and territorial integrity. Any actions (except delimitation, demarcation, re-demarcation of the state border of the Russian Federation with bordering states) aimed at alienation of the part of the territory of the Russian Federation, as well as calls upon such actions are precluded.

3. Borders between constituent entities of the Russian Federation may be changed upon their mutual consent.

Article 67^1

1. The Russian Federation is the legal successor of the Union of SSR within its territory, and a legal successor (legal continuator) of the Union of SSR as regards membership in international organisations and their bodies, participation in international treaties, and as regards obligations of the Union of SSR foreseen by international treaties and its active assets outside the territory of the Russian Federation.

2. The Russian Federation, united by the millennium history, preserving the memory of the ancestors who conveyed to us ideals and belief in God, as well as continuity of development of the Russian state, recognises the unanimity of the State

that was established historically.

3. The Russian Federation honours the memory of the defenders of the Fatherland, ensures protection of historical truth. Diminution of the heroic deed of the people defending the Fatherland is precluded.

4. Children are the most important priority of the state policy of Russia. The state creates conditions contributing to comprehensive spiritual, moral, intellectual and physical development of children, upbringing of their patriotism, civic consciousness and respect towards elders. The state, ensuring priority of family upbringing, undertakes to fulfil parental obligations towards children left without care.

Article 68

1. The State language of the Russian Federation in all of its territory shall be Russian language, as a language of the state-constituting nation a member of the multinational union of equal nations of the Russian Federation.

2. Republics shall have the right to establish their own State languages. In State government bodies, local self-government bodies and State institutions of republics they shall be used together with the State language of the Russian Federation.

3. The Russian Federation shall guarantee all of its peoples the right to preserve their native language and to create conditions for its study and development.

4. Culture in the Russian Federation is a unique heritage of its multinational people. Culture is supported and protected by state.

Article 69

1. The Russian Federation shall guarantee the rights of indigenous small peoples in accordance with the universally recognized principles and norms of international law and international treaties of the Russian Federation.

2. The state protects cultural identity of all the nations and ethnic communities of the Russian Federation, guarantees preservation of ethnic-cultural and language variety.

3. The Russian Federation provides support to compatriots living abroad in exercising their rights, ensuring protection of their interests and preserving all-Russian cultural identity.

Article 70

1. The state flag, emblem and anthem of the Russian Federation, their

description and the procedure for the official use thereof shall be established by federal constitutional law.

2. The capital of the Russian Federation shall be the city of Moscow. The status of the capital shall be established by federal law. Another city defined by a federal constitutional law can be the place of residents of certain federal bodies of state power.

Article 71

The Russian Federation shall have jurisdiction over:

a) the adoption and amending of the Constitution of the Russian Federation and federal laws, control over compliance therewith;

b) the federative structure and the territory of the Russian Federation;

c) regulation and protection of human and civil rights and freedoms; citizenship in the Russian Federation, regulation and protection of the rights of national minorities;

d) organisation of public power; establishment of the system of federal legislative, executive and judicial bodies, the procedure for their organisation and activities, the formation of federal State government bodies;

e) federal State property and administration thereof;

f) establishment of the basic principles of federal policy, and federal programs in the spheres of state, economical, ecological, scientific and technological, social, cultural and national development of the Russian Federation; establishment of unified basic legal foundations of healthcare system, upbringing and education system, including continuous education;

g) establishment of the basic legal principles for the unified market; financial, currency, credit and customs regulation; money emission; the basic principles of pricing policy, federal economic services, including federal banks;

h) the federal budget, federal taxes and levies, federal funds of regional development;

i) federal power-engineering systems, nuclear power, fissile materials, federal transport, communication lines, information technologies and communication, activities in space;

j) foreign policy and international relations of the Russian Federation,

international treaties of the Russian Federation, issues of war and peace;

k) foreign economic relations of the Russian Federation;

l) defence and security; military production; determination of the procedure for selling and purchasing weapons, ammunition, military equipment and other military hardware; production of poisonous substances, narcotic substances and the procedure for their use; ensuring security of person, society and state in using information technologies, circulation of digital data;

m) determination of the status and protection of the State border, territorial sea, air space, the exclusive economic zone and the continental shelf of the Russian Federation;

n) the judicial system, public prosecution, criminal and criminal-executive legislation, amnesty and remission, civil legislation, procedural legislation, legal regulation of intellectual property;

o) federal collision law;

p) metrological service, standards, samples, metric and time systems; geodesy and cartography; names of geographical units; meteorological service; official statistics and accounting;

q) State awards and honorary titles of the Russian Federation;

r) federal state service; establishment of restrictions for holding state and municipal posts, posts of state and municipal service, including restrictions connected to foreign citizenship or residential permit or another document certifying the right of the Russian Federation citizen to full-time residence in the foreign state, as well as restrictions connected to opening and presence of bank accounts (deposits), keeping of cash assets and valuables in foreign banks situated outside the territory of the Russian Federation.

Article 72

1. The following shall be within the joint jurisdiction of the Russian Federation and constituent entities of the Russian Federation:

a) measures to ensure the correspondence of constitutions and laws of republics, the charters, laws and other normative legal acts of krays, oblasts, cities of federal significance, autonomous oblast and autonomous okrugs to the Constitution of the Russian Federation and federal laws;
b) protection of human and civil rights and freedoms, protection of the rights of national minorities, ensuring lawfulness, law and order, public security; border zone regimes;

c) issues of the possession, utilisation and management of land and of subsurface, water and other natural resources;
d) demarcation of State property;
e) use of natural resources, agriculture, protection of the environment and provisions for ecological safety; specially protected natural territories, protection of historical and cultural monuments;
f) general issues of upbringing, education, science, culture, physical education and sport, youth policy;
g) coordination of healthcare issues, including ensuring provisions of accessible and quality medical care, preserving and strengthening public health, creation of conditions for healthy living, developing the culture of responsible attitude of citizens to their health; social protection, including social security;

g[1]) protection of the family, maternity, fatherhood and childhood; protection of marriage as a union of a male and a female; creation of conditions for decent upbringing of children in a family, and for fulfilling by children of legal age of their obligation to take care of parents;

h) carrying out measures against catastrophes, natural disasters, epidemics and rectification of their consequences;
i) establishment of common principles of taxation and levies in the Russian Federation;
j) administrative, administrative-procedural, labour, family, housing, land, water and forest legislation; legislation on subsurface resources and on environmental protection;
k) personnel of judicial and law enforcement bodies; lawyers, notaries;
l) protection of the traditional habitat and the traditional way of life of small ethnic communities;
m) establishment of general principles of the organisation of the system of State government and local self-government bodies;
n) coordination of international and foreign economic relations of constituent entities of the Russian Federation, observance of international agreements of the Russian Federation.

2. The provisions of this Article shall be equally valid for republics, krays, oblasts, cities of federal significance, autonomous oblast and autonomous okrugs.

Article 73

Outside the limits of authority of the Russian Federation and the powers of the Russian Federation on issues under the joint jurisdiction of the Russian Federation and constituent entities of the Russian Federation, the constituent entities of the Russian Federation shall enjoy full State power.

Article 74

1. In the territory of the Russian Federation it shall not be permitted to establish custom borders, duties, levies or any other barriers to the free flow of goods, services and financial resources.

2. Restrictions on the movement of goods and services may be introduced in accordance with federal law only to ensure security, to protect the life and health of people and to preserve nature and cultural values.

Article 75

1. The monetary unit in the Russian Federation shall be the rouble. Money emission shall be carried out exclusively by the Central Bank of the Russian Federation. The introduction and emission of other currencies in Russia shall not be permitted.

2. Protecting and ensuring the stability of the rouble shall be the principal function of the Central Bank of the Russian Federation, which it shall fulfil independently of other State governmental bodies.

3. The system of taxes paid to the federal budget and the general principles of taxation and levies in the Russian Federation shall be determined by federal law.

4. State loans shall be issued in accordance with the procedure specified by federal law and shall be floated on a voluntary basis.

5. The Russian Federation respects the labour of citizens and ensures protection of their rights. The state guarantees minimal wage in the amount of no less than subsistence rate for able-bodied general population throughout the Russian Federation.

6. In the Russian Federation the system for pension provisions to citizens shall be developed on the basis of principles of generality, fairness and solidarity of generations, its effective functioning shall be supported, and the pensions indexation shall be performed no less than once a year in the order established by federal law.

7. In the Russian Federation in accordance with the federal law obligatory social insurance, targeted social support of citizens and indexation of social allowance and other social payments shall be guaranteed.

Article 75[1]

In the Russian Federation conditions shall be created for sustainable development of the economic growth of the country and increase of prosperity of citizens, for mutual trust between the state and the citizens; protection of citizens' dignity and respect for a working man shall be guaranteed; balance between rights and obligations of citizen, social partnership, economic, political and social solidarity shall

be ensured.

Article 76

1. On issues under the jurisdiction of the Russian Federation, federal constitutional laws and federal laws shall be adopted. These shall have direct force on the entire territory of the Russian Federation.

2. On issues under the joint jurisdiction of the Russian Federation and the constituent entities of the Russian Federation, in addition to federal laws, laws and other normative legal acts of constituent entities of the Russian Federation shall be issued which are adopted in accordance with those federal laws.

3. Federal laws may not conflict with federal constitutional laws.

4. Outside the limits of authority of the Russian Federation and of the joint jurisdiction of the Russian Federation and constituent entities of the Russian Federation republics, krays, oblasts, cities of federal significance, autonomous oblast and autonomous okrugs shall exercise their own legal regulation, including the adoption of laws and other normative legal acts.

5. Laws and other normative legal acts of the constituent entities of the Russian Federation shall not conflict with federal laws which are adopted in accordance with parts one and two of this Article. In the event of a conflict between a federal law and any other act issued in the Russian Federation, the federal law shall prevail.

6. In the event of a conflict between a federal law and a normative legal act of a constituent entity of the Russian Federation issued in accordance with part four of this Article, the normative legal act of the constituent entity of the Russian Federation shall prevail.

Article 77

1. The system of State government bodies of republics, krays, oblasts, cities of federal significance, autonomous oblast and autonomous okrugs shall be established by the constituent entities of the Russian Federation independently in accordance with the basic principles of the constitutional order of the Russian Federation and the general principles of the organisation of representative and executive State government bodies which are established by federal law.

2. Within the limits of the jurisdiction and powers of the Russian Federation on issues under the joint jurisdiction of the Russian Federation and the constituent entities of the Russian Federation federal executive government bodies and executive government bodies of the constituent entities of the Russian Federation shall form a unified system of executive authority in the Russian Federation.

3. The highest office of the constituent entity of the Russian Federation (post of the highest executive state authority in a constituent entity of the Russian Federation) can be held by the citizen of the Russian Federation who is of the age of thirty at least, lives permanently in the Russian Federation, has no foreign citizenship, residence permit or another document certifying the right of the citizen of the Russian Federation to have residence in the territory of a foreign state. The person holding the highest office of the constituent entity of the Russian Federation (head of the highest executive state authority in a constituent entity of the Russian Federation) in order established by the federal law shall be forbidden from opening and having bank accounts (deposits), keeping cash assets and valuables in foreign banks situated outside the territory of the Russian Federation. The federal law can establish additional requirements for the person holding the highest office of the constituent entity of the Russian Federation (head of the highest executive state authority in a constituent entity of the Russian Federation).

Article 78

1. Federal executive government bodies may, in order to exercise their powers, establish their own territorial bodies and appoint appropriate officials.

2. Federal executive government bodies, by agreement with executive government bodies of constituent entities of the Russian Federation, may delegate some of their powers to the latter provided that this does not conflict with the Constitution of the Russian Federation and federal laws.

3. Executive government bodies of constituent entities of the Russian Federation, by agreement with federal executive government bodies, may delegate some of their powers to the latter.

4. The President of the Russian Federation and the Government of the Russian Federation shall provide for the implementation of the powers of federal State power on the entire territory of the Russian Federation in accordance with the Constitution of the Russian Federation.

5. The post of head of the federal state authority can be held by a citizen of the Russian Federation who is of the age of thirty at least, has no foreign citizenship, residence permit or another document certifying the right of the citizen of the Russian Federation to have residence in the territory of a foreign state. The person holding the post of head of the federal state authority in order established by the federal law shall be forbidden from opening and having bank accounts (deposits), keeping cash assets and valuables in foreign banks situated outside the territory of the Russian Federation.

Article 79

The Russian Federation may participate in interstate associations and transfer some of its powers to those associations in accordance with international treaties of

the Russian Federation provided that this does not entail restrictions on human and civil rights and freedoms and does not conflict with the basic principles of the constitutional order of the Russian Federation. Decisions of international bodies, taken on the basis of provisions of international treaties of the Russian Federation in their interpretation that contradicts the Constitution of the Russian Federation shall not be executed in the Russian Federation.

Article 79[1]

The Russian Federation takes measures to preserve and strengthen international peace and security, to ensure peaceful coexistence of the states and peoples, to prevent intervention into internal affairs of a State.

CHAPTER 4 THE PRESIDENT OF THE RUSSIAN FEDERATION

Article 80

1. The President of the Russian Federation shall be the Head of State.

2. The President of the Russian Federation shall be the guarantor of the Constitution of the Russian Federation and of human and civil rights and freedoms. In accordance with the procedure established by the Constitution of the Russian Federation, he (she) shall adopt measures to protect the sovereignty of the Russian Federation, its independence and State integrity, shall support civil peace and conciliation in the country, and shall ensure the coordinated functioning and interaction of bodies forming the unified system of public authority.

3. The President of the Russian Federation shall, in accordance with the Constitution of the Russian Federation and federal laws, determine the basic objectives of the internal and foreign policy of the State.

4. The President of the Russian Federation, as the Head of State, shall represent the Russian Federation within the country and in international relations.

Article 81

1. The President of the Russian Federation shall be elected for six years by citizens of the Russian Federation on the basis of universal, equal, direct suffrage by secret ballot.

2. Any citizen of the Russian Federation not younger than 35 years of age who has resided in the Russian Federation on a permanent basis for not less than 25 years, who does not have and never had foreign citizenship, residence permit or another document certifying the right of the citizen of the Russian Federation to have residence in the territory of a foreign state may be elected President of the Russian Federation. The requirement for the candidate for election as the President of the Russian Federation to have no and have had no citizenship of a foreign state shall not

apply to citizens of the Russian Federation who previously had had a citizenship of a foreign state that was fully or partially accepted into the Russian Federation in accordance with the federal constitutional law and have had permanently lived in the foreign state accepted into the Russian Federation or in the territory of the part of foreign state accepted into the Russian Federation. The President of the Russian Federation in order established by the federal law shall be forbidden from opening and having bank accounts (deposits), keeping cash assets and valuables in foreign banks situated outside the territory of the Russian Federation.

3. One and the same person cannot hold the office of the President of the Russian Federation for more than two terms.

3^1 The provision of the section 3 of article 81 of the Constitution of the Russian Federation limiting the number of terms for which the same person cannot hold the office of the President of the Russian Federation, is applied to the person having held or holding the post of the President of the Russian Federation without taking into account the number of terms the he (she) had held or is holding this post by the time of coming into force of the amendment to the Constitution of the Russian Federation introducing the relevant limitation, and does not exclude for him (her) the possibility to hold the post of the President of the Russian Federation: during the terms allowed by this provision.

4. The procedure for elections of the President of the Russian Federation shall be determined by federal law.

Article 82

1. On assuming office the President of the Russian Federation shall take the following oath of loyalty to the people:

"I swear that in exercising the powers of the President of the Russian Federation I shall respect and protect human and civil rights and freedoms, observe and protect the Constitution of the Russian Federation, protect the sovereignty and independence, security and integrity of the State, and faithfully serve the people"

2. The oath shall be taken in a solemn ceremony in the presence of senators of the Russian Federation, deputies of the State Duma and judges of the Constitutional Court of the Russian Federation.

Article 83

The President of the Russian Federation:

a) shall appoint the Chairman of the Government of the Russian Federation whose candidature was approved by the State Duma upon nomination by the President of the Russian Federation, and shall relieve the Chairman of the Government of the

Russian Federation from his post;

b) shall conduct overall direction over the Government of the Russian Federation, shall have the right to chair meetings of the Government of the Russian Federation

b[1]) shall approve upon proposition submitted by the Chairman of the Government of the Russian Federation the structure of the federal executive authorities, shall introduce amendments thereto; within the structure of federal executive authorities defines the bodies the work of which is managed by the President of the Russian Federation and the bodies the work of which is managed by the Government of the Russian Federation. If a Chairman of the Government relieved of his post by the President of the Russian Federation, the newly appointed Chairman of the Government of the Russian Federation shall not submit to the President of the Russian Federation the proposition as regards the structure of the federal executive authorities;

c) shall adopt decision on the resignation of the Government of the Russian Federation;

c[1]) shall accept the resignation of the Chairman of the Government of the Russian Federation, deputy chairmen of the Government of the Russian Federation, federal ministers and heads of the federal executive government bodies the work of which is managed by the President of the Russian Federation;

d) shall nominate to the State Duma a candidate for appointment to the post of Chairman of the Central Bank of the Russian Federation; shall raise before the State Duma the issue of relieving the Chairman of the Central Bank of the Russian Federation of his post;

e) shall appoint deputy chairmen of the Government of the Russian Federation and federal ministers whose nominations were approved by the State Duma (except for the federal ministers mentioned in item e[1] of the present Article) and relieve them of their posts;

e[1]) shall appoint upon consultations with the Council of Federation and relieve of their posts the heads of the federal executive government authorities (including federal ministers) in charge of issues of defence, state security, internal affairs, justice, foreign affairs, prevention of emergencies and elimination of consequences of natural disasters, domestic security;

f) shall present to the Council of Federation candidates for the posts of the Chairman of the Constitutional Court of the Russian Federation, Deputy Chairman of the Constitutional Court of the Russian Federation and the judges of the Constitutional Court of the Russian Federation, the Chief Justice of the Supreme Court of the Russian Federation, deputy chief justices of the Supreme Court of the

Russian Federation and judges of the Supreme Court of the Russian Federation; shall appoint presidents, vice-presidents and judges of other federal courts;

f[1]) shall appoint upon consultations with the Council of Federation and relieve of their posts the Prosecutor General of the Russian Federation, deputies of the Prosecutor General of the Russian Federation, prosecutors of the constituent entities of the Russian Federation, prosecutors of military and other specialised prosecution offices equated to prosecutors of the constituent entities of the Russian Federation; appoints and relieves of their posts other prosecutors for which such an order of appointment and relieving of post is established by federal law;

f[2]) shall appoint and relieve of their posts the representatives of the Russian Federation in the Council of Federation;

f[3]) shall bring to the Council of Federation the proposition to terminate in accordance with the federal constitutional law the powers of the Chairman of the Constitutional Court of the Russian Federation, the Deputy Chairman of the Constitutional Court of the Russian Federation and the judges of the Constitutional Court of the Russian Federation, the Chief Justice of the Supreme Court of the Russian Federation, deputy chief justices of the Supreme Court of the Russian Federation and judges of the Supreme Court of the Russian Federation, presidents, vice-presidents and judges of the cassation and appeal courts in the event of them committing a violation tarnishing the honour and dignity of judge, as well as in other situations established by federal constitutional law demonstrating impossibility for a judge to continue discharging of its powers;

f[4]) shall present to the Council of Federation the nominees for appointment as Chairman of the Accounts Chamber and half of the auditors of the Accounts Chamber; shall present to the State Duma the nominees for appointment as deputy Chairman of the Accounts Chamber and half of the auditors of the Accounts Chamber;

f[5]) shall form the State Council of the Russian Federation in order to ensure concordant functioning and cooperation of the bodies of public authority, determination of basic objectives of internal and external policies of the Russian Federation and priority directions of social economic development of the state; the status of the National Council of the Russian Federation shall be determined by federal law;

g) shall form the Security Council of the Russian Federation with the aim to assist the head of state in realisation of his (her) powers on the issues of ensuring national interests and security of person, society and state, as well as ensuring civil peace and accord, protection of the sovereignty of the Russian Federation, its independence and state integrity, prevention of internal and external threats; shall head the Security Council of the Russian Federation. The status of the Security Council of the Russian Federation shall be determined by federal law;

h) shall approve the military doctrine of the Russian Federation

i) in order to realise his (her) powers shall form the Administration of the President of the Russian Federation;

j) shall appoint and dismiss plenipotentiary representatives of the President of the Russian Federation;

k) shall appoint and dismiss supreme commanders of the Armed Forces of the Russian Federation;

l) shall appoint and recall after consultations with appropriate committees or commissions of the chambers of the Federal Assembly diplomatic representatives of the Russian Federation in foreign States and international organisations.

Article 84

The President of the Russian Federation:

a) shall announce elections to the State Duma in accordance with the Constitution of the Russian Federation and federal law;

b) shall dissolve the State Duma in the cases and in accordance with the procedure provided for by the Constitution of the Russian Federation;

c) shall announce referendums in accordance with the procedure established by federal constitutional law;

d) shall submit draft laws to the State Duma;

e) shall sign and promulgate federal laws;

f) shall address the Federal Assembly with annual messages on the situation in the country and on the basic objectives of the internal and foreign policy of the State.

Article 85

1. The President of the Russian Federation may use conciliatory procedures to resolve disputes between State government bodies of the Russian Federation and State government bodies of constituent entities of the Russian Federation, and disputes between State government bodies of constituent entities of the Russian Federation. In the event that no agreed decision is reached, he (she) shall have the right to refer the dispute to the appropriate court.

2. The President of the Russian Federation shall have the right to suspend acts

of executive government bodies of constituent entities of the Russian Federation in the event that these acts conflict with the Constitution of the Russian Federation and federal laws or with international commitments of the Russian Federation, or violate human and civil rights and freedoms until the issue is resolved by an appropriate court.

Article 86

The President of the Russian Federation:

a) shall direct the foreign policy of the Russian Federation;

b) shall hold negotiations and sign international treaties of the Russian Federation;

c) shall sign ratification instruments;

d) shall receive letters of credence and letters of recall of diplomatic representatives accredited to his (her) office.

Article 87

1. The President of the Russian Federation shall be the Supreme Commander-in-Chief of the Armed Forces of the Russian Federation.

2. In the event of aggression against the Russian Federation or of a direct threat of aggression, the President of the Russian Federation shall introduce martial law on the territory of the Russian Federation or on certain parts thereof and shall immediately inform the Council of Federation and the State Duma of this.

3. The regime of martial law shall be defined by federal constitutional law.

Article 88

The President of the Russian Federation, in the circumstances and in accordance with the procedure envisaged by federal constitutional law, shall introduce a state of emergency on the territory of the Russian Federation or on certain parts thereof and shall immediately inform the Council of Federation and the State Duma of this.

Article 89

The President of the Russian Federation:

a) shall decide on issues of citizenship of the Russian Federation and of granting political asylum;

b) shall bestow State awards of the Russian Federation and confer honorary titles of the Russian Federation and supreme military and supreme special titles;

c) shall grant pardon.

Article 90

1. The President of the Russian Federation shall issue edicts and regulations.

2. The edicts and regulations of the President of the Russian Federation shall be binding on the entire territory of the Russian Federation.

3. Edicts and regulations of the President of the Russian Federation must not conflict with the Constitution of the Russian Federation and federal laws.

Article 91

The President of the Russian Federation shall have immunity.

Article 92

1. The President of the Russian Federation shall begin to exercise his (her) powers from the moment of taking the oath and shall cease to do so when his (her) term of office expires and after a newly-elected the President of the Russian Federation has been sworn in.

2. The President of the Russian Federation shall cease to exercise his (her) powers before the end of his (her) term in the event of his (her) resignation, persistent inability for health reasons to carry out the powers invested in him (her), or impeachment. Presidential elections shall be held before the expiration of three months from the date of the early termination of presidential office.

3. In all cases where the President of the Russian Federation is unable to fulfil his (her) duties, they shall be temporarily delegated to the Chairman of the Government of the Russian Federation. The Acting President of the Russian Federation shall not have the right to dissolve the State Duma, call a referendum or to submit proposals for amendments to and the revision of the provisions of the Constitution of the Russian Federation.

Article 92[1]

1. The President of the Russian Federation who has ceased to exercise his (her) powers upon expiration of his (her) term of office or before the end of his (her) term due to his (her) resignation or persistent inability for health reasons to carry out the powers invested in him (her), shall have immunity.

2. Other guarantees for the President of the Russian Federation who has

ceased to exercise his (her) powers upon expiration of his (her) term of office or before the end of his (her) term due to his (her) resignation or persistent inability for health reasons to carry out the powers invested in him (her) shall be established by federal law.

3. Immunity of the President of the Russian Federation who has ceased to exercise his (her) powers may be removed under the procedure foreseen in Article 93 of the Constitution of the Russian Federation.

Article 93

1. The President of the Russian Federation may be impeached and the immunity of the President of the Russian Federation who has ceased to exercise his (her) powers may be removed by the Council of Federation only on the basis of charges of high treason or of another grave crime brought by the State Duma and confirmed by a resolution of the Supreme Court of the Russian Federation on the existence of indications of a crime in the actions of the President of the Russian Federation, both acting and who has ceased to exercise his (her) powers, and by a resolution of the Constitutional Court of the Russian Federation confirming that the established procedure for bringing charges has been observed.

2. The decision of the State Duma to bring charges and the decision of the Council of Federation to impeach the President or to remove immunity of the President of the Russian Federation who has ceased to exercise his (her) powers, must be adopted by two-thirds of votes of the total number of senators of the Russian Federation and deputies of the State Duma respectively, on the initiative of not less than one third of deputies of the State Duma and on the basis of a resolution of a special commission set up by the State Duma.

3. The decision of the Council of Federation to impeach the President of the Russian Federation or to remove immunity of the President of the Russian Federation who has ceased to exercise his (her) powers must be adopted not later than three months after the State Duma brings charges against the President of the Russian Federation. If a decision of the Council of Federation is not adopted within this time the charges against the President or the President of the Russian Federation who has ceased to exercise his (her) powers shall be regarded as having been declined.

CHAPTER 5 THE FEDERAL ASSEMBLY

Article 94

The Federal Assembly — parliament of the Russian Federation shall be the representative and legislative body of the Russian Federation.

Article 95

1. The Federal Assembly shall consist of two chambers – the Council of

Federation and the State Duma.

2. The Council of Federation shall consist of senators of the Russian Federation.

The Council of Federation shall include:

a) two representatives from each constituent entity of the Russian Federation – one from the legislative (representative) and one from the executive State government body - for the term of office of the relevant body;

b) the President of the Russian Federation who has ceased to exercise his (her) powers upon expiration of his (her) term of office or before the end of his (her) term due to his (her) resignation - for life; the President of the Russian Federation who has ceased to exercise his (her) powers upon expiration of his (her) term of office or before the end of his (her) term due to his (her) resignation shall be entitled to forgo the powers of the senator of the Russian Federation;

c) no more than 30 representatives of the Russian Federation appointed by the President of the Russian Federation, no more than seven of which may be appointed for life.

3. The number of the senators of the Russian Federation is defined on the basis of the number of the representatives of the constituent entities of the Russian Federation enumerated in Article 65 of the Constitution of the Russian Federation and the number of persons performing the powers of the senators of the Russian Federation enumerated in items “b” and “c” of section 2 of the present Article.

4. The post of the senator of the Russian Federation can be held by a citizen of the Russian Federation not younger than 30 years of age who permanently resides in the Russian Federation and has no foreign citizenship, residence permit or another document certifying the right of the citizen of the Russian Federation to have residence in the territory of a foreign state. The senators of the Russian Federation in order established by the federal law shall be forbidden from opening and having bank accounts (deposits), keeping cash assets and valuables in foreign banks situated outside the territory of the Russian Federation.

5. Citizens who have done prominent services to the country in the spheres of state or public activities can be appointed representatives of the Russian Federation at the Council of Federation performing the powers of the senators of the Russian Federation for life.

6. The representatives of the Russian Federation, excluding the representatives of the Russian Federation performing the powers of the senators of the Russian Federation for life, shall be appointed for the term of six years.

7. The State Duma shall consist of 450 deputies.

Article 96

1. The State Duma shall be elected for a term of five years.

2. The procedure for forming the Council of Federation and the procedure for electing deputies to the State Duma shall be established by federal laws.

Article 97

1. Any citizen of the Russian Federation not younger than 21 years of age, who has a right to participate in elections, permanently resides in the Russian Federation, does not have foreign citizenship, residence permit or another document certifying the right of the citizen of the Russian Federation to have residence in the territory of a foreign state may be elected deputy of the State Duma. The deputies of the State Duma in order established by the federal law shall be forbidden from opening and having bank accounts (deposits), keeping cash assets and valuables in foreign banks situated outside the territory of the Russian Federation.

2. One and the same person may not be simultaneously a senator of the Russian Federation and a deputy of the State Duma. A deputy of the State Duma may not be a deputy of other representative State government bodies and local self-government bodies.

3. Deputies of the State Duma shall work on a professional permanent basis. Deputies of the State Duma may not be employed in State service or engage in other paid activities, except for teaching and scientific and other creative work.

Article 98

1. Senators of the Russian Federation and deputies of the State Duma shall enjoy immunity during the whole term of their office. They may not be detained, arrested or searched, except in the event of detention at the scene of a crime, they may not be subjected to personal searches, except in instances where this is provided for by federal law in order to ensure the safety of other people.

2. The issue of the removal of immunity shall be resolved by an appropriate chamber of the Federal Assembly upon submission of the Prosecutor General of the Russian Federation.

Article 99

1. The Federal Assembly shall be a permanently functioning body.

2. The State Duma shall convene its first session on the thirtieth day after election. The President of the Russian Federation may convene a session of the State

Duma earlier than this date.

3. The first session of the State Duma shall be opened by the oldest deputy.

4. From the moment that the State Duma of a new convocation begins to work the powers of the State Duma of the previous convocation shall expire.

Article 100

1. The Council of Federation and the State Duma shall hold separate sessions.

2. Sessions of the Council of Federation and of the State Duma shall be open. In the cases envisaged by the procedural regulations of a chamber, the latter shall have the right to hold closed-door sessions.

3. The chambers may hold joint sessions to hear messages of the President of the Russian Federation.

Article 101

1. The Council of Federation shall elect from among its members the Chairman of the Council of Federation and his (her) deputies. The State Duma shall elect from among its members the Chairman of the State Duma and his (her) deputies.

2. The Chairman of the Council of Federation and his (her) deputies and the Chairman of the State Duma and his (her) deputies shall chair sessions and shall be in charge of the internal routine of the chamber.

3. The Council of Federation and the State Duma shall set up committees and commissions and shall hold parliamentary hearings on issues under their authority.

4. Each of the chambers shall adopt its procedural regulations and resolve issues relating to the routine procedures for its activities.

5. To monitor implementation of the federal budget the Council of Federation and the State Duma shall set up the Accounts Chamber, whose composition and work procedures shall be determined by federal law.

Article 102

1. The following shall be within the jurisdiction of the Council of Federation:

a) approval of border changes between constituent entities of the Russian Federation;

b) approval of edict of the President of the Russian Federation on the

introduction of martial law;

c) approval of edict of the President of the Russian Federation on the introduction of a state of emergency;

d) deciding on the possibility of using the Armed Forces of the Russian Federation outside the territory of the Russian Federation;

e) announcement of elections of the President of the Russian Federation;

f) impeachment of the President of the Russian Federation; removal of immunity of the President of the Russian Federation who has ceased to exercise his (her) powers;

g) appointment upon presentation of the Russian Federation of the Chairman of the Constitutional Court of the Russian Federation, Deputy Chairman of the Constitutional Court of the Russian Federation and the judges of the Constitutional Court of the Russian Federation, the Chief Justice of the Supreme Court of the Russian Federation, deputy chief justices of the Supreme Court of the Russian Federation and judges of the Supreme Court of the Russian Federation vice-presidents and judges of other federal courts;

h) holding consultations on the candidates presented by the President of the Russian Federation for appointment as the Prosecutor General of the Russian Federation, deputies of the Prosecutor General of the Russian Federation, prosecutors of the constituent entities of the Russian Federation, prosecutors of military and other specialised prosecution offices equated to prosecutors of the constituent entities of the Russian Federation;

i) appointment, upon presentation of the President of the Russian Federation, the Chairman of the Accounts Chamber and half of the general number of the auditors of the Accounts Chamber and relieving them from their duties;

j) holding consultations on the candidates presented by the President of the Russian Federation for appointment as the heads of the federal executive government authorities (including federal ministers) in charge of issues of defence, state security, internal affairs, justice, foreign affairs, prevention of emergencies and elimination of consequences of natural disasters, domestic security;

k) termination upon proposition of the President of the Russian Federation in accordance with the federal constitutional law of powers of the Chairman of the Constitutional Court of the Russian Federation, the Deputy Chairman of the Constitutional Court of the Russian Federation and the judges of the Constitutional Court of the Russian Federation, the Chief Justice of the Supreme Court of the Russian Federation, vice-presidents of the Supreme Court of the Russian Federation and judges of the Supreme Court of the Russian Federation, presidents, vice-

presidents and judges of the cassation and appeal courts in the event of them committing a violation tarnishing the honour and dignity of judge, as well as in other situations established by federal constitutional law demonstrating impossibility for a judge to continue discharging of his (her) powers;

l) hearing of the annual reports of the Prosecutor General of the Russian Federation on the state of law and order in the Russian Federation.

2. The Council of Federation shall adopt decrees on issues referred to its authority by the Constitution of the Russian Federation.

3. Decrees of the Council of Federation shall be adopted by a majority of the total number of senators of the Russian Federation unless another procedure for adopting decisions is envisaged by the Constitution of the Russian Federation.

Article 103

1. The following shall be within the jurisdiction of the State Duma:

a) approval upon presentation of the President of the Russian Federation of candidate for the post of Chairman of the Government of the Russian Federation;

a[1]) approval upon presentation of the Chairman of the Government of the Russian Federation of candidates for the posts of deputy chairmen of the Government of the Russian Federation and federal ministers excluding those enumerated in item "e[1]" of Article 83 of the Constitution of the Russian Federation;

b) deciding the issue of confidence in the Government of the Russian Federation;

c) hearing to the annual reports of the Government of the Russian Federation on results of its activity, including the points raised by the State Duma;

d) appointment and dismissal of the Chairman of the Central Bank of the Russian Federation;

d[1]) hearing of the annual reports of the Central Bank of the Russian Federation;

e) appointment upon presentation of the President of the Russian Federation the deputy Chairman of the Accounts Chamber and half of the of the auditors of the Accounts Chamber and relieving them from their duties;

f) appointment and dismissal of the Commissioner for Human Rights, who shall act according to federal constitutional law. The post of the Commissioner for Human Rights can be held by a citizen of the Russian Federation who permanently resides in the Russian Federation and has no foreign citizenship, residence permit or

another document certifying the right of the citizen of the Russian Federation to have residence in the territory of a foreign state. The Commissioner for Human Rights in order established by the federal law shall be forbidden from opening and having bank accounts (deposits), keeping cash assets and valuables in foreign banks situated outside the territory of the Russian Federation;

g) announcement of amnesty;

h) bringing charges against the President of the Russian Federation for his (her) impeachment or against the President of the Russian Federation who has ceased to exercise his (her) powers with the aim to remove his (her) immunity;

2. The State Duma shall adopt decrees on issues referred to its authority by the Constitution of the Russian Federation.

3. Decrees of the State Duma shall be adopted by a majority of the total number of deputies of the State Duma, unless another procedure for adopting decisions is envisaged by the Constitution of the Russian Federation.

Article 103[1]

The Council of Federation and the State Duma shall have the right to conduct parliamentary supervision, including to send parliament inquiries to the heads of the state authorities and bodies of the local self-government on the issues within the competence of these authorities and officials. The order of conducting parliamentary supervision is defined by federal laws and procedural regulations of the chambers of the Federal Assembly.

Article 104

1. The right of legislative initiative shall belong to the President of the Russian Federation, the Council of Federation, senators of the Russian Federation, deputies of the State Duma, the Government of the Russian Federation, and legislative (representative) bodies of constituent entities of the Russian Federation. The right of legislative initiative shall also belong to the Constitutional Court of the Russian Federation and the Supreme Court of the Russian Federation on issues within their competence23.

2. Bills shall be submitted to the State Duma.

3. Bills on the introduction or cancellation of taxes, on exemption from taxes, on the issue of State loans, on changes in the financial obligations of the State, and other bills envisaging expenses to be covered from the federal budget may be submitted only upon a resolution of the Government of the Russian Federation.

Article 105

1. Federal laws shall be adopted by the State Duma.

2. Federal laws shall be adopted by a majority of votes of the total number of deputies of the State Duma, unless otherwise envisaged by the Constitution of the Russian Federation.

3. Federal laws adopted by the State Duma shall be submitted within five days for examination by the Council of Federation.

4. A federal law shall be considered to have been approved by the Council of Federation if over a half of the total number of members of that chamber has voted for it or if the Council of Federation does not examine it within fourteen days. In the event that the Council of Federation rejects a federal law, the chambers may set up a conciliatory commission to settle differences, after which the federal law shall be reconsidered by the State Duma.

5. In the event that the State Duma disagrees with the decision of the Council of Federation a federal law shall be considered to have been adopted if in the second vote not less than two thirds of the total number of deputies of the State Duma has voted in favour of it.

Article 106

Federal laws adopted by the State Duma on the following issues must compulsorily be examined by the Council of Federation:

a) the federal budget;

b) federal taxes and levies;

c) financial, currency, credit and customs regulation, money emission;

d) ratification and denunciation of international treaties of the Russian Federation;

e) the status and protection of the State border of the Russian Federation;

f) war and peace.

Article 107

1. An adopted federal law shall be submitted within five days to the President of the Russian Federation for signing and promulgation.

2. The President of the Russian Federation shall sign the federal law and promulgate it within fourteen days.

3. If the President of the Russian Federation rejects a federal law within fourteen days of receiving it, the State Duma and the Council of Federation shall reconsider that law in accordance with the procedure established by the Constitution of the Russian Federation. If upon reconsideration the law is approved in the previously adopted wording by a majority of not less than two thirds of the total number of senators of the Russian Federation and of deputies of the State Duma, it must be signed by the President within seven days and promulgated. If within the above term the President of the Russian Federation lodges a request with the Constitutional Court of the Russian Federation to verify constitutionality of the federal law, the term for signing this law shall be suspended for the duration of consideration of the request by the Constitutional Court of the Russian Federation. If the Constitutional Court of the Russian Federation confirms constitutionality of the federal law, the President of the Russian Federation shall sign it within three days term from delivery of the relevant decision by the Constitutional Court of the Russian Federation. If the Constitutional Court of the Russian Federation does not confirm constitutionality of the federal law, the President of the Russian Federation shall return it to the State Duma without signing.

Article 108

1. Federal constitutional laws shall be adopted on issues envisaged by the Constitution of the Russian Federation.

2. A federal constitutional law shall be considered to have been adopted if it is approved by a majority of not less than three quarters of the total number of senators of the Russian Federation and not less than two-thirds of the total number of deputies of the State Duma. An adopted federal constitutional law shall be signed by the President of the Russian Federation and promulgated within fourteen days. If within the above term the President of the Russian Federation lodges a request with the Constitutional Court of the Russian Federation to verify constitutionality of the federal constitutional law, the term for signing this law shall be suspended for the duration of consideration of the request by the Constitutional Court of the Russian Federation. If the Constitutional Court of the Russian Federation confirms constitutionality of the federal constitutional law, the President of the Russian Federation shall sign it within three days term from delivery of the relevant decision by the Constitutional Court of the Russian Federation. If the Constitutional Court of the Russian Federation does not confirm constitutionality of the federal constitutional law, the President of the Russian Federation shall return it to the State Duma without signing.

Article 109

1. The State Duma may be dissolved by the President of the Russian Federation in the cases envisaged by Articles 111 and 117 of the Constitution of the Russian Federation.

2. In the event that the State Duma is dissolved, the President of the Russian

Federation shall announce the date of elections so that a newly-elected State Duma may be convened not later than four months after the dissolution.

3. The State Duma may not be dissolved on the grounds envisaged in Article 117 of the Constitution of the Russian Federation during the year following its election.

4. The State Duma may not be dissolved from the moment that it brings charges against the President of the Russian Federation until the Council of Federation adopts a decision on the issue.

5. The State Duma may not be dissolved while a state of emergency or martial law is in effect on the whole territory of the Russian Federation, or during the last six months of the term of office of the President of the Russian Federation.

CHAPTER 6 THE GOVERNMENT OF THE RUSSIAN FEDERATION

Article 110

1. Executive power in the Russian Federation shall be exercised by the Government of the Russian Federation under overall direction of the President of the Russian Federation.

2. The Government of the Russian Federation shall consist of the Chairman of the Government of the Russian Federation, deputy chairmen of the Government of the Russian Federation and federal ministers.

3. The Government of the Russian Federation leads the work of federal executive government except for those federal executive government bodies work of which is directed by the President of the Russian Federation.

4. The posts of Chairman of the Government of the Russian Federation, Deputy Chairman of the Government of the Russian Federation, federal minister, another head of federal executive state body can be held by a citizen of the Russian Federation who is of the age of thirty at least, has no foreign citizenship, residence permit or another document certifying the right of the citizen of the Russian Federation to have residence in the territory of a foreign state. The Chairman of the Government of the Russian Federation, deputy chairmen of the Government of the Russian Federation, federal ministers, other heads of federal executive government state bodies in order established by the federal law shall be forbidden from opening and having bank accounts (deposits), keeping cash assets and valuables in foreign banks situated outside the territory of the Russian Federation.

Article 111

1. The Chairman of the Government of the Russian Federation shall be

appointed by the President of the Russian Federation after approval of his (her) nomination by the State Duma.

2. Nomination for the Chairman of the Government of the Russian Federation shall be submitted to the State Duma by the President of the Russian Federation not later than two weeks after a newly-elected President of the Russian Federation assumes office or after the resignation of the Government of the Russian Federation or within one week after the State Duma has rejected a nomination for the Chairman of the Government of the Russian Federation, or after the President has relieved him (her) of his (her) post, or his (her) resignation.

3. The State Duma shall consider the candidate nominated by the President of the Russian Federation for the post of Chairman of the Government of the Russian Federation within one week after the submission of the nomination.

4. In the event that the State Duma rejects the candidates for the post of Chairman of the Government of the Russian Federation three times, the President of the Russian Federation shall appoint the Chairman of the Government of the Russian Federation. In such event the President of the Russian Federation shall have the right to dissolve the State Duma and announce new elections.

Article 112

1. The Chairman of the Government of the Russian Federation not later than one week after his (her) appointment shall present to the President of the Russian Federation propositions on the structure of federal executive government bodies, except for the event when the previous Chairman of the Government of the Russian Federation had been relieved of his (her) post by the President of the Russian Federation.

2. The Chairman of the Government of the Russian Federation shall present to the State Duma for approval nominations for deputy chairmen of the Government of the Russian Federation and federal ministers (except for federal ministers enumerated in item e^1 of Article 83 of the Constitution of the Russian Federation). The State Duma shall decide on the presented nominations not later than within a week.

3. Deputy chairmen of the Government of the Russian Federation and federal ministers, whose nominations have been approved by the State Duma, shall be appointed by the President of the Russian Federation. The President of the Russian Federation shall not be entitled to refuse to appoint the deputy chairmen of the Government of the Russian Federation and federal ministers whose nominations have been approved by the State Duma.

4. After the State Duma three time rejects nominations for the posts of deputy chairmen of the Government of the Russian Federation, federal ministers presented in accordance with part 2 of the present Article, the President of the Russian Federation

shall have the right to appoint deputy chairmen of the Government of the Russian Federation, federal ministers from among nominations presented by the Chairman of the Government of the Russian Federation. If after the State Duma three times rejects nominations presented in accordance with part 2 of the present Article more than one-third of posts of the members of the Government of the Russian Federation (except for the posts of federal ministers enumerated in item e^1 of Article 83 of the Constitution of the Russian Federation) remain vacant, the President of the Russian Federation shall have the right to dissolve the State Duma and announce new elections.

5. In the event foreseen by part 4 of Article 111 of the Constitution of the Russian Federation, as well as in the event of dissolution of the State Duma in accordance with the Constitution of the Russian Federation, the President of the Russian Federation appoints deputy chairmen of the Government of the Russian Federation, federal ministers (except for federal ministers enumerated in item e^1 of Article 83 of the Constitution of the Russian Federation) upon presentation by the Chairman of the Government of the Russian Federation.

Article 113

The Chairman of the Government of the Russian Federation, in accordance with the Constitution of the Russian Federation, federal laws, edicts, orders and assignments of the President of the Russian Federation, shall organise the work of the Government of the Russian Federation. The Chairman of the Government of the Russian Federation bears personal responsibility for realisation of powers conferred to the Government of the Russian Federation.

Article 114

1. The Government of the Russian Federation

a) shall work out and submit to the State Duma the federal budget and ensure its implementation; shall submit to the State Duma a report on the implementation of the federal budget; shall submit to the State Duma the annual reports on results of its activity, including the points raised by the State Duma;

b) shall ensure the implementation in the Russian Federation of a uniform financial, credit and monetary policy;

c) shall ensure the implementation in the Russian Federation of a uniform socially-oriented State policy in the sphere of culture, science, education, health, social security, support, strengthening and protection of family, preserving traditional family values, and protection of environment;

c^1) shall ensure State support of scientific and technological development of the Russian Federation, preserving and developing its scientific potential;

c[2]) shall ensure functioning of system of social security for disabled persons based on full and equal realisation by them of human and civil rights and freedoms, their social integration without any discrimination whatsoever, creation of accessible environment for disabled persons and improving quality of their life;

d) shall carry out the administration of federal property;

e) shall carry out measures to secure the defence of the country, State security, and implementation of the foreign policy of the Russian Federation;

f) shall implement measures to ensure lawfulness and civil rights and freedoms, protect property and public order, and combat crime;

f[1]) shall undertake measures to support institutions of civil society, including non-profit organisations, shall ensures their participation in devising and implementing state policy;

f[2]) shall undertake measures to support volunteering activities;

f[3]) shall contribute to development of entrepreneurial activity and private initiatives;

f[4]) shall ensure realisation of principles of social partnership in the sphere of labour and other directly connected relations;

f[5]) shall undertake measures aimed to creating favourable conditions for the life of population, reduction of negative impact of business and other activities on the environment, preservation of unique natural and biological diversity of the country, forming responsible attitude in society towards animals;

f[6]) shall create conditions for developing the system of ecological education of citizens, upbringing ecological culture;

g) shall exercise other functions, which are entrusted to it by the Constitution of the Russian Federation, federal laws and edicts of the President of the Russian Federation.

2. The procedure for the activities of the Government of the Russian Federation shall be determined by federal constitutional law.

Article 115

1. On the basis of the Constitution of the Russian Federation, federal laws, edicts, orders, assignments of the President of the Russian Federation and for the purpose of their implementation the Government of the Russian Federation shall issue decrees and regulations and ensure their implementation.

2. Decrees and regulations of the Government of the Russian Federation shall be binding in the Russian Federation.

3. In the event that decrees and regulations of the Government of the Russian Federation conflict with the Constitution of the Russian Federation, federal laws, edicts and orders of the President of the Russian Federation, they may be abolished by the President of the Russian Federation.

Article 116

The Government of the Russian Federation shall resign its powers before a newly-elected President of the Russian Federation.

Article 117

1. The Government of the Russian Federation may offer its resignation and the President of the Russian Federation shall either accept or reject it.

2. The President of the Russian Federation may decide on the resignation of the Government of the Russian Federation.

3. The State Duma may express no confidence in the Government of the Russian Federation. A resolution of no confidence in the Government shall be adopted by a majority of votes of the total number of deputies of the State Duma. After the State Duma has expressed no confidence in the Government of the Russian Federation, the President of the Russian Federation shall have the right to announce the resignation of the Government or to reject the decision of the State Duma. In the event that the State Duma expresses no confidence in the Government of the Russian Federation again within three months, the President of the Russian Federation shall announce the resignation of the Government of the Russian Federation or dissolve the State Duma and announce new elections.

4. The Chairman of the Government of the Russian Federation shall have the right to raise before the State Duma the issue of confidence in the Government of the Russian Federation, such issue shall be considered within seven days. If the State Duma returns a vote of no confidence in the Government of the Russian Federation, the President shall have the right to adopt within seven days a decision on the resignation of the Government of the Russian Federation or on the dissolution of the State Duma and the announcement of new elections. In the event that the Government of the Russian Federation raises before the State Duma the issue of confidence in the Government of the Russian Federation again within three months, and the State Duma returns a vote of no confidence in the Government of the Russian Federation, the President of the Russian Federation shall decide on the resignation of the Government of the Russian Federation or dissolve the State Duma and announce new elections.

4^1. The Chairman of the Government of the Russian Federation, Deputy

Chairman of the Government of the Russian Federation, federal minister may offer his (her) resignation and the President of the Russian Federation shall either accept or reject it.

5. In the event of the resignation or cessation of the powers of the Government of the Russian Federation, it shall continue to work on the instructions of the President of the Russian Federation until a new Government of the Russian Federation is formed. In the event of reliving of his (her) post or resignation of the Chairman of the Government of the Russian Federation, Deputy Chairman of the Government of the Russian Federation, federal minister, the President of the Russian Federation shall have the right to instruct this person to continue discharging his (her) duties according to this post, or to entrust another person with these duties until the relevant appointment.

6. The State Duma cannot express no confidence in the Government of the Russian Federation, and the Chairman of the Government of the Russian Federation cannot raise before the State Duma the issue of confidence in the Government of the Russian Federation in the events foreseen by parts 3 - 5 of Article 109 of the Constitution of the Russian Federation, and within a year after appointment of the Chairman of the Government of the Russian Federation in accordance with part 4 of Article 111 of the Constitution of the Russian Federation.

CHAPTER 7 JUDICIAL AUTHORITY AND PUBLIC PROSECUTION

Article 118

1. Justice in the Russian Federation shall be administered only by court.

2. Judicial authority shall be exercised by means of constitutional, civil, commercial, administrative and criminal proceedings.

3. The judicial system in the Russian Federation shall be established by the Constitution of the Russian Federation and federal constitutional law. The judicial system of the Russian Federation shall be comprised of the Constitutional Court of the Russian Federation, the Supreme Court of the Russian Federation, federal courts of general jurisdiction, commercial courts, and justices of the peace of the constituent entities of the Russian Federation. The creation of extraordinary courts shall not be permitted.

Article 119

Judges shall be citizens of the Russian Federation over 25 years of age with a higher education in law who have served in the legal profession for not less than five years, live permanently in the Russian Federation, have no foreign citizenship, residence permit or another document certifying the right of the citizen of the Russian Federation to have residence in the territory of a foreign state. The judges of the courts

of the Russian Federation in order established by the federal law shall be forbidden from opening and having bank accounts (deposits), keeping cash assets and valuables in foreign banks situated outside the territory of the Russian Federation. Federal law may establish additional requirements for judges of the courts of the Russian Federation.

Article 120

1. Judges shall be independent and shall be subordinate only to the Constitution of the Russian Federation and federal law.

2. Should a court establish when considering a case that a legal act of a State or other body conflicts with law, it shall take a decision in accordance with the law.

Article 121

1. Judges shall be irremovable.

2. The powers of a judge may be terminated or suspended only on the grounds and in accordance with the procedure established by federal law.

Article 122

1. Judges shall be inviolable.

2. A judge cannot face criminal liability otherwise than in accordance with the procedure established by federal law.

Article 123

1. The examination of cases in all courts shall be open. Cases may be heard in closed sessions in those instances where this is permitted by federal law.

2. The examination of criminal cases by default in courts shall not be permitted except in instances where this is permitted by federal law.

3. Judicial proceedings shall be conducted on the basis of controversy and the equality of the parties concerned.

4. In cases provided for by federal law, judicial proceedings shall be conducted with the participation of a jury.

Article 124

Courts shall be financed only from the federal budget and should ensure the possibility of the complete and independent administration of justice according to the requirements of federal law.

Article 125

1. The Constitutional Court of the Russian Federation is the highest judicial body of constitutional supervision in the Russian Federation, exercising judicial powers by way of administering constitutional justice with the aim to protect the basis of the constitutional system, basic human and civil rights and freedoms, ensuring supremacy and direct effect of the Constitution of the Russian Federation on the entire territory of the Russian Federation. The Constitutional Court shall consist of 11 judges, including the Chairman of the Constitutional Court of the Russian Federation and his deputy.

2. The Constitutional Court of the Russian Federation, at the request of the President of the Russian Federation, the Council of Federation, the State Duma, one fifth of senators of the Russian Federation or of the deputies of the State Duma, the Government of the Russian Federation, the Supreme Court of the Russian Federation, and bodies of legislative and executive power of constituent entities of the Russian Federation, shall decide cases on conformity to the Constitution of the Russian Federation of:

a) federal constitutional laws, federal laws, normative acts of the President of the Russian Federation, the Council of Federation, the State Duma, the Government of the Russian Federation;

b) constitutions of republics, charters as well as laws and other normative acts of constituent entities of the Russian Federation adopted on issues under the jurisdiction of bodies of State power of the Russian Federation and under the joint jurisdiction of bodies of State power of the Russian Federation and bodies of State power of constituent entities of the Russian Federation;

c) treaties between bodies of State power of the Russian Federation and bodies of State power of constituent entities of the Russian Federation, treaties between bodies of State power of constituent entities of the Russian Federation;

d) international treaties of the Russian Federation pending their entry into force.

3. The Constitutional Court of the Russian Federation shall resolve disputes on authority:

a) between federal State government bodies;

b) between State government bodies of the Russian Federation and State government bodies of constituent entities of the Russian Federation;

c) between higher State government bodies of constituent entities of the Russian Federation.

4. The Constitutional Court of the Russian Federation, in the order established by the federal constitutional law, shall verify:

a) upon complaints on violation of constitutional rights and freedoms of citizens - the constitutionality of laws and other normative acts, enumerated in items “a” and “b” of part 2 of the present Article, that had been implemented in a concrete case, if all other internal judicial remedies have been exhausted;

b) upon requests of courts - the constitutionality of laws and other normative acts enumerated in items “a” and “b” of part 2 of the present Article, that are to be applied in a concrete case.

5. The Constitutional Court of the Russian Federation, upon request of the President of the Russian Federation, the Council of Federation, the State Duma, the Government of the Russian Federation, and legislative authorities of constituent entities of the Russian Federation, shall provide interpretation of the Constitution of the Russian Federation.

5^{1}. The Constitutional Court of the Russian Federation:

a) upon request of the President of the Russian Federation shall verify constitutionality of draft laws of the Russian Federation on amendment to the Constitution of the Russian Federation, of draft federal constitutional laws and federal laws, as well as laws adopted in the order established by parts 2 and 3 of Article 107, part 2 of Article 108 of the Constitution of the Russian Federation, before their signing by the President of the Russian Federation;

b) in the order established by the federal constitutional law shall resolve the issue of possibility to execute decisions of interstate bodies, adopted on the basis of international treaties of the Russian Federation in their interpretation contradicting the Constitution of the Russian Federation, as well as of possibility to execute decision of foreign or international (interstate) court, foreign or international mediation court (arbitrage) imposing obligations on the Russian Federation, in the event if this decision contradicts the basis of public order of the Russian Federation;

c) upon request of the President of the Russian Federation in the order established by the federal constitutional law shall verify the constitutionality of laws of a constituent entity of the Russian Federation before their promulgation by the highest official of the constituent entity of the Russian Federation (head of the highest executive state authority in a constituent entity of the Russian Federation).

6. Acts or certain provisions thereof, which are recognised as unconstitutional, shall lose force; international treaties of the Russian Federation, which do not correspond to the Constitution of the Russian Federation, shall not be implemented or used. Acts or certain provisions thereof, which are recognised as constitutional in their interpretation given by the Constitutional Court of the Russian Federation, shall not be

implemented in another interpretation.

7. The Constitutional Court of the Russian Federation, upon request of the Council of Federation, shall issue a resolution on the observation of the established procedure for bringing charges of treason or of other grave crimes against the President of the Russian Federation or the President of the Russian Federation who has ceased to exercise his (her) powers.

8. The Constitutional Court of the Russian Federation shall realise other powers established by the federal constitutional law.

Article 126

The Supreme Court of the Russian Federation is the highest judicial body resolving civil cases, commercial disputes, criminal, administrative and other cases subject to jurisdiction of courts of general jurisdiction and commercial court established in accordance with the federal constitutional law and exercising judicial powers by way of administering civil, commercial, administrative and criminal justice. The Supreme Court of the Russian Federation shall exercise judicial supervision over activity of courts of general jurisdiction and commercial courts in procedural forms provided for by federal law, and shall provide clarifications on the issues of court practice.

Article 127

Excluded in accordance with amendment to the Constitution of the Russian Federation (Law of the Russian Federation on amendment to the Constitution of the Russian Federation "On the Supreme Court of the Russian Federation and Public Prosecution of the Russian Federation").

Article 128

1. The Chairman of the Constitutional Court of the Russian Federation, Deputy Chairman of the Constitutional Court of the Russian Federation and the judges of the Constitutional Court of the Russian Federation, the Chief Justice of the Supreme Court of the Russian Federation, deputy chief justices of the Supreme Court of the Russian Federation and judges of the Supreme Court of the Russian Federation shall be appointed by the Council of Federation upon nomination by the President of the Russian Federation.

2. Presidents, vice-presidents, judges of other federal courts shall be appointed by the President of the Russian Federation in accordance with the procedure established by federal constitutional law.

3. The powers and the procedure for the formation and activity of the Constitutional Court of the Russian Federation, the Supreme Court of the Russian Federation and other federal courts shall be established by the Constitution of the

Russian Federation and federal constitutional law. The order of administering civil, commercial, administrative and criminal justice shall be established also by the relevant procedural legislation.

Article 129

1. The public prosecution system of the Russian Federation is the unified federal centralised system of authorities conducting supervision over observance of the Constitution of the Russian Federation and implementation of laws, supervision over observance of human and civil rights and freedoms, criminal prosecution in accordance with its powers, and carrying out other functions. The powers and functions of the public prosecution of the Russian Federation its organisation and order of work shall be determined by federal law.

2. The posts of prosecutors can be held by citizens of the Russian Federation who have no foreign citizenship, residence permit or another document certifying the right of the citizen of the Russian Federation to have residence in the territory of a foreign state. The prosecutors in order established by the federal law shall be forbidden from opening and having bank accounts (deposits), keeping cash assets and valuables in foreign banks situated outside the territory of the Russian Federation.

3. The Prosecutor General of the Russian Federation and deputies of the Prosecutor General of the Russian Federation shall be appointed and dismissed upon consultations with the Council of Federation by the President of the Russian Federation.

4. Prosecutors of the constituent entities of the Russian Federation, prosecutors of military and other specialised prosecution offices equated to prosecutors of the constituent entities of the Russian Federation shall be appointed and relieved of their posts by the President of the Russian Federation after consultations with the Council of Federation.

5. Other prosecutors shall be appointed and relieved of their posts by the President of the Russian Federation if such order of appointment and relieving of posts is established by federal law.

6. Unless otherwise established by federal law, public prosecutors of cities, districts and public prosecutors equated with them shall be appointed and dismissed by the Prosecutor General of the Russian Federation.

CHAPTER 8 LOCAL SELF-GOVERNMENT

Article 130

1. Local self-government in the Russian Federation shall provide for the independent resolution by the population of issues of local importance, and the

possession, use and management of municipal property.

2. Local self-government shall be exercised by citizens by means of referendum, elections and other forms of direct expression of their will, and through elected and other bodies of local self-government.

Article 131

1. Local self-government shall be administered in municipal entities, types of which shall be established by federal law. Territories of municipal entities shall be determined with due consideration to historical and other local traditions. The structure of bodies of local self-government shall be determined by the population independently in accordance with basic principles of organisation of local self-government in the Russian Federation established by federal law.

1^1. Bodies of state power can take part in forming bodies of local self-government, appointing and relieving of their posts the officials of local-self-government in order and in cases specified by federal law.

2. Changes of borders of the territories in which local self-government is administered shall be permitted with due consideration to the opinion of the inhabitants of the relevant territories under the order established by federal law.

3. Specific properties of exercising public authority on the territories of cities of federal significance, administrative centres (capitals) of constituent entities of the Russian Federation and other territories can be established by federal law.

Article 132

1. Bodies of local self-government shall independently manage municipal property, form, approve and implement the local budget, introduce local taxes and levies, resolve other issues of local importance and according to federal law ensure within their competence accessibility of medical care.

2. Bodies of local self-government may be vested by federal law, law of constituent entity of the Russian Federation with certain State powers on condition of transmission to them of material and financial resources necessary for their implementation. The implementation of the vested powers shall be controlled by the State.

3. Local self-government bodies and state power bodies shall be integrated in the unified system of public authority in the Russian Federation, and shall cooperate to most efficiently resolve tasks in the interests of population inhabiting the relevant territory.

Article 133

Local self-government in the Russian Federation shall be guaranteed by the right to legal protection and compensation of additional expenses arising as a result of exercising public functions by bodies of local self-government in cooperation with bodies of state powers, and by a ban on restrictions of the rights of local self-government which are established by the Constitution of the Russian Federation and federal laws.

CHAPTER 9 CONSTITUTIONAL AMENDMENTS AND REVISION OF THE CONSTITUTION

Article 134

Proposals on amendments to and revision of the provisions of the Constitution of the Russian Federation may be submitted by the President of the Russian Federation, the Council of Federation, the State Duma, the Government of the Russian Federation, legislative (representative) bodies of constituent entities of the Russian Federation, and by groups consisting of not less than one fifth of the members of the Council of Federation or of the deputies of the State Duma.

Article 135

1. The provisions of Chapters 1, 2 and 9 of the Constitution of the Russian Federation may not be revised by the Federal Assembly.

2. If a proposal on revising the provisions of Chapters 1, 2 and 9 of the Constitution of the Russian Federation is supported by three fifths of the total number of members of the Council of Federation and deputies of the State Duma, then in accordance with federal constitutional law, a Constitutional Assembly shall be convened.

3. The Constitutional Assembly shall either confirm the invariability of the Constitution of the Russian Federation or draft a new Constitution of the Russian Federation, which shall be adopted by the Constitutional Assembly by two thirds of the total number of its members or shall be referred to a referendum. In the event that a referendum is held, the Constitution of the Russian Federation shall be considered to have been adopted if over one half of voters who participated in the vote voted in favour of it and provided that over a half of the electorate participated in the referendum.

Article 136

Amendments to the provisions of Chapters 3 – 8 of the Constitution of the Russian Federation shall be adopted in accordance with the procedure established for the adoption of federal constitutional law and shall come into force after they have been approved by legislative authorities of not less than two thirds of the constituent

entities of the Russian Federation.

Article 137

1. Amendments to Article 65 of the Constitution of the Russian Federation which determines the composition of the Russian Federation shall be introduced on the basis of a federal constitutional law on the admission to the Russian Federation and the creation within it of new constituent entities of the Russian Federation, or on changes in the constitutional and legal status of a constituent entity of the Russian Federation.

2. In the event of a change in the name of a republic, kray, oblast, city of federal significance, autonomous oblast or autonomous okrug the new name of the constituent entity of the Russian Federation shall be included in Article 65 of the Constitution of the Russian Federation.

Section Two.
Concluding and Transitional Provisions

1. The Constitution of the Russian Federation shall come into force from the moment of its official publication according to the results of the popular vote.

The day of the popular vote of 12 December 1993 shall be considered the day of adoption of the Constitution of the Russian Federation.

Simultaneously the Constitution (Fundamental Law) of the Russian Federation – Russia adopted on 12 April 1978 with all amendments and changes thereto shall become invalid.

In case of non-compliance with the Constitution of the Russian Federation of the provisions of the Federal treaty – the Treaty on the Division of Subjects of Jurisdiction and Powers Between the Federal Bodies of State Power of the Russian Federation and the Bodies of Authority of the Sovereign Republics within the Russian Federation, the Treaty on the Division of Subjects of Jurisdiction and Powers Between the Federal Bodies of State Power of the Russian Federation and the Bodies of Authority of krays, oblasts, cities of Moscow and St. Petersburg of the Russian Federation, the Treaty on the Division of Subjects of Jurisdiction and Powers Between the Federal Bodies of State Power of the Russian Federation and the Bodies of Authority of the autonomous oblast, and autonomous okrugs within the Russian Federation, and also other treaties concluded between the federal bodies of state authority of the Russian Federation and bodies of state authority of the subjects of the Russian Federation, treaties between the bodies of state authority of the subjects of the Russian Federation, the provisions of the Constitution of the Russian Federation shall be applicable.

2. The laws and other legal acts in force in the territory of the Russian

Federation before the present Constitution comes into force shall be applied in part which does not contradict the Constitution of the Russian Federation.

3. The President of the Russian Federation elected according to the Constitution (Fundamental Law) of the Russian Federation – Russia from the date of the present Constitution coming into force shall carry out the powers established therein until expiration of the term of office for which he was elected.

4. The Council of Ministers – Government of the Russian Federation from the date when the present Constitution comes into force shall acquire the rights, obligations and responsibilities of the Government of the Russian Federation established by the Constitution of the Russian Federation and shall be further called the Government of the Russian Federation.

5. The courts of the Russian Federation shall administer justice in accordance with their powers established by the present Constitution.

After the Constitution comes into force the judges of all the courts of the Russian Federation shall retain their powers until the term they were elected for expires. Vacant positions shall be filled in accordance with the rules established by the present Constitution.

6. Until adoption and coming into force of the federal law establishing the rules for consideration of cases by a court with the participation of a jury, the existing rules of court examination of corresponding cases shall be preserved.

Until the legislation on criminal procedure of the Russian Federation is brought into conformity with the provisions of the present Constitution, the previous rules for arrest, detention and apprehension of people suspected of committing crimes shall be preserved.

7. The Council of Federation of the first convocation and the State Duma of the first convocation shall be elected for a period of two years.

8. The Council of Federation shall convene its first sitting on the thirtieth day after its election. The first sitting of the Council of Federation shall be opened by the President of the Russian Federation.

9. A deputy of the State Duma of the first convocation may be simultaneously a member of the Government of the Russian Federation. The deputies of the State Duma – members of the Government of the Russian Federation shall not enjoy immunity under the provisions of the present Constitution as regards immunity of deputies in part concerning actions (inaction) connected with fulfillment of their duties.

The deputies of the Council of the Federation of the first convocation shall

exercise their powers on a temporary basis.

Annex 579

Act on Compensation for Environmental Damage, No. 737/1994, 19 August 1994

No. 737
ACT ON COMPENSATION FOR ENVIRONMENTAL DAMAGE

August 19, 1994

Section 1
Scope of application

Compensation shall be paid for a loss defined in this Act as environmental damage, caused by activities carried out in a certain area and resulting from:

1) pollution of the water, air or soil;
2) noise, vibration, radiation, light, heat or smell; or
3) other similar nuisance.

The keeper of a road, railway, port, airport or other comparable traffic area shall also be considered to be carrying out activities referred to above in paragraph 1.

This Act does not apply to contractual liability for compensation.

Section 2
Relationship to other legislation

This Act does not apply to losses, compensation for which is provided for in another Act.

This Act, however, also applies to environmental damage where compensation is due by virtue of the Product Liability Act (694/90).

The Adjoining Properties Act (26/20) and the Water Act (264/61) contain separate provisions on losses to be compensated under this Act.

The application of the provisions of this Act in procedures under certain other Acts is laid down in section 12.

Unless otherwise provided for in this Act, the Damages Act (412/74) applies to compensation for environmental damage.

Section 3
Causality

Compensation shall be paid for environmental damage in accordance with this Act if it is shown that there is a probable causal link between the activities and the loss referred to in section 1, paragraph 1. In assessing the probability of causality, consideration shall be given, among other things, to the type of activity and loss and to the other possible causes of the loss.

Section 4
Obligation to tolerate the nuisance

Compensation shall be paid for environmental damage by virtue of this Act only if toleration of the nuisance is deemed unreasonable, consideration being given, among other things, to local circumstances, the situation resulting in the occurrence of the nuisance, and the regularity of the nuisance elsewhere in similar circumstances.

The obligation to tolerate the nuisance prescribed in paragraph 1 above shall not, however, apply to loss inflicted deliberately or criminally, nor to bodily injury, nor to material loss of greater than minor significance.

Section 5
Damage for which compensation is due

Compensation shall be set for bodily injury and material loss in accordance with the provisions of chapter 5 of the Damages Act. Compensation shall be paid for financial loss not connected with bodily injury or material loss if the loss is not minor. Compensation shall, however, always be paid for loss inflicted criminally.

Reasonable compensation shall be paid for environmental damage other than that specified in paragraph 1; in the determination of this compensation, due consideration shall be given to the duration of the nuisance and the loss, and to the chances of the person suffering the loss avoiding or preventing this loss.

Section 6
Costs of prevention and reinstatement

Compensation shall also be paid by virtue of this Act for:

1) the costs of the measures needed to prevent environmental damage, as referred to in section 1, threatening the person undertaking the measures, or to reinstate a damaged environment;
2) the costs, incurred by authorities, of measures to prevent the threat or the effects of a nuisance referred to in section 1, or to reinstate a polluted environment to its original state, if the costs are reasonable relative to the nuisance or the threat thereof, and to the benefit gained by the measures; and
3) the costs of investigations that proved unavoidable in carrying out the preventive measures or reinstatement referred to above in subparagraphs 1 and 2.

This section does not apply to costs provided for in section 17 of the Act on the Imposed Threat of a Fine (1113/90).

Section 7
Persons liable for compensation

Even when the loss has not been caused deliberately or negligently, liability for compensation shall lie with a person

1) whose activity has caused the environmental damage;

2) who is comparable to the person carrying out the activity, as referred to in subparagraph 1; and

3) to whom the activity which caused the environmental damage has been assigned, if the assignee knew or should have known, at the time of the assignment, about the loss or the nuisance referred to in section 1 or the threat of the same.

In the assessment of the comparability referred to in paragraph 1, subparagraph 2, due consideration shall be given to the competence of the person concerned, his financial relationship with the person carrying out the activity and the profit he seeks from the activity.

Section 8
Joint and several liability

Persons liable for compensation shall be jointly and severally liable for environmental damage probably caused by the relevant activities as a whole.

Unless otherwise agreed, the joint and several liability for compensation shall be divided equitably, giving due consideration to the grounds for the liability, the chances of preventing the damage and the other prevailing circumstances.

However, liability for compensation shall not be imposed by judgment, in a degree exceeding the appropriate share, on a person whose share in inflicting the loss is manifestly minor.

Section 9
Advance compensation

If the future environmental damage resulting from a nuisance can be assessed in advance, compensation for it shall on demand be pre-set either as a lump sum or as an annual payment. If there is later an essential change in circumstances, or the assessed loss is otherwise essentially different from that actually resulting from the nuisance, the compensation set in this manner may be adjusted to a reasonable extent considering the circumstances.

An advance lump-sum compensation to be paid for damage caused to real estate shall be ordered to be deposited if the real estate, due to a mortgage or according to the provisions on the lien for an outstanding purchase price, stands as security for a claim or the right to collect a specific revenue in money or goods, and the owner does not show that the rights holders have consented to the payment of the compensation to him, or a court of law considers that the property can, despite the environmental damage, clearly bear the encumbrances attached to it. The provisions of section 7 of the Act on the Redemption (Expropriation) of Immoveable Property and Special Rights (603/77) apply, where appropriate, to the deposit and withdrawal of the compensation.

Section 10
Duty of redemption

If, owing to environmental damage, the real estate is rendered entirely or partially useless to the owner, or its use for its intended purpose is essentially hampered, the party liable for compensation shall redeem the entire real estate or part thereof on the demand of the owner.

If a court of law rules that the real estate or part thereof shall be redeemed, the provisions of the Act on the Redemption (Expropriation) of Immoveable Property and Special Rights apply to the redemption.

If the damage has been caused jointly by several persons, the provisions of paragraph 1 only apply to the persons whose shares in causing the entire damage are substantial. The provisions currently in force on compensation paid under section 8 shall apply to the redemption compensation paid.

Section 11
Compensation procedure

An action referred to in this Act shall be brought before the court of law competent to hear a case concerning compensation by virtue of chapter 10 of the Code of Judicial Procedure.

Section 12
Application of the Act in procedures under certain other Acts

If, in a procedure under the Act on the Redemption (Expropriation) of Immoveable Property and Special Rights, the Act on Public Roads (243/54), the Act on Private Roads (358/62) or the Mining Act (503/65), compensation is to be set for environmental damage as referred to in this Act, the provisions of this Act on liability for compensation and on the grounds for compensation shall apply, except for sections 8 to 10 inclusive. This Act shall apply if activities under the acts mentioned above in this section lead to bodily injury deemed to be environmental damage.

Section 13
Entry into force and transitional provisions

This Act enters into force on June 1, 1995.

Earlier legislation shall apply to compensation for damage caused by activities carried out before the entry into force of this Act, even if the damage becomes apparent only after the entry into force.

Annex 580

Soil Environment Conservation Act, 5 January 1995, as amended from time to time and updated in 2015

SOIL ENVIRONMENT CONSERVATION ACT

Act No. 4906, Jan. 5, 1995
Amended by Act No. 5454, Dec. 13, 1997
Act No. 5878, Feb. 8, 1999
Act No. 6452, Mar. 28, 2001
Act No. 6627, Jan. 26, 2002
Act No. 6656, Feb. 4, 2002
Act No. 6846, Dec. 30, 2002
Act No. 6893, May 29, 2003
Act No. 7291, Dec. 31, 2004
Act No. 7428, Mar. 31, 2005
Act No. 7459, Mar. 31, 2005
Act No. 8010, Sep. 27, 2006
Act No. 8014, Sep. 27, 2006
Act No. 8038, Oct. 4, 2006
Act No. 8352, Apr. 11, 2007
Act No. 8466, May 17, 2007
Act No. 8469, May 17, 2007
Act No. 10219, Mar. 31, 2010
Act No. 10314, May 25, 2010
Act No. 10551, Apr. 5, 2011
Act No. 11461, jun. 1, 2012
Act No. 11464, jun. 1, 2012
Act No. 11862, jun. 4, 2013
Act No. 12522, Mar. 24, 2014
Act No. 13169, Feb. 3, 2015
Act No. 13533, Dec. 1, 2015

CHAPTER I GENERAL PROVISIONS

Article 1 (Purpose)

The purpose of this Act is to prevent potential hazard to public health and environment to be caused by soil contamination, to conserve the soil ecosystem by properly maintaining and preserving soil including purifying contaminated soil, etc., to enhance the value of the soil as a resource, and to enable all citizens of the nation to live in a healthy and comfortable environment.

[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 2 (Definitions)

The definitions of terms used in this Act shall be as follows: <Amended by Act No. 12522, Mar. 24, 2014>

1. The term "soil contamination" means contamination of soil caused by business or other human activities, damaging the health and property of people or the environment;
2. The term "soil contaminants" means any substance causing soil contamination, which is prescribed by Ordinance of the Ministry of Environment;
3. The term "facilities subject to the control of soil contamination" means any facilities, equipment, buildings, structures, and other things determined by Ordinance of the Ministry of Environment which are suspected of contaminating soil through the production, transportation, storage, treatment, process, disposal, etc. of soil contaminants;
4. The term "specified facilities subject to the control of soil contamination" means the facilities subject to the control of soil contamination that are feared to seriously contaminate soil and which are specified by Ordinance of the Ministry of Environment;
5. The term "soil purification" means reducing or eliminating contaminants in soil or relieving any danger caused by contaminants in soil by means of biological, physical and chemical treatment, etc.;

6. The term "detailed soil survey" means surveying the types of contaminants, the degree and extent of contamination, etc. in any area that has exceeded or is highly likely to exceed the worrisome level provided for in Article 4-2 as prescribed by Ordinance of the Ministry of Environment;
7. The term "soil purification business" means the business of performing purification of contaminated soil.
[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 3 (Exclusion from Application)

(1) This Act shall not apply to soil contamination caused by radioactive materials nor the prevention thereof.
(2) Articles 15-3 and 15-6 shall not apply to a case where any contaminated farmland is purified due to the soil improvement project provided in Article 21 of the Farmland Act.
[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 4 (Formulation of Basic Plan for Soil Conservation, etc.)

(1) The Minister of Environment shall formulate and enforce a basic plan for soil conservation (hereinafter referred to as the "basic plan") every 10 years.
(2) The Minister of Environment shall, when he/she formulates the basic plan, consult the heads of the relevant central administrative agencies.
(3) The basic plan shall include matters as prescribed in any of the following subparagraphs:
1. The guidelines for soil conservation policies;
2. The present condition, the on-going progress, and the prospects of soil conservation;
3. Matters concerning the prevention of soil contamination;
4. Matters concerning the soil purification and utilization of purified soil;
5. Matters concerning the development of technologies related to soil purification and promotion of associated industries;
6. Matters concerning education and fostering of technical human resources for soil purification;
7. Other necessary matters for soil conservation.
(4) The Special Metropolitan City Mayor, Metropolitan City Mayor, Do Governor or the Governor of a Special Self-governing Province (hereinafter referred to as the "Mayor/Do Governor") shall formulate a regional soil conservation plan for the region under his/her jurisdiction (hereinafter referred to as the "regional plan") in accordance with the basic plan, and shall enforce it after obtaining the approval of the Minister of Environment. This provision shall also apply when alterations are to be made to the regional plan.
(5) The formulation method and procedure of the basic and regional plan and other necessary matters shall be prescribed by Presidential Decree.
[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 4-2 (Worrisome Level of Soil Contamination)

The level of soil contamination, which is likely to obstruct the health and properties of persons or rearing of animals and plants (hereinafter referred to as the "worrisome level") shall be prescribed by Ordinance of the Ministry of Environment.
[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 4-3 (Installation and Operation of Information System)

(1) The Minister of Environment shall install and operate a information system to ensure the easy access to the following information by the people:
1. Outcomes of investigation on facilities subject to the control of soil contamination prescribed in Article 4-4;
2. Outcomes of regular measuring, surveys of the actual state of soil contamination, and detailed soil surveys under Article 5;
3. Current status of designation of soil-related specialized agencies under Article 23-2;
4. Current status of registration of the soil purification business under Article 23-7;
5. Current status of installation, etc. of specific facilities subject to control of soil contamination under Article 26-3;
6. Any other information prescribed by Ordinary of the Ministry of Environment.
(2) Matters necessary for installing, operating, etc. the information system pursuant to paragraph (1) shall be prescribed by the Minister of Environment.
[This Article Newly Inserted by Act No. 13533, Dec. 1, 2015]

Article 4-4 (Investigation on Facilities, etc. Subject to Control of Soil Contamination)

(1) The Minister of Environment shall investigate, on a regular basis (hereinafter referred to as "investigation on facilities, etc. subject to the control of soil contamination" in this Article), the distribution status of facilities subject to the control of soil contamination, detailed soil surveys prescribed in Article 5 (4), detailed soil surveys prescribed in Article 10-4 (1), and current status of implementing projects for purifying or improving contaminated soil, in order to rationally formulate or approve the basic plan and regional plan pursuant to Article 4, measures for preventing topsoil erosion and its restoration measures referred to in Article 6-2, plans on areas requiring countermeasures for soil conservation under Article 18, or effectively measure soil contamination level pursuant to Article 5.
(2) The Minister of Environment may request the head of the relevant agency to submit the necessary data of the investigation of facilities, etc. subject to the control of soil contamination pursuant to paragraph (1). In such cases, the head of the relevant agency in receipt of the request shall follow its request except in extenuating circumstances.
(3) Necessary matters concerning the method, object, procedure, etc. of investigation, such as facilities subject to the control of soil contamination under paragraph (1), shall be prescribed by the Minister of Environment.
[This Article Newly Inserted by Act No. 13533, Dec. 1, 2015]

Article 5 (Measuring of Soil Contamination Level)

(1) For the purpose of surveying the actual nationwide state of soil contamination, the Minister of Environment shall establish a measuring network and measure the soil contamination level at all times.
(2) The Mayor/Do Governor or the head of a Si/Gun/Gu (referring to the head of autonomous Gu; hereafter the same shall apply) shall conduct a survey of the actual state of soil contamination in the area under his/her jurisdiction which is feared to suffer (hereinafter referred to as the "survey of the actual state of soil contamination"). In this case, the head of a Si/Gun/Gu shall report the result of the survey of the actual state of soil contamination to the Mayor/Do Governor as prescribed by Ordinance of the Ministry of Environment and the Mayor/Do Governor shall report the result of the survey of the actual state of soil contamination that he/she conducts and the result of the survey of the actual state of soil contamination that the head of a Si/Gun/Gu reports to him/her to the Minister of Environment as prescribed by Ordinance of the Ministry of Environment.
(3) The standards for establishment of measuring network under paragraph (1), the selection standards for areas subject to a survey of the actual state of soil contamination, the method and procedure for such survey, and other necessary matters shall be prescribed by Ordinance of the Ministry of Environment.
(4) If the Minister of Environment, the Mayor/Do Governor or the head of a Si/Gun/Gu deems it necessary, he/she may conduct a detailed soil survey in any of the following areas as prescribed by Ordinance of the Ministry of Environment:
1. Areas in which the results of a regular measuring under paragraph (1) (hereinafter referred to as the "regular measuring") exceed the worrisome level;
2. Areas in which the results of a survey of the actual state of soil contamination exceed the worrisome level;
3. Other areas falling under any of the following categories which are deemed by the Minister of Environment, the Mayor/Do Governor or the head of a Si/Gun/Gu to have a great possibility for exceeding the worrisome level:
(a) Areas where accidents of soil contamination have taken place;
(b) Industrial complexes (excluding agricultural and industrial complexes) under subparagraph 5 of Article 2 of the Industrial Sites and Development Act;
(c) Periphery areas of abandoned mines under subparagraph 4 of Article 2 of the Mining Damage Prevention and Restoration Act;
(d) Reclamation facilities and their periphery areas from among the waste disposal facilities under subparagraph 8 of Article 2 of the Wastes Control Act;
(e) Other areas prescribed by Ordinance of the Ministry of Environment.
(5) The results of regular measuring, survey of the actual state of soil contamination, and detailed soil survey under paragraph (4) shall be disclosed to the public.
[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 6 (Decision and Notification of Installation Plan of Measuring Network)

The Minister of Environment shall decide and publicly announce the installation plan of the measuring network, pursuant to Article 5 (1), which indicates in detail the location and area in which the measuring

network is installed, and he/she shall have the drawings thereof available for the public. This provision shall also apply to the case where changes are to be made to the installation plan of the measuring network.
[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 6-2 (Survey on Actual State of Topsoil Erosion)

(1) In order to apprehend the actual state of soil environment related to erosion of topsoil, the Minister of Environment may perform a survey on the actual state and level of topsoil erosion in the areas falling under any of the following subparagraphs:

1. Areas designated and publicly announced as the water-source protection areas under Article 7 of the Water Supply and Waterworks Installation Act;
2. Areas each of which is designated and publicly announced as the waterfront areas respectively under Article 4 of Act on the Improvement of Water Quality and Support for Residents of the Han River Basin, Article 4 of the Act on Water Management and Resident Support in the Nakdong River Basin, Article 4 of the Act on Water Management and Resident Support in the Geum River Basin, and Article 4 of the Act on Water Management and Resident Support in the Yeongsan and Seomjin River Basins.

(2) Where the level of topsoil erosion exceeds the criteria prescribed by Ordinance of the Ministry of Environment as a result of the survey pursuant to paragraph (1), the Minister of Environment shall formulate and implement the necessary countermeasures.

(3) Matters necessary for the procedures and methods of the survey pursuant to paragraph (1) shall be prescribed by Ordinance of the Ministry of Environment.

[This Article Newly Inserted by Act No. 10551, Apr. 5, 2011]

Article 6-3 (Soil Purification for State Property)

(1) In any of the following cases, the Minister of Environment may conduct the soil purification work after carrying out a detailed soil survey in order to prevent the proliferation of soil contamination. In such cases, the detailed soil survey may be omitted, if it has been already conducted: <Amended by Act No. 12522, Mar. 24, 2014>

1. Where the soil purification is necessary due to occurrence of soil contamination exceeding the worrisome level owing to the State property referred to in subparagraph 1 of Article 2 of the State Property Act, and the State is a person responsible for purification under Article 10-4 (1) (hereinafter referred to as the "person responsible for purification");
2. Where the soil purification work is conducted under the proviso to Article 15 (3), and the Mayor/Do Governor or the head of a Si/Gun/Gu makes an urgent request for the soil purification work;
3. Where a project designed to improve contaminated soil is carried out under Article 19 (3), and the Governor of a Special Self-Governing Province or the head of a Si/Gun/Gu makes an urgent request for the soil purification work.

(2) Where the Minister of Environment intends to conduct the soil purification work under paragraph (1), he/she shall consult in advance with the head of the relevant central government agency in cases referred to in subparagraph 1 of the same paragraph, and with the Mayor/Do Governor or the head of a Si/Gun/Gu and a person responsible for purification in cases referred to in subparagraph 2 or 3 of the same paragraph, on timing, area, and costs of the soil purification work. In such cases, he/she may have the local government requesting the soil purification work bear the costs required for purification, etc. pursuant to paragraph (1) 2 or 3 within the scope prescribed by Ordinance of the Ministry of Environment. <Amended by Act No. 12522, Mar. 24, 2014>

(3) Where the Minister of Environment intends to conduct the soil purification work under paragraph (1), he/she shall formulate and publicly announce the soil purification plan including the following matters, as prescribed by Ordinance of the Ministry of Environment:

1. Timing and period for the soil purification work;
2. Location of land subject to the soil purification;
3. Name and address of the proprietor of land subject to the soil purification;
4. Other matters prescribed by Ordinance of the Ministry of Environment.

(4) In cases referred to in paragraph (1) 2 or 3, reimbursement of the costs required for conducting detailed soil survey or soil purification may be claimed to the relevant person responsible for purification. <Amended by Act No. 12522, Mar. 24, 2014>

[This Article Newly Inserted by Act No. 10551, Apr. 5, 2011]

Article 7 (Expropriation and Use of Land, etc.)

(1) The Minister of Environment, the Mayor/Do Governor or the head of Si/Gun/Gu may, where deemed necessary for the measuring, survey, installation or soil purification works falling under any of the

matters prescribed in the following subparagraphs, expropriate (applicable only to subparagraphs 2 and 4) or use the land, buildings, or fixtures of the land in the relevant area or zone:

1. Regular measuring, survey of the actual state of soil contamination, or detailed soil survey;
2. Establishment of a measuring network pursuant to Article 5 (1);
3. Survey on the actual state and level of topsoil erosion pursuant to Article 6-2;
4. Soil purification for the State property pursuant to Article 6-3.

(2) In case where the Minister of Environment has publicly announced a soil purification plan pursuant to Article 6-3 (3), it shall be deemed there have been a project approval and the public announcement thereof as prescribed in Articles 20 (1) and 22 of the Act on the Acquisition of and Compensation for Land, etc. for Public Works Projects and application for adjudication may be filed within the soil purification period set forth in the soil purification plan, notwithstanding Articles 23 (1) and 28 (1) of the same Act.

(3) With regard to the procedures of expropriation and use and the compensation for loss, etc. as provided for in paragraph (1), the Act on the Acquisition of and Compensation for Land, etc. for Public Works Projects shall apply unless there exist special provisions therefor.

[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 8 (Entry to Land of Other Persons, etc.)

(1) The Minister of Environment, the Mayor/Do Governor, the head of a Si/Gun/Gu, or the specialized agency related to soil under Article 23-2 (hereinafter referred to as the "soil-related specialized agency") may, where deemed necessary for a regular measuring, survey of the actual state of soil contamination, detailed soil survey, survey on the actual state and level of topsoil erosion under Article 6-2 (1), or assessment of hazard as provided for in Article 15-5 (1), make the public officials under his/her control or employees of the soil-related specialized agency to enter the land of other persons and alter or remove the tree, stone, soil and other obstacles in the relevant land. In this case, the head of soil-related specialized agency shall obtain permission therefor from the Governor of a Special Self-Governing Province or the head of a Si/Gun/Gu.

(2) When intending to alter or remove the obstacles under paragraph (1), the competent public officials or employees of the soil-related specialized agency shall obtain consent from the proprietor, occupant, or manager of the obstacles: Provided, That when the competent public officials or employees of the soil-related specialized agency are unable to obtain consent because the proprietor, occupant, or manager is not present at the site, or his/her address or residence cannot be ascertained, they shall obtain consent from the Governor of a Special Self-Governing Province or the head of a Si/Gun/Gu.

(3) When intending to enter the land of other person or to alter or remove the obstacles from the surface of that land under paragraph (1), the competent public officials or employees of the soil-related specialized agency shall notify the proprietor, occupant or manager of the land or obstacles three days prior to the date of entering the land, altering or removing the obstacles: Provided, That the address or residence of the proprietor, occupant or manager of the land or obstacles cannot be ascertained, the notification may not be given.

(4) Before sunrise and after sunset, competent public officials or employees of the soil-related specialized agency shall be prohibited from entering into the residential site or fenced land of other person without permission of the occupant of the relevant land.

(5) The occupant of the land may not interfere with or refuse the activities of the competent public officials or employees of the soil-related specialized agency under paragraph (1), without any justifiable reasons.

(6) The public officials or employees of the soil-related specialized agency who intend to enter the land of other person under paragraph (1), shall carry a certificate indicating their authority and show it to the relevant persons.

[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 9 (Compensation for Loss)

(1) In case where the State, a local government or a soil-related specialized agency inflicts loss to other persons on account of the activities under Article 8, it shall compensate for such loss as prescribed by Presidential Decree.

(2) Persons who intend to obtain a compensation under paragraph (1) shall claim such with the Minister of Environment, the Mayor/Do Governor, the head of a Si/Gun/Gu or the head of soil-related specialized agency.

(3) The Minister of Environment, the Mayor/Do Governor, the head of a Si/Gun/Gu or the head of soil-related specialized agency shall, where a claim under paragraph (2) has been made, determine the amount,

etc. to be compensated through the consultation with the person suffered such loss, and notify the claimant thereof.
(4) The Minister of Environment, the Mayor/Do Governor, the head of a Si/Gun/Gu, the head of soil-related specialized agency or the person suffered a loss may, where the consultation under paragraph (3) fails to lead to an agreement or may not be achieved, file a motion for adjudication with the competent Land Expropriation Committee as prescribed by Presidential Decree.
(5) A person who is dissatisfied with the adjudication under paragraph (4) may file an objection with the Central Land Expropriation Committee within one month from the date of receiving the original written adjudication.
[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 10 Deleted. <by Act No. 8038, Oct. 4, 2006>

Article 10-2 (Assessment of Soil Environment)
(1) Where a site on which any of the following facilities are installed or used to be installed, or any other land which is likely to cause soil contamination is transferred or acquired (including auction under the Civil Execution Act, conversion under the Debtor Rehabilitation and Bankruptcy Act, sale of seized assets under the National Tax Collection Act, the Customs Act or the Framework Act on Local Taxes, and other acquisitions made in accordance with procedures similar thereto; hereinafter the same shall apply), or rented out or taken on lease, the transferor, transferee, lesser, or lessee may receive an assessment by a soil environment assessment institution as to soil contamination (hereinafter referred to as "assessment of soil environment") for the relevant site, its neighboring areas, and the land which is likely to cause soil contamination: <Amended by Act No. 12522, Mar. 24, 2014>
1. Facilities subject to the control of soil contamination;
2. Factories referred to in subparagraph 1 of Article 2 of the Industrial Cluster Development and Factory Establishment Act;
3. National defense and military installations referred to in Article 2 (1) of the Act on National Defense and Military Installations Projects.
(2) Where a person, who has acquired by transfer a site on which any of the facilities prescribed in subparagraphs of paragraph (1) are installed or used to be installed or any other land which is likely to cause soil contamination, has ascertained that the contamination level of such site or land is below the worrisome level as a result of assessments of its soil environment conducted under the same paragraph as at the time of its acquisition, he/she shall be deemed to be in good faith and not negligent in preventing the relevant soil contamination. <Amended by Act No. 12522, Mar. 24, 2014>
(3) Assessment of soil environment shall be conducted as prescribed in each of the following subparagraphs, and detailed matters concerning the assessment of soil environment and other necessary matters shall be prescribed by Presidential Decree:
1. Assessment items of soil environment shall include soil contaminants under subparagraph 2 of Article 2 and contaminants prescribed by Presidential Decree as necessary for the assessment of soil environment;
2. Assessment procedures for soil environment shall be conducted by classifying into basic survey, overall survey, and detailed survey;
3. Assessment methods of soil environment shall include survey, analysis, and appraisal of contamination level of contaminants referred to in subparagraph 1, actual utilization state of the subject land, and whether or not the subject falls under any facilities subject to the control of soil contamination.
[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 10-3 (Strict Liability, etc. for Damages Resulting from Soil Contamination)
(1) Where any damage occurs due to the soil contamination, a person who has caused the contamination shall compensate for such damage and take measures, such as purifying the contaminated soil: Provided, That the same shall not apply to cases where the soil contamination has been caused by a natural disaster, war, or force majeure. <Amended by Act No. 12522, Mar. 24, 2014>
(2) Where at least two persons have caused the contamination, and it is impracticable to find out which one has caused the damage under paragraph (1), each one shall jointly and severally compensate for such damage and take measures, such as purifying the contaminated soil. <Amended by Act No. 12522, Mar. 24, 2014>
[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 10-4 (Responsibility, etc. for Purification of Soil Contamination)

(1) Any of the following persons shall, as a person responsible for purification, carry out a detailed soil survey, purification of contaminated soil under Article 11 (3), 14 (1), or 15 (1) and (3), or a project for improving contaminated soil under Article 19 (1) (hereinafter referred to as "soil purification, etc." in this Article):

1. Any person who causes soil contamination by discharging, leaking, dumping, neglecting soil contaminants, or committing other acts;
2. The proprietor, occupant, or operator of a facility subject to the control of soil contamination constituting a cause for soil contamination as at the time soil contamination occurs;
3. Any person who has comprehensively succeeded to the rights and liabilities of those falling under subparagraphs 1 and 2 on account of merger, inheritance or other reasons;
4. Any person who previously owned or presently owns or occupies land on which soil contamination has occurred.

(2) Notwithstanding the provisions of paragraph (1), any of the following person shall not be deemed a person responsible for purification referred to in paragraph (1) 4: Provided, That the same shall not apply where he/she permits, after January 6, 1996, any person prescribed in paragraph (1) 1 or 2 to use the land he/she owns or occupies:

1. Where the person no longer owned the relevant land due to transfer or other reasons before January 5, 1996;
2. Where the person acquired the relevant land before January 5, 1996;
3. Where the person was in good faith and was not negligent in preventing soil contamination as at the time he/she acquired the land on which soil contamination has occurred;
4. Where soil contamination occurs while the person owns or occupies the relevant land and such soil contamination occurs due to reasons unattributable to him/her.

(3) Where at least two persons responsible for purification exist to whom the Mayor/Do Governor or the head of a Si/Gun/Gu may issue an order for soil purification, etc. pursuant to Article 11 (3), 14 (1), 15 (1) and (3) or 19 (1), he/she shall order soil purification, etc., taking into account the degree of responsibility of each person responsible for purification for the relevant soil contamination, the possibility of prompt and smooth soil purification, etc., as prescribed by Presidential Decree, and may seek advice from the Soil Purification Advisory Committee referred to in Article 10-9, if necessary.

(4) Where a person responsible for purification, ordered to conduct soil purification, etc. pursuant to Article 11 (3), 14 (1), 15 (1) and (3) or 19 (1), has performed soil purification, etc. at his/her own expenses, he/she may claim reimbursement for the expenses to be borne by the other persons responsible for purification.

(5) In any of the following cases, the State may subsidize all or part of the expenses incurred in conducting soil purification, etc. pursuant to Article 11 (3), 14 (1), 15 (1) and (3) or 19 (1) (excluding both the expenses refundable through the exercise of the claim for reimbursement under Article 10-4 (4) and the amount equivalent to an increase in the value of the relevant land caused by soil purification, etc.; hereinafter the same shall apply), as prescribed by Presidential Decree:

1. Where the expenses required by a person responsible for soil purification under paragraph (1) 1, 2 or 3 to perform soil purification, etc. significantly exceed either his/her share of expenses or the profits he/she has gained or is expected to gain by owning, occupying or operating the relevant facility subject to the control of soil contamination;
2. Where the expenses required by a person, who acquired the relevant land before December 31, 2001 or no longer owns it due to transfer thereof or other reasons, to perform soil purification, etc. as a person responsible for purification under paragraph (1) 4 exceeds the value of the relevant land;
3. Where the expenses required by a person who acquired the relevant land after January 1, 2002 to perform soil purification, etc. as a person responsible for purification under paragraph (1) 4 significantly exceeds the value of the relevant land and the profits he/she has gained or is expected to gain by owning or occupying such land;
4. Other cases determined by Presidential Decree for which expenses for soil purification, etc. need to be subsidized.

[This Article Wholly Amended by Act No. 12522, Mar. 24, 2014]

[This Article wholly amended by Act No. 12522 on March 24, 2014 following the decision of unconstitutionality made by the Constitutional Court on August 23, 2012]

Article 10-5 (Establishment of Soil Purification Cooperative)

(1) Establishers and operators of specified facilities subject to the control of soil contamination and persons who have filed registration of soil purification business under Article 23-7 (1) (hereinafter referred to as "soil purification business operators") may establish soil purification cooperatives (hereinafter referred to as the "cooperatives") with the permission from the Minister of Environment in order to guarantee for the purification work of contaminated soil under Article 11 (3) and to secure financial resources.
(2) A cooperative shall be a corporation.
(3) A cooperative shall be established by effecting its registration at the seat of its principal office.
[This Article Newly Inserted by Act No. 10551, Apr. 5, 2011]

Article 10-6 (Activities of Cooperatives)

The cooperatives shall be engaged in the activities prescribed in each of following subparagraphs:
1. Mutual-aid activities for the soil purification work of its members;
2. Activities related to the survey, development and distribution of technology necessary for the prevention of soil contamination and soil purification.
[This Article Newly Inserted by Act No. 10551, Apr. 5, 2011]

Article 10-7 (Contribution)

(1) Members of the cooperatives shall pay to the cooperative their respective contributions, which is necessary for carrying out the activities referred to in Article 10-6.
(2) The basis for computing the contribution, payment procedure and other necessary matters shall be determined by the articles of association.
[This Article Newly Inserted by Act No. 10551, Apr. 5, 2011]

Article 10-8 (Application Mutatis Mutandis of the Civil Act)

Except as otherwise provided in this Act, the provisions of the Civil Act, which pertain to incorporated associations shall apply mutatis mutandis to the cooperatives.
[This Article Newly Inserted by Act No. 10551, Apr. 5, 2011]

Article 10-9 (Soil Purification Advisory Committee)

(1) In order to respond to inquiries from the Mayor/Do Governor or the head of a Si/Gun/Gu under Article 10-4 (3), the Soil Purification Advisory Committee shall be established under the jurisdiction of the Ministry of Environment (hereinafter referred to as the "Committee").
(2) The Committee shall be comprised of five to nine members, including the Chairperson.
(3) Matters necessary for the organization, operation, etc. of the Committee shall be prescribed by Presidential Decree.
[This Article Newly Inserted by Act No. 12522, Mar. 24, 2014]

Article 10-10 (Establishment, Operation, etc. of Soil Environment Center)

(1) The Minister of Environment may establish or operate a soil environment center to efficiently perform the following affairs relating to soil conservation:
1. Affairs for the development and utilization of research and technology related to the soil environmental industry;
2. Dissemination of technology related to soil conservation, promotion of its commercialization and support for its advance into overseas markets;
3. Affairs for the collection and utilization of, and education, publicity, and international cooperation on, the information related to the soil environmental industry;
4. Affairs for the invigoration of the soil environmental industry, such as the operation of a soil environment assessment system;
5. Affairs entrusted by the State, local governments, or public institutions referred to in Article 4 of the Act on the Management of Public Institutions with regard to the affairs under subparagraphs 1 through 4.
(2) The Minister of Environment may subsidize all or part of the expenses incurred in carrying out the affairs referred to in paragraph (1).
(3) The Minister of Environment may entrust the operation of the soil environment center to the Korea Environmental Industry and Technology Institute under Article 5-3 of the Environmental Technology and Industry Support Act.
(4) Matters necessary for the operation, supervision, etc. of the soil environment center shall be prescribed by Presidential Decree.
[This Article Newly Inserted by Act No. 12522, Mar. 24, 2014]

CHAPTER II REGULATION ON SOIL CONTAMINATION

Article 11 (Reports on Soil Contamination, etc.)

(1) In any of the following cases, the relevant person shall file a report to the Governor of the competent Special Self-Governing Province or the head of the competent Si/Gun/Gu without delay: <Amended by Act No. 12522, Mar. 24, 2014>

1. Where a person who produces, transports, stores, handles, processes, or treats soil contaminants, discharges or leaks them in the process;
2. Where a person who owns, occupies, or operates facilities subject to the control of soil contamination finds the soil of the site on which such facilities are installed or its neighboring areas has been contaminated;
3. Where the proprietor or occupant of land finds the land he/she owns or occupies contaminated.

(2) When the Governor of a Special Self-Governing Province or the head of a Si/Gun/Gu receives a report referred to in paragraph (1) or otherwise finds the discharge or leakage of soil contaminants, he/she may have public officials belonging thereto enter the relevant land and survey the cause and the level of soil contamination.

(3) With respect to any soil whose level of contamination is found to exceed the worrisome level of soil contamination (hereinafter referred to as the "contaminated soil") as a result of the survey referred to in paragraph (2), the Governor of a Special Self-Governing Province or the head of a Si/Gun/Gu may order the person responsible for purification to ask the soil-related specialized agency for conducting a detailed soil survey and to take measures to purify the contaminated soil within a prescribed period, as prescribed by Presidential Decree. <Amended byby Act No. 12522, Mar. 24, 2014>

(4) If the soil-related specialized agency conducts the detailed soil survey pursuant to paragraph (3), it shall inform without delay the Governor of the competent Special Self-Governing Province or the head of the competent Si/Gun/Gu of the results of the detailed soil survey.

(5) Public officials who intend to enter any land of other person under paragraph (2) shall carry certificates showing their authority and produce them to the relevant persons.

(6) Where the Governor of a Special Self-Governing Province or the head of a Si/Gun/Gu has public officials belonging thereto enter the relevant land to survey the cause and the level of soil contamination pursuant to paragraph (2), he/she shall inform the head of a regional environment office of such fact without delay. <Newly Inserted by Act No. 12522, Mar. 24, 2014>

[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 11-2

[This Article Wholly Relocated to Article 13 by Act No. 7291, Dec. 31, 2004]

Article 12 (Reports, etc. on Specific Facilities Subject to Control of Soil Contamination)

(1) Any person who intends to install the specified facilities subject to the control of soil contamination shall, as prescribed by Presidential Decree, report on the details of such facilities and a plan for installing the facilities to prevent soil contamination under paragraph (3) to the Governor of the competent Special Self-Governing Province or the head of the competent Si/Gun/Gu. The same shall also apply where the reported matters, the details of which are prescribed by Ordinance of the Ministry of Environment, are changed (including the closure of specified facilities subject to the control of soil contamination).

(2) Permission granted or registration made under the Safety Control of Dangerous Substances Act, the Chemicals Control Act and other statutes designated by Ordinance of the Ministry of Environment concerning the installation of the specified facilities subject to the control of soil contamination shall be deemed to be a report made under paragraph (1). In such cases, the head of a permission or registration agency shall notify such facts to the Governor of the competent Special Self-Governing Province, or the head of the competent Si/Gun/Gu having jurisdiction over an area in which the specified facilities subject to the control of soil contamination are installed, attaching the documents concerning the facilities for preventing soil contamination, as prescribed by Ordinance of the Ministry of Environment. <Amended by Act No. 11862, Jun. 4, 2013>

(3) The installer of the specified facilities subject to the control of soil contamination (including an operator of relevant facilities; hereinafter the same shall apply) shall, as prescribed by Presidential Decree, install the facilities for preventing soil contamination (hereinafter referred to as the "facilities for preventing soil contamination"), and maintain it properly.

[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 12-2 (Legal Fiction of Report on Modification Following Other Acts)

(1) Where any change is reported pursuant to the latter part of Article 12 (1), the following report on modification shall be deemed to have been made in relation to the specified facilities subject to the control of

soil contamination: Provided, That matters concerning a report on modification shall be limited to where the name or a representative of the business place is changed:

1. Report on modifications concerning discharge facilities pursuant to the proviso to Article 33 (2) and (3) of the Water Quality and Aquatic Ecosystem Conservation Act;

2. Report on modifications concerning discharge facilities under Article 44 (2) of the Clean Air Conservation Act.

(2) A person who intends to be deemed to have reported on modification pursuant to paragraph (1) shall submit the relevant documents prescribed by applicable Acts, when applying for the report on modification.

(3) When the report on modification has been disposed, the head of an administrative agency in receipt of a report on modification pursuant to paragraph (1) shall without delay notify the head of the competent administrative agency under the jurisdiction of the report on modification set forth in any subparagraph of paragraph (1) of its contents.

(4) Where the report on modifications is deemed to have been made pursuant to paragraph (1), he/she shall be exempted from charges imposed in accordance with the relevant Acts.

[This Article Newly Inserted by Act No. 13533, Dec. 1, 2015]

[Enforcement Date : Jun. 2, 2016]

Article 13 (Soil Contamination Inspection)

(1) The installer of the specified facilities subject to the control of soil contamination shall, as prescribed by Presidential Decree, undergo the soil contamination inspection on the site of relevant facilities and the areas around it (hereinafter referred to as the "soil contamination inspection") conducted by a soil-related specialized agency: Provided, That the same shall not apply where the collection of soil samples is impossible or the soil contamination inspection is unnecessary, which fall under the requirements prescribed by Presidential Decree and the Governor of a Special-Self Governing Province or the head of a Si/Gun/Gu approves.

(2) The procedures for an approval under the proviso to paragraph (1) shall be prescribed by Ordinance of the Ministry of Environment, and the applicant for such approval shall attach the opinion of a soil-related specialized agency: Provided, That in cases where prescribed by Presidential Decree, such as some facilities among a large number of the same type of storage facilities are shut down, etc., the opinion of the soil-related specialized agency may not be attached.

(3) The soil contamination inspection shall be conducted in two parts which are an inspection of soil contamination levels and an leakage inspection: Provided, That the leakage inspection shall be conducted only for the facilities over which a visual verification of leakage is impossible because the storage facilities or pipes are buried underground or stuck on the land and the inspection of which is deemed necessary by the Governor of a Special-Self Governing Province or the head of a Si/Gun/Gu as prescribed by Ordinance of the Ministry of Environment.

(4) The soil-related specialized agency shall, where it has conducted the soil contamination inspection, notify inspection results to the installer of the specified facilities subject to the control of soil contamination, the Governor of the competent Special-Self Governing Province, or the head of the competent Si/Gun/Gu, and the head of competent fire station (a notification to the head of fire station shall be limited to the case of facilities, from among those permitted under the Safety Control of Dangerous Substances Act, verified to have a leakage of contaminated substance as a result of a leakage inspection), and the installer of the specified facilities subject to the control of soil contamination shall keep the result of inspection notified to him/her, as prescribed by Ordinance of the Ministry of Environment. In such case, the installer of the specified facilities subject to the control of soil contamination may keep the result of inspection notified to him/her in the form of the electronic document as provided for in subparagraph 1 of Article 2 of the Act on Electronic Documents and Transactions. <Amended by Act No. 11461, Jun. 1, 2012>

(5) The method of collecting samples for the soil contamination inspection and other necessary matters shall be prescribed by Ordinance of the Ministry of Environment.

(6) Where it is deemed necessary to perform a close inspection based on the soil contamination inspection results notified by the soil-related specialized agency pursuant to paragraph (4), the Governor of the competent Special-Self Governing Province or the head of the competent Si/Gun/Gu may commission any soil-related specialized agency that is prescribed by Ordinance of the Ministry of Environment with the soil contamination inspection.

[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 14 (Order Given to Installer of Specific Facilities Subject to Control of Soil Contamination)

(1) The Governor of a Special-Self Governing Province or the head of a Si/Gun/Gu may, in case where the installer of the specified facilities subject to the control of soil contamination falls under any case of the following subparagraphs, order him/her to install or improve the facilities for preventing soil contamination and to take measures to purify the contaminated soil for the period that is fixed by Presidential Decree, or ask the soil-related specialized agency to conduct a detailed soil survey in the site of such facilities and surrounding areas:

1. Where he/she fails to install the facilities for preventing soil contamination or to meet the relevant criteria;
2. Where the level of soil contamination is revealed to exceed the worrisome level after an inspection of soil contamination levels conducted pursuant to Article 13 (3);
3. Where a leakage is found as a result of a leakage inspection conducted pursuant to Article 13 (3).

(2) The soil-related specialized agency shall, where it conducts the detailed soil survey pursuant to paragraph (1), inform without delay the installer of the specified facilities subject to the control of soil contamination, the Governor of the competent Special-Self Governing Province, or the head of the competent Si/Gun/Gu of the result of such detailed soil survey.

(3) The Governor of a competent Special-Self Governing Province or the head of a Si/Gun/Gu may order the installer of the specified facilities subject to the control of soil contamination to suspend the use of relevant facilities, where the said installer fails to comply with the order under paragraph (1), or where the level of soil contamination in the site of relevant facilities and surrounding areas fails to come down below the purification standards under Article 15-3 (1) even if he/she has complied with the relevant order.

[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 15 (Orders, etc. to Take Preventive Measures against Soil Contamination)

(1) The Mayor/Do Governor or the head of a Si/Gun/Gu may order a person responsible for purification in an area falling under Article 5 (4) 1 or 2 to undergo a detailed soil survey conducted by a soil-related specialized agency by fixing a period, as prescribed by Presidential Decree. <Amended by Act No. 10551, Apr. 5, 2011; Act No. 11464, Jun. 1, 2012; Act No. 12522, Mar. 24, 2014>

(2) Where the soil-related specialized agency has conducted a detailed soil survey under paragraph (1), it shall notify without delay the person responsible for purification and the competent Mayor/Do Governor or the head of a Si/Gun/Gu of the inspection results. <Amended by Act No. 10551, Apr. 5, 2011; Act No. 12522, Mar. 24, 2014>

(3) Where the level of soil contamination exceeds the worrisome level as a result of the regular measuring, the survey of the actual state of soil contamination, or the detailed soil survey, the Mayor/Do Governor or the head of a Si/Gun/Gu may order the person responsible for purification to take any of the following measures by fixing a period prescribed by Presidential Decree: Provided, That where it is impracticable to identify the person responsible for purification, or it is deemed impracticable for the person responsible for purification to purify the contaminated soil, the Mayor/Do Governor or the head of the Si/Gun/Gu may purify such contaminated soil: <Amended by Act No. 10551, Apr. 5, 2011; Act No. 12522, Mar. 24, 2014>

1. To improve or relocate the facilities subject to the control of soil contamination;
2. To limit or stop the use of relevant soil contaminants;
3. To purify contaminated soil.

(4) and (5) Deleted. <by Act No. 7291, Dec. 31, 2004>

(6) The Minister of Environment may, where any soil contamination is found to exceed the worrisome level as a result of the measurement of soil contamination under Article 5, request the Mayor/Do Governor or the head of a Si/Gun/Gu having jurisdiction over an area to take measures referred to in paragraph (3). <Amended by Act No. 10551, Apr. 5, 2011>

(7) The Mayor/Do Governor or the head of a Si/Gun/Gu shall, upon receiving a request from the Minister of Environment under paragraph (6), take measures referred to in paragraph (3) and report the results thereof to the Minister of Environment, as prescribed by Ordinance of the Ministry of Environment. <Amended by Act No. 10551, Apr. 5, 2011>

[This Article Wholly Amended by Act No. 6452, Mar. 28, 2001]

Article 15-2 (Reports on Execution of Order)

(1) When anyone who is ordered to take measures or to conduct the suspension pursuant to Article 11 (3), 14 (1) and (3) or 15 (3) executes such order, he/she shall promptly make a report thereon to the Mayor/Do Governor or the head of a Si/Gun/Gu, as prescribed by Ordinance of the Ministry of Environment. In such cases, the Mayor/Do Governor or the head of the Si/Gun/Gu shall confirm the execution of such

order, as prescribed by Ordinance of the Ministry of Environment. <Amended by Act No. 12522, Mar. 24, 2014>

(2) Where the person ordered to take measures pursuant to Article 11 (3) has reported on the completed execution of such order pursuant to paragraph (1), the Governor of a Special Self-Governing Province or the head of a Si/Gun/Gu shall notify the head of a regional environment office of the relevant report on the completed execution of such order, as prescribed by Ordinance of the Ministry of Environment. <Newly Inserted by Act No. 12522, Mar. 24, 2014>

[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 15-3 (Purification of Contaminated Soil)

(1) The contaminated soil shall be purified according to the purification standards and methods prescribed by Presidential Decree.

(2) The contaminated soil shall be purified by entrusting the purification work to a soil purification business operator (referring to the soil purification business operator who has registered facilities for purification of the contaminated soil brought into his/her facilities under Article 23-7 (1), in cases where the purification work is to be conducted by shipping it to other facilities under the proviso to paragraph (3)): Provided, That with respect to any soil contamination that falls under the categories and scales that are prescribed by Presidential Decree, including the soil contamination caused by organic solvents, etc., a person responsible for purification may purify it himself/herself. <Amended by Act No. 12522, Mar. 24, 2014>

(3) The contaminated soil shall be purified within a site where such soil contamination occurs: Provided, That where it is impracticable to purify the contaminated soil in the site due to inevitable reasons prescribed by Ordinance of the Ministry of Environment such as a narrow site area, the contaminated soil may be shipped out to the facilities owned by a soil purification business operator (referring to the facilities for purification of the contaminated soil under Article 23-7 (1)) for its purification, as prescribed by Ordinance of the Ministry of Environment.

(4) Any person who intends to purify the contaminated soil after shipping it out to other facilities under the proviso to paragraph (3) shall submit a contaminated soil ship-out and purification plan to the Governor of the competent Special Self-Governing Province or the head of the competent Si/Gun/Gu and receive a notification of appropriateness, as prescribed by Ordinance of the Ministry of Environment. The same shall apply to a case where he/she intends to change any important matters prescribed by Ordinance of the Ministry of Environment in the contaminated soil ship-out and purification plan that has been notified as appropriate under paragraph (5). <Amended by Act No. 11464, Jun. 1, 2012>

(5) The Governor of a Special Self-Governing Province or the head of a Si/Gun/Gu shall notify the person who has submitted a contaminated soil ship-out and purification plan of whether the plan is appropriate or not after reviewing the following matters with respect to the plan submitted under paragraph (4): <Amended by Act No. 11464, Jun. 1, 2012>

1. Whether the soil is classified as the contaminated soil that can be shipped out to other facilities and purified under the proviso to paragraph (3);
2. Whether the contaminated soil ship-out and purification plan is appropriate.

(6) Any person who has received a notification of appropriateness under paragraph (5) shall, whenever he/she ships out, transports, purifies, or uses (referring to the first use of the purified soil; hereinafter the same shall apply) the contaminated soil, submit the soil transfer form in writing to the head of a Si/Gun/Gu who has jurisdiction over an area in which soil contamination has occurred as well as the Mayor/Do Governor who has jurisdiction over the soil purification business operator taking over the contaminated soil, or shall enter such information into the contaminated soil information system under paragraph (9). <Newly Inserted by Act No. 11464, Jun. 1, 2012>

(7) Anyone who purifies the contaminated soil shall be prohibited from performing either of the following acts: <Newly Inserted by Act No. 11464, Jun. 1, 2012>

1. An act of lowering concentrations of contaminants by mixing the contaminated soil with other soil;
2. Where the contaminated soil is shipped out to other facilities for purification under the proviso to paragraph (3), an act of keeping the contaminated soil in excess of the capacity of his/her facilities registered under Article 23-7 (1).

(8) Matters necessary for the soil transfer form under paragraph (6), the timing and method for filling out the form, and the timing for transferring the soil shall be determined by Ordinance of the Ministry of Environment. <Newly Inserted by Act No. 11464, Jun. 1, 2012>

(9) The Minister of Environment may install and operate the contaminated soil information system that can computerize the process of shipping-out, transporting, purifying or using the contaminated soil. <Newly Inserted by Act No. 11464, Jun. 1, 2012>

[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 15-4 (Prohibition on Dumping Contaminated Soil, etc.)

No one shall commit an act falling under any of the following subparagraphs:

1. The act of dumping or reclaiming the contaminated soil;
2. The act of leaking and discharging the contaminated soil in the course of storing, transporting and purifying it;
3. The act of using the soil whose purification work is completed for other area where the worrisome level is more strict than that of the purified soil.

[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 15-5 (Hazard Assessment)

(1) The Minister of Environment, the Mayor/Do Governor, the head of a Si/Gun/Gu or a person responsible for purification may have a hazard assessment agency designated under Article 23-2 (2) 1 conduct an assessment of the extent of hazard that contaminants cause to human bodies and environment, in consideration of the types of contaminants, the contamination level, surrounding areas, the future land utilization plan and other necessary matters (hereinafter referred to as "hazard assessment") to reflect the results thereof in the scope, timing and level of the soil purification. <Amended by Act No. 11464, Jun. 1, 2012; Act No. 12522, Mar. 24, 2014>

(2) Hazard assessment may be conducted in any of the following cases (only subparagraphs 4 and 5 shall apply to a person responsible for purification): <Amended by Act No. 12522, Mar. 24, 2014>

1. Where purification of the contaminated soil is intended under Article 6-3;
2. Where purification of the contaminated soil is intended under proviso to parts other than each subparagraph of Article 15 (3);
3. Where improvement to the contaminated soil is intended under Article 19 (3);
4. Where purification of contaminated soil is intended on the site where it is verified by methods prescribed by Presidential Decree as being contaminated due to the natural causes (excluding cases where purification of the contaminated soil is intended after it is shipped to other facilities under the proviso to Article 15-3 (3));
5. Any other cases which necessitate the hazard assessment, as prescribed by Presidential Decree.

(3) Where the Mayor/Do Governor, the head of a Si/Gun/Gu, or a person responsible for purification intends to reflect the hazard assessment results in the timing, scope, and level of the soil purification, the results shall be verified preliminarily by the Minister of Environment. <Amended by Act No. 12522, Mar. 24, 2014>

(4) Items and methods of the hazard assessment and other necessary matters as well as the procedures and methods for verification of the hazard assessment results shall be prescribed by Ordinance of Ministry of Environment.

[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 15-6 (Verification of Soil Purification)

(1) Where a person responsible for purification entrusts a soil purification business operator with the work of purifying the contaminated soil, he/she shall have a soil contamination survey agency designated under Article 23-2 (2) 2 verify the process of purification and the completion of purification: Provided, That where the contaminated soil falls under the scales and categories that are prescribed by Presidential Decree such as a small scale of the contaminated soil or low concentrations of contaminants as a result of the detailed soil survey, the verification of the purification process may be omitted. <Amended by Act No. 11464, Jun. 1, 2012; Act No. 12522, Mar. 24, 2014>

(2) When a person responsible for purification intends to undergo the purification process of the contaminated soil and the completion of the purification verified by the soil contamination survey agency pursuant to the main sentence of paragraph (1), he/she shall formulate a plan for purifying the contaminated soil according to details and procedures that are prescribed by Ordinance of the Ministry of Environment to submit such plan to the Governor of the competent Special Self-Governing Province or the head of the competent Si/Gun/Gu. The same shall apply where he/she intends to make changes to matters prescribed by Ordinance of the Ministry of Environment in the plan submitted. <Amended by Act No. 12522, Mar. 24, 2014>

(3) When the soil-related specialized agency performs the verification under paragraph (1), it may collect verification fees from persons responsible for purification. In such cases, standards for calculating verification fees shall be prescribed by Ordinance of the Ministry of Environment. <Amended by Act No. 12522, Mar. 24, 2014>
(4) Procedures, details, and methods for the verification referred to in paragraph (1) and other matters necessary for the verification shall be prescribed by Ordinance of the Ministry of Environment.
(5) In cases where a soil purification business operator undergoes verification of the process and completion of the purification work under paragraph (1), he/she shall not ship out the contaminated soil to another place before the verification is completed by a soil-related specialized agency.
[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 15-7 (Designation, etc. of Soil Control Complexes)

(1) In case where the Minister of Environment deems it necessary for efficient soil purification to concentrate the facilities required for the soil purification in a certain area for the purpose of conducting purification work after shipping out to other facilities under the proviso to Article 15-3 (3) or recycling the purified soil, he/she may designate a land of which the Minister of Environment is the head of the central government agency as a soil control complex from among the State property under the State Property Act.
(2) In case where the Minister of Environment intends to designate a soil control complex pursuant to paragraph (1), he/she shall, as prescribed by Presidential Decree, formulate a plan for creation of a soil control complex, hear the opinions of the competent Mayor/Do Governor, and consult the competent head of the central government agency. The same shall also apply where he/she intends to change the important matters of plan for creation of a soil control complex, which are prescribed by Presidential Decree.
(3) Notwithstanding the State Property Act, the Minister of Environment may allow by free contract any person who intends to operate the soil purification business to use or earn profit from part of the land of the soil control complex, or lend or sell it to him/her.
(4) For the smooth operation of the soil control complex pursuant to paragraph (1), the Minister of Environment may provide necessary support for establishment of infrastructure, etc. including roads.
[This Article Newly Inserted by Act No. 10551, Apr. 5, 2011]

CHAPTER III DESIGNATION AND MAINTENANCE OF AREA REQUIRING COUNTERMEASURES FOR SOIL CONSERVATION

Article 16 (Standards of Countermeasures against Soil Contamination)

The standards of soil contamination, which is likely to obstruct human health and properties or rearing of animals and plant, and accordingly would necessitate the countermeasures (hereinafter referred to as the "countermeasure standards"), shall be prescribed by Ordinance of the Ministry of Environment.
[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 17 (Designation of Area Requiring Countermeasures for Soil Conservation)

(1) The Minister of Environment may designate the area exceeding the countermeasure standards, and the area requested by the Governor of a Special Self-Governing Province or the head of a Si/ Gun/Gu provided in paragraph (2) as an area requiring countermeasures for soil conservation (hereinafter referred to as an "area requiring countermeasures") in consultation with the head of the relevant central administrative agency and the competent Mayor/Do Governor: Provided, That any area that falls under the case that is prescribed by Presidential Decree shall be designated as an area requiring countermeasures.
(2) When the Governor of a Special Self-Governing Province or the head of a Si/Gun/Gu deems that soil conservation on a particular area under his/her jurisdiction is especially necessary, he/she may ask the Minister of Environment to designate the area as an area requiring countermeasures after consulting the Mayor/Do Governor having jurisdiction over the area even if the level of soil contamination in that area does not exceed the countermeasure standards.
(3) The standards and procedures of designating an area requiring countermeasures under paragraph (1), and other necessary matters shall be prescribed by Presidential Decree.
(4) In a case where the Minister of Environment designates an area requiring countermeasures under paragraph (1), he/she shall publicly announce the location, area, date, purpose of the designation and other matters as prescribed by Ordinance of the Ministry of Environment. This shall also apply when any matters announced are altered.
[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 18 (Formulation and Execution of Countermeasure Plans)

(1) The Governor of a Special Self-Governing Province or the head of a Si/Gun/Gu (in cases where the relevant area requiring countermeasures extends over at least two Sis/Guns/Gus (referring to an autonomous

Gu; hereinafter the same shall apply), the head of a Si/Gun/Gu refers to the head of a Si/Gun/Gu prescribed by Presidential Decree) shall formulate a countermeasure plan for soil conservation (hereinafter referred to as the "countermeasure plan") with respect to an area requiring countermeasures and execute it after obtaining approval therefor from the Minister of Environment and consulting with the Mayor/Do Governor having jurisdiction over the area.

(2) The countermeasure plan shall include the following matters:

1. The project for improving contaminated soil;
2. The plan for using the land, etc.;
3. The survey of damage to the health of residents and the countermeasures against such damage;
4. Countermeasures to support the residents suffering damage;
5. Other matters deemed and prescribed by Ordinance of the Ministry of Environment as necessary for the formulation and execution of the countermeasure plan.

(3) The Governor of a Special Self-Governing Province or the head of a Si/Gun/Gu may have the person responsible for purification bear part of the expenses required for countermeasures to support the residents suffering from damage under paragraph (2) 4. <Amended by Act No. 12522, Mar. 24, 2014>

(4) The types, standards and other necessary matters of the projects for improving contaminated soil under paragraph (2) 1 shall be determined by Presidential Decree.

(5) Detailed matters necessary for the survey of damage to the health of residents referred to in paragraph (2) 3 and the countermeasures against such damage referred to in paragraph (2) 4 shall be prescribed by Presidential Decree.

(6) When approving the countermeasure plan under paragraph (1), the Minister of Environment shall consult with the head of the relevant central administrative agency, and after granting the approval, he/she shall notify the head of the relevant central administrative agency thereof and may request him/her to take necessary measures. In such cases, the head of the relevant central administrative agency shall comply with such request, except in extenuating circumstances.

[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 18-2 (Report on Results of Implementing Countermeasure Plan)

The Governor of a Special Self-Governing Province or the head of a Si/Gun/Gu shall report the result of implementing the countermeasure plan to the Minister of Environment.

[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 19 (Projects for Improving Contaminated Soil)

(1) The Governor of a Special Self-Governing Province or the head of a Si/Gun/Gu may order the person responsible for purification to execute the whole or part of the project for improving contaminated soil as provided for in Article 18 (2) 1. In such cases, the Governor of a Special Self-Governing Province or the head of a Si/Gun/Gu may, if deemed necessary for preservation of soil, require the soil-related specialized agency prescribed by Ordinance of the Ministry of Environment to direct and supervise the contaminated soil improvement project. <Amended by Act No. 12522, Mar. 24, 2014>

(2) Where a person responsible for purification intends to execute a project for improving contaminated soil as provided for in paragraph (1), he/she shall prepare the plan for such project, and obtain approval therefor from the Governor of a Special Self-Governing Province or the head of a Si/Gun/Gu, as prescribed by Ordinance of the Ministry of Environment. This provision shall also apply when he/she intends to alter important matters prescribed by Ordinance of the Ministry of Environment from among other approved matters. <Amended by Act No. 12522, Mar. 24, 2014>

(3) In cases under paragraph (1), where a person responsible for purification does not exist or the project for improving contaminated soil is impracticable to be executed by the person responsible for purification, the Governor of a Special Self-Governing Province or the head of a Si/Gun/Gu may execute the pertinent project designed to improve contaminated soil. <Amended by Act No. 12522, Mar. 24, 2014>

(4) In cases under paragraph (3), where the pertinent area requiring countermeasures extends over at least two Sis/Guns/Gus, the head of a Si/Gun/Gu who is prescribed by Presidential Decree shall implement the project for improving contaminated soil.

(5) Where the project for improving contaminated soil as provided for in paragraph (3) or (4) is impracticable to be executed by the Governor of a Special Self-Governing Province or the head of a Si/Gun/Gu due to the lack of technology or the excess of project costs, etc., the Minister of Environment or the Mayor/Do Governor may, upon a request from the Governor of a Special Self-Governing Province or the head of a Si/Gun/Gu, provide technological and financial support to the relevant project.

[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 20 (Limitation on Use of Land, etc.)
The Governor of a Special Self-Governing Province or the head of a Si/Gun/Gu may impose limitations on the use of land or the installation of facilities deemed to have a possibility to harm the purpose of the designation of the area requiring countermeasures, as prescribed by Presidential Decree.
[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]
Article 21 (Limitations on Activities)
(1) No one shall discharge into the soil in the area requiring countermeasures the specified substances harmful to water quality under subparagraph 8 of Article 2 of the Water Quality and Aquatic Ecosystem Conservation Act, wastes under subparagraph 1 of Article 2 of the Wastes Control Act, toxic chemicals under subparagraph 7 of Article 2 of the Chemicals Control Act, sewage and excreta under subparagraphs 1 and 2 of Article 2 of the Sewerage Act, or livestock excreta under subparagraph 2 of Article 2 of the Act on the Management and Use of Livestock Excreta: Provided, That acts prescribed by Ordinance of the Ministry of Environment shall be excluded therefrom: <Amended by Act No. 10314, May 25, 2010; Act No. 11862, Jun. 4, 2013>
(2) No one shall install facilities deemed and prescribed by Presidential Decree as likely to violate the purpose of the designation of the area requiring countermeasures in such area. <Amended by Act No. 10551, Apr. 5, 2011>
(3) Where the soil is contaminated or likely to be contaminated due to acts or installation of the facilities referred to in paragraphs (1) and (2), the Governor of a Special Self-Governing Province or the head of a Si/Gun/Gu may order a person who performed such acts to eliminate soil contaminants or an installer of such facilities to remove the facilities. <Amended by Act No. 10551, Apr. 5, 2011>
Article 22 (Cancellation of Designation of Area Requiring Countermeasures)
(1) The Minister of Environment may cancel or alter the designation of an area requiring countermeasures under Article 17 (1) in case where the relevant area falls under any of the following subparagraphs:
1. Where the level of soil contamination is improved by designing and implementing countermeasures, coming down to a level below the purification standards under Article 15-3 (1);
2. Where it is inevitable for public interest;
3. Where the purpose of designating the area requiring countermeasures has ceased to exist due to natural disasters or other reasons.
(2) The provisions of Article 17 (2) and (4) shall apply mutatis mutandis to the cancellation or alternation of the designation of an area requiring countermeasures as provided for in paragraph (1).
[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]
Article 23 [Moved to Article 10-3]
CHAPTER III-2 SOIL-RELATED SPECIALIZED AGENCY AND SOIL PURIFICATION BUSINESS
Article 23-2 (Classification and Designation, etc. of Soil-Related Specialized Agency)
(1) Soil-related specialized agencies shall be classified into the following subparagraphs: <Amended by Act No. 11464, Jun. 1, 2012>
1. Soil environment assessment agency: an agency that assesses soil environment;
2. Hazard assessment agency: an agency that assesses hazardous levels;
3. Soil contamination survey agency: an agency that conducts the following duties:
(a) Detailed soil surveys;
(b) Inspection of soil contamination levels under Article 13 (3);
(c) Verification of soil purification under Article 15-6 (1);
(d) Guidance and supervision of projects to improve contaminated soil under Article 19 (1);
4. Leakage inspection agency: an agency that inspects leakage under Article 13 (3).
(2) Any person who intends to become a soil-related specialized agency according to the classifications in the subparagraphs of paragraph (1) shall be designated by the Minister of Environment or the Mayor/Do Governor as specified in the following subparagraphs after securing facilities, equipment and technological capabilities as prescribed by Presidential Decree. This shall also apply where the matters prescribed by Presidential Decree among those already designated are changed: <Newly Inserted by Act No. 11464, Jun. 1, 2012>
1. Soil environment assessment agencies under paragraph (1) 1 and hazard assessment agencies under paragraph (1) 2: The Minister of Environment;
2. Soil contamination survey agencies under paragraph (1) 3 and leakage inspection agencies under paragraph (1) 4: The Mayor/Do Governor.

(3) Soil contamination survey agencies under paragraph (1) 3 shall be designated from among the agencies falling under the following subparagraphs: Provided, That the agencies prescribed by Presidential Decree shall be deemed to be designated as a soil contamination survey agency under paragraph (1): <Amended by Act No. 11464, Jun. 1, 2012>

1. Regional environment offices;
2. National and public research institutes;
3. Universities under subparagraphs 1 through 6 of Article 2 of the Higher Education Act;
4. Special corporations established under the special Acts;
5. Nonprofit corporations under a permit for establishment by the Minister of Environment.

(4) The Minister of Environment or the Mayor/Do Governor shall, when he/she has designated a soil-related specialized agency, issue a certificate of designation and publicly announce such designation. <Amended by Act No. 11464, Jun. 1, 2012>

(5) Matters to be observed by soil-related specialized agencies, fees for inspection, and other necessary matters shall be prescribed by Ordinance of the Ministry of Environment.

(6) A soil environment assessment agency and a hazard assessment agency designated under paragraph (2) 1 may allow a soil contamination survey agency designated under subparagraph 2 of the same paragraph to collect or analyze soil samples on their behalf for assessment of soil environment or of hazardous levels. <Amended by Act No. 11464, Jun. 1, 2012>

[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 23-3 (Disqualifications of Soil-Related Specialized Agencies)

None of the following persons shall be designated as a soil-related specialized agency: <Amended by Act No. 13169, Feb. 3, 2015>

1. A person under adult guardianship or a person under limited guardianship;
2. A person who has been sentenced to a bankruptcy and not reinstated as yet;
3. A person for whom two years have not yet elapsed after the revocation of designation under Article 23-6;
4. A person who has been sentenced to imprisonment with labor or a heavier punishment for violating this Act and for whom two years have yet to pass from the date on which the execution of the sentence is completed (including where the execution of the sentence is deemed completed) or the execution of the sentence is exempted;
5. A corporation that employs persons falling under one of subparagraphs 1 through 4 from as its executive officers.

[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 23-4 (Prohibition on Lending Written Designation of Soil-Related Specialized Agency, etc.)

Anyone who is designated as the soil-related specialized agency shall be prohibited from permitting any other person to perform the work of his/her soil-related specialized agency by using his/her name or from lending the written designation of his/her soil-related specialized agency to any other person.

[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 23-5 (Prohibition on Concurrently Running other Businesses)

Neither those designated as a hazard assessment agency pursuant to Article 23-2 (2) 1 nor those designated as a soil contamination survey agency pursuant to subparagraph 2 of the same paragraph from among soil-related specialized agencies may concurrently run the soil purification business. <Amended by Act No. 11464, Jun. 1, 2012>

[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 23-6 (Revocation, etc. of Designation of Soil-Related Specialized Agency)

(1) In case where a soil-related specialized agency falls under any of the following subparagraphs, the Minister of Environment or the Mayor/Do Governor shall revoke the designation: <Amended by Act No. 11464, Jun. 1, 2012>

1. Where it has been designated by deception or other unlawful means;
2. Where it has come to fall under any of the subparagraphs of Article 23-3: Provided, That a person falling under subparagraph 5 of Article 23-3 from among executive officers of the corporation is replaced within 3 months, this shall not apply;
3. Where it has concurrently run the soil purification business in violation of Article 23-5.

(2) In case where a soil-related specialized agency falls under any of the following subparagraphs, the Minister of Environment or the Mayor/Do Governor may either revoke the designation or order the agency to suspend business with setting a period of six months or less: <Amended by Act No. 11464, Jun. 1, 2012>

1. Where it has failed to meet the designation standards under Article 23-2 (2);
2. Where it has allowed others to conduct duties of the soil-related specialized agency by using its name or lent its certificate of designation to others in violation of Article 23-4;
3. Where it has falsely or poorly prepared the results of inspection or assessment by intention or gross negligence;
4. Where it poorly conducted the detailed soil survey under Article 11 (3), 14 (1) or 15 (1) by intention or gross negligence, reducing the scale of contaminated soil below the one subject to the verification of the purification process under the proviso to Article 15-6 (1);
5. Where it has conducted duties relating to the inspection of soil contamination levels, leakage inspection, soil environment assessment, or hazard assessment during the period of disposition of business suspension;
6. Where a person other than a technical expert falling under the requirements for designation of technological capabilities under Article 23-2 (2) has conducted a survey or assessment and notified of the result.

(3) In case where a soil-related specialized agency falls under any of the following subparagraphs, the Minister of Environment or the Mayor/Do Governor may order the agency to suspend its duty with setting a period of six months or less: <Amended by Act No. 11464, Jun. 1, 2012>
1. Where it poorly conducted the verification of soil purification under Article 15-6, failing to treat the contaminated soil below the purification standards under Article 15-3 (1);
2. Where it has failed to commence business within two years from the date of its designation (excluding the cases where it is deemed to have been designated as a soil contamination survey agency under the proviso to Article 23-2 (3)) or has no record of performance for not less than two consecutive years without any justifiable reason;
3. Where it has failed to notify without delay the competent Mayor/Do Governor or the head of the competent Si/Gun/Gu of the result of a detailed survey under Articles 11 (4), 14 (2) and 15 (2);
4. Where it has presented an untruthful opinion concerning approval for exemption from the soil contamination inspection under Article 13 (2);
5. Where it has failed to notify the results of the soil contamination inspection under Article 13 (4) to the Governor of the competent Special Self-Governing Province, the head of the competent Si/Gun/Gu and the head of competent fire station;
6. Where it has violated the matters of observance of soil-related specialized agencies under Article 23-2 (5);
7. Where it has failed to make report or to present data in violation of Article 26-2 (2), or has reported or presented data fraudulently.

[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 23-7 (Registration of Soil Purification Business, etc.)

(1) Anyone who intends to run a soil purification business shall secure facilities (including facilities for purification of contaminated soil brought into the facilities in case where the purification works are to be conducted by shipping it out to other facilities under the proviso to Article 15-3 (3)), equipment, technical manpower, etc. that are prescribed by Presidential Decree to register his/her business with the Mayor/Do Governor. The same shall apply where he/she changes any matter prescribed by Presidential Decree from among those already registered. <Amended by Act No. 11464, Jun. 1, 2012>

(2) The Mayor/Do Governor shall, when he/she makes the registration of a soil purification business, issue a registration certificate as prescribed by Ordinance of the Ministry of Environment. <Amended by Act No. 11464, Jun. 1, 2012>

[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 23-8 (Grounds of Disqualification for Registration of Soil Purification Business)

The provision of Article 23-3 shall apply mutatis mutandis to anyone who intends to register his/her soil purification business pursuant to Article 23-7 (1). In this case, the "soil-related specialized agency" shall be deemed the "soil purification business" and the "designation" shall be deemed the "registration," respectively.

[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 23-9 (Matters to be Observed by Soil Purification Business Operators)

(1) Every soil purification business operator shall be prohibited from letting any other person run the soil purification business by getting the latter to use his/her name or his/her firm name or from lending his/her registration certificate to any other person.

(2) Every soil purification business operator shall be prohibited from subcontracting in bulk his/her contracted work for the soil purification (hereinafter referred to as the "soil purification work") or the work directly connected to the soil purification that is prescribed by Presidential Decree from among the soil purification work: Provided, That this shall not apply if there exists a natural disaster or any other unavoidable ground prescribed by Presidential Decree.
(3) Other matters that soil purification business operators are required to observe other than those prescribed in paragraphs (1) and (2) when they run their soil purification business shall be prescribed by Ordinance of the Ministry of Environment.
[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 23-10 (Revocation, etc. of Registration of Soil Purification Business)

(1) In case where a soil purification business operator falls under any of the following subparagraphs, the Mayor/Do Governor shall revoke the registration: <Amended by Act No. 11464, Jun. 1, 2012>
1. Where he/she has registered by deception or other unlawful means;
2. Where he/she has come to fall under any of the subparagraphs of Article 23-3 which shall apply mutatis mutandis under Article 23-8: Provided, That a person falling under subparagraph 5 of Article 23-3 from among the executive officers of the corporation is replaced within 3 months, this shall not apply;
3. Where he/she conducted business activities during the period of business suspension.
(2) In case where a soil purification business operator falls under any of the following subparagraphs, the Mayor/Do Governor may either revoke the registration of the soil purification business operator or order him/her to suspend business with setting a period of not more than six months: <Amended by Act No. 11464, Jun. 1, 2012>
1. Where he/she has failed to conduct purification work in conformity with the standards and methods of purification under Article 15-3 (1);
2. Where he/she has conducted purification work after shipping the contaminated soil to a place other than the relevant land where the contamination has occurred or to a place other than the facilities owned by himself/herself in violation of Article 15-3 (3);
3. Where he/she has committed an act of lowering concentrations of contaminants by mixing the contaminated soil with other soil in violation of Article 15-3 (7) 1;
4. Where he/she has kept the contaminated soil in excess of the capacity of the registered facilities in violation of Article 15-3 (7) 2;
5. Where he/she has committed an act of dumping, reclaiming, leaking or discharging the contaminated soil in violation of Article 15-4;
6. Where he/she has shipped the contaminated soil to another place before the completion of verification by a soil-related specialized agency in violation of Article 15-6 (5);
7. Where he/she has fell short of the registration standards under Article 23-7 (1);
8. Where he/she has allowed other persons to conduct the duty of the soil purification business by using his/her name or lent his/her certificate of registration to other persons in violation of Article 23-9 (1);
9. Where he/she has subcontracted the soil purification work for which he/she has been contracted in violation of Article 23-9 (2).
(3) When a soil purification business operator has failed to commence his/her duty within two years from the date of registration or has no record of performance for not less than two consecutive years without any justifiable reasons, the Mayor/Do Governor may order him/her to suspend business with setting a period of six months or less. <Amended by Act No. 11464, Jun. 1, 2012>
[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 23-11 (Uninterrupted Work of Soil Purification Business Operator Whose Business is Revoked or Suspended, etc.)

(1) Anyone who is subjected to the revocation of his/her registration or a disposition taken to suspend his/her business pursuant to Article 23-10 may conduct only the soil purification work for which the ground is broken prior to such disposition. In such cases, anyone who continues the soil purification work shall be deemed a soil purification business operator under this Act until the work is completed.
(2) Anyone subject to the revocation of his/her registration or a disposition taken to suspend his/her business pursuant to Article 23-10 shall notify without delay a person who places an order for the soil purification work and a subcontractor of details of such disposition.
(3) Anyone who awards or is awarded a contract of soil purification work to/from a soil purification business operator may terminate the work contract only within the limited period of 30 days from the date on

which he/she is informed pursuant to paragraph (2) by the relevant soil purification business operator or he/she learns of such fact unless extraordinary grounds exist.
[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 23-12 (Succession of Rights and Duties)

(1) Anyone falling under any of the following subparagraphs shall succeed the rights and duties accruing from the designation or registration of the person designated as a soil-related specialized agency under Article 23-2 or the person registered as a soil purification business operator under Article 23-7. In such case, if the inheritor falls under any grounds for disqualification under Article 23-3 or 23-8, he/she shall transfer his/her soil-related specialized agency or soil purification business to another person within the period of three months:

1. Where the person designated as a soil-related specialized agency or registered as a soil purification business operator is deceased, the inheritor;
2. Where the person designated as a soil-related specialized agency transfers his/her soil-related specialized agency or the person registered as soil purification business operator transfers his/her soil purification business, the transferee;
3. Where a corporation designated as a soil-related specialized agency or registered as a soil purification business operator is merged, the corporation which remains after or is established by such merger.

(2) Anyone who acquires a soil-related specialized agency or soil purification business through any procedure of the following subparagraphs shall succeed the rights and the duties accruing from the previous designation or the previous registration provided in this Act:

1. Auction under the Civil Execution Act;
2. Conversion under the Debtor Rehabilitation and Bankruptcy Act;
3. Sale of the seized property under the National Tax Collection Act, the Customs Act or the Framework Act on Local Taxes;
4. Procedures corresponding to any of the provisions of subparagraphs 1 through 3.

(3) Anyone who succeeds the status of the soil-related specialized agency or the soil purification business operator pursuant to paragraph (1) or (2) shall make a report thereon to the Minister of Environment or the Mayor/Do Governor within one month from the date on which he/she succeeds such status as prescribed by Ordinance of the Ministry of Environment. <Amended by Act No. 11464, Jun. 1, 2012>
[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 23-13 (Succession of Effect of Administrative Disposition)

Where anyone who obtains the designation of his/her soil-related specialized agency pursuant to Article 23-2 or anyone who registers his/her soil purification business pursuant to Article 23-7 deceases or transfers his/her soil-related specialized agency or his/her soil purification business or in case where a merger of corporation takes place, the transferee, the inheritor, the corporation that is newly incorporated after a merger or the surviving corporation shall succeed the effect of the administrative disposition taken to the previous soil-related specialized agency or the previous soil purification business operator on the grounds of violating each subparagraph of Article 23-6 or 23-10 for one year from the date on which the disposition period expires and when the procedures for the administrative disposition are underway, such procedures for the administrative disposition to the transferee, the inheritor, the corporation that is newly incorporated after a merger or the surviving corporation may continue: Provided, That the same shall not apply to a case where the transferee, the corporation that is newly incorporated after a merger or the surviving corporation verifies that he/she or it does not learn of the disposition or the fact of violation at the time when the acquisition by transfer or the merger takes place.
[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 23-14 (Training of Technical Manpower by Soil-Related Specialized Agencies, etc.)

(1) The technical manpower that works for any soil-related specialized agency and any soil purification business shall undergo training as prescribed by Ordinance of the Ministry of Environment.

(2) Anyone who employs persons liable to undergo the training referred to in paragraph (1) shall get them to undergo the training. In this case, expenses required for the training shall be borne by the employer.
[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

CHAPTER IV SUPPLEMENTARY PROVISIONS

Article 24 (Execution by Proxy)

Where any person subject to the soil contamination inspection under Article 13 (1) or any person given an order falling under any of the following subparagraphs fails to undergo such inspection or comply with such

order, the Governor of a Special Self-Governing Province or the head of a Si/Gun/Gu may carry out the orders by proxy as prescribed by the Administrative Vicarious Execution Act, and collect the relevant expenses from the person who has violated the orders:

1. An order under Articles 11 (3) and 14 (1);
2. An order of detailed soil survey under Article 15 (1);
3. An order under Article 15 (3);
4. An order to execute the project for improving contaminated soil under Article 19 (1);
5. An order to eliminate the soil contaminants or to remove the facilities, etc. under Article 21 (3).

[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 25 (Assistance from Relevant Organizations)

The Minister of Environment may request the head of the relevant central administrative agency or the Mayor/Do Governor to take the measures as prescribed by the following subparagraphs if he/she deems it necessary to achieve the purpose of this Act:

1. Cultivation of fertile agricultural soil such as bringing fertile soil from another place to prevent soil contamination, etc.;
2. Measures to prevent contamination of surrounding agricultural land on account of wastes and hazardous materials from abandoned mines;
3. Restoration of soil that is damaged by installation of industrial facilities, etc.;
4. Other matters which are prescribed by Ordinance of the Ministry of Environment as necessary for soil conservation.

[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 26 (State Subsidy)

The State may subsidize or finance the soil conservation project that is promoted by a local government within the budget.

[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 26-2 (Reports and Inspection, etc.)

(1) The Governor of a Special Self-Governing Province or the head of a Si/Gun/Gu may, as prescribed by Ordinance of the Ministry of Environment, order the installer of the specified facilities subject to the control of soil contamination to furnish the data necessary for his/her supervision, and have public officials under his/her control enter the specified facilities subject to the control of soil contamination to inspect whether the facilities for preventing soil contamination are installed, the soil contamination inspection is conducted, its results are kept, etc.

(2) If deemed necessary, the Minister of Environment or the Mayor/Do Governor may request a soil-related specialized agency and a soil purification business operator to file reports or furnish the data necessary for his/her supervision, and have public officials under his/her control enter the office or business place of the soil-related specialized agency or the soil purification business operator, or other necessary places to inspect the documents, facilities, equipment, etc. <Amended by Act No. 11464, Jun. 1, 2012>

(3) The Mayor/Do Governor or the head of a Si/Gun/Gu may require the proprietor, occupant or operator of the land on which soil contamination has occurred or of the facilities subject to the control of soil contamination to submit necessary data, or have public officials belonging thereto enter the relevant land or facilities subject to the control of soil contamination and inspect the documents, the facilities, equipment, etc. <Newly Inserted by Act No. 12522, Mar. 24, 2014>

(4) Public officials conducting the inspections under paragraphs (1) through (3) shall carry an identification indicating their authority, and present it to the relevant persons. <Amended by Act No. 12522, Mar. 24, 2014>

[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 26-3 (Report on Current State of Specific Facilities Subject to Control of Soil Contamination, etc.)

(1) The head of a Si/Gun/Gu shall submit the material of the preceding year concerning the matters falling under each of the following subparagraphs to the Mayor/Do Governor by the end of January every year as prescribed by Ordinance of the Ministry of Environment:

1. The current state of the specified facilities subject to the control of soil contamination;
2. The result of the soil contamination inspection that is notified pursuant to Article 13 (4);
3. Details of the order given to take measures and the result of the survey provided in Article 14.

(2) The Mayor/Do Governor shall compile the material that is submitted pursuant to paragraph (1) and report such material to the Minister of Environment by the end of February every year.

[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]

Article 26-4 (Standards for Administrative Disposition)
The detailed standards for the administrative disposition provided in Articles 23-6 and 23-10 shall be set by Ordinance of the Ministry of Environment, taking into account the categories of the act of violation and the extent of violation, etc.
[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]
Article 26-5 (Hearing)
The Minister of Environment, the Mayor/Do Governor or the head of a Si/Gun/Gu shall, if he/she intends to make dispositions falling under any of the following subparagraphs, conduct the hearing: <Amended by Act No. 11464, Jun. 1, 2012>
1. Order to withdraw facilities under Article 21 (3);
2. Revocation of designation of the soil-related specialized agency under Article 23-6;
3. Revocation of the registration of the soil purification business provided in Article 23-10.
[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]
Article 27 (Delegation and Entrustment of Authority)
(1) The authority of the Minister of Environment prescribed by this Act may be delegated in part to the heads of agencies under his/her control, as prescribed by Presidential Decree.
(2) The Minister of Environment may entrust part of his/her duties vested under this Act to the Korea Environment Corporation and the Korea Environmental Industry and Technology Institute in accordance with the Korea Environment Corporation Act, as prescribed by Presidential Decree. <Newly Inserted by Act No. 11464, Jun. 1, 2012; Act No. 12522, Mar. 24, 2014>
[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]
CHAPTER V PENALTY PROVISIONS
Article 28 (Penalty Provisions)
Anyone who fails to carry out an execution order pursuant to Article 19 (1) or a person who implements a project for improving soil contamination without obtaining the approval pursuant to Article 19 (2) shall be punished by imprisonment with labor for not more than five years or a fine not exceeding 50 million won. <Amended by Act No. 12522, Mar. 24, 2014>
[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]
Article 29 (Penalty Provisions)
Any of the following persons shall be punished by imprisonment with labor for not more than two years or by a fine not exceeding 20 million won: <Amended by Act No. 11464, Jun. 1, 2012; Act No. 12522, Mar. 24, 2014>
1. A person who has failed to execute an order given to take measures to purify contaminated soil under Article 11 (3) or 14 (1);
2. A person who has failed to execute an order issued to suspend the use of the specified facilities subject to the control of soil contamination under Article 14 (3);
3. A person who has failed to execute an order issued under Article 15 (3);
4. A person who has commissioned purification of the contaminated soil in violation of Article 15-3 (2);
5. A person who has dumped or reclaimed any contaminated soil in violation of subparagraph 1 of Article 15-4;
6. A person who has failed to execute an order to eliminate soil contaminants or withdraw facilities, etc. under Article 21 (3);
7. A person who performs the work of the soil-related specialized agency without obtaining designation required under Article 23-2 (2);
8. A person who runs the soil purification business without having his/her business registered pursuant to Article 23-7 (1).
[This Article Wholly Amended by Act No. 10551, Apr. 5, 2011]
Article 30 (Penalty Provisions)
Any of the following persons shall be punished by imprisonment with prison labor for not more than one year or by a fine not exceeding 10 million won: <Amended by Act No. 10314, May 25, 2010; Act No. 10551, Apr. 5, 2011; Act No. 11464, Jun. 1, 2012; Act No. 12522, Mar. 24, 2014>
1. A person who conducts an assessment of soil environment as differently from the actual state not conforming to the items, methods and procedures under Article 10-2 (3) by intention or gross negligence;

1-2. A person who fails to make a report, in violation of Article 11 (1), on the fact that soil contaminants have been leaked or discharged in the course of production, transportation, storage, handling, processing or disposal;
1-3. A person who manipulates the contamination level to be less than the scale subject to verification of the purification process pursuant to the proviso to Article 15-6 (1) by flimsily conducting the detailed soil survey under Article 11 (3), 14 (1) or 15 (1) by intention or gross negligence;
2. A person who installs specified facilities subject to the control of soil contamination without making a report thereon under the former part of Article 12 (1) or has made a false report thereon;
3. A person who fails to install the facilities for preventing soil contamination in violation of Article 12 (3);
4. A person who fails to execute an order to install or improve the facilities for preventing soil contamination pursuant to Article 14 (1);
5. A person who purifies any contaminated soil in violation of Article 15-3 (1);
6. A person who ships out any contaminated soil to a place that is neither a site where the soil is contaminated nor a site of the facilities owned by any soil purification business operator for the purpose of purifying such contaminated soil in violation of Article 15-3 (3);
7. A person who lowers concentrations of contaminants by mixing the contaminated soil with other soil in violation of Article 15-3 (7) 1;
8. A person who discharges or leaks any contaminated soil in violation of subparagraph 2 of Article 15-4;
8-2. A person who uses the soil, the purification of which is complete in an area where a stricter criteria is applied to its soil than the criteria applied to the purified soil in violation of subparagraph 3 of Article 15-4;
9. A person who fails to order the soil-related specialized agency to perform the verification in violation of Article 15-6 (1);
10. A person who fails to comply with procedures, details and methods of the verification under Article 15-6 (4) by intention or gross negligence, obstructing the contaminated soil to be treated within the purification standards under Article 15-3 (1);
11. A person who ships contaminated soil to other facilities when the verification by the soil-related specialized agency is not completed in violation of Article 15-6 (5);
12. A person who has installed any facilities in areas requiring countermeasures in violation of Article 21 (2);
13. A person who obtains designation of a soil-related specialized agency or register his/her soil purification business by fraudulent and illegal means;
14. A person who allows any other person to perform the work of the soil-related specialized agency under his/her name or who lends his/her written designation to any other person in violation of Article 23-4;
15. A person who allows any other person to run the soil purification business under his/her name or trade name or who lends his/her registration certificate to any other person in violation of Article 23-9 (1);
16. A person who subcontracts contracted soil purification work in violation of Article 23-9 (2);
17. A person who refuses, obstructs, or evades the entry and inspection by public officials under Article 26-2 (2).
[This Article Wholly Amended by Act No. 7291, Dec. 31, 2004]

Article 31 (Joint Penalty Provisions)

When the representative of a corporation, or an agent, employee, or other servant of a corporation or individual commits an offence under Articles 28 through 30 in relation to the business of such corporation or individual, not only shall such violator be punished, but the corporation or the individual shall also be punished by a fine under the relevant provisions: Provided, That this shall not apply where the corporation or the individual has not neglected to pay due attention and supervision concerning the relevant business in order to prevent such violation.
[This Article Wholly Amended by Act No. 10314, May 25, 2010]

Article 32 (Administrative Fines)

(1) Any of the following persons shall be punished by an administrative fine not exceeding three million won: <Amended by Act No. 11464, Jun. 1, 2012; Act No. 12522, Mar. 24, 2014>
1. A person who finds out the fact that the soil has been contaminated but fails to report such fact in violation of Article 11 (1);
2. A person who fails to submit the soil transfer form or enter information in the form into the contaminated soil information system in violation of Article 15-3 (6);

3. A person who refuses, obstructs or avoids the entry and inspection by a public official under Article 26-2 (1) or (3);

(2) Any of the following persons shall be punished by an administrative fine not exceeding two million won: <Amended by Act No. 11464, Jun. 1, 2012>

1. A person who obstructs or rejects activities of the relevant public officials or staff of a soil-related specialized agency pursuant to Article 8 (5) without any justifiable grounds;
2. A person who fails to execute an order to conduct the detailed soil survey pursuant to Article 11 (3), 14 (1) or 15 (1);
3. A person who fails to promptly inform the Mayor/Do Governor or the head of a Si/Gun/Gu of the results of the detailed soil survey in violation of Article 11 (4), 14 (2) or 15 (2);
4. A person who fails to report amendments (including closedown of facilities) in violation of the latter part of Article 12 (1);
5. A person who has failed to undergo the inspection or to keep the results of the inspection pursuant to Article 13 (1) or (4);
5-2. A person who fails to report the results of the soil contamination inspection to the Governor of a Special Self-Governing Province or the head of a Si/Gun/Gu and the head of the competent fire station in violation of Article 13 (4);
5-3. A person who ships out and purifies the contaminated soil without receiving notification of appropriateness on a contaminated soil ship-out and purification plan in violation of Article 15-3 (4);
5-4. A person who submits or fills out the soil transfer form under Article 15-3 (6) falsely or poorly;
6. A person who fails to submit a plan for purifying the contaminated soil or the amended plan for purifying the contaminated soil pursuant to Article 15-6 (2);
7. A person who refuses, obstructs or evades the guidance and supervision pursuant to Article 19 (1);
8. A person who dumps specific substances harmful to water quality, wastes, toxic chemicals, sewage, excreta or livestock excreta in the area requiring countermeasures in violation of Article 21 (1);
9. A person who fails to obtain the changed designation pursuant to the latter part of Article 23-2 (2);
10. A person who fails to observe matters pursuant to Articles 23-2 (5) and 23-9 (3);
11. A person who fails to register the changed matters pursuant to the latter part of Article 23-7 (1);
11-2. A person who fails to file a report in violation of Article 23-12 (3);
12. A person who fails to receiving training or who prevents another person from receiving training in violation of Article 23-14 (1) or (2);
13. A person who fails to make a report or submit materials or has made a false report or submitted false materials in violation of Article 26-2 (1) or (2).

(3) The Minister of Environment, the Mayor/Do Governor, or the head of a Si/Gun/Gu shall impose and collect administrative fines under paragraphs (1) and (2), as prescribed by Presidential Decree.

[This Article Wholly Amended by Act No. 10314, May 25, 2010]

ADDENDA

(1) (Enforcement Date) This Act shall enter into force one year following the date of its promulgation.

(2) (Transitional Measures concerning Installer of Facilities Inducing Soil Contamination) The person who is in the process of installing the facilities inducing soil contamination (including those who operates such the facilities) at the time of the enforcement of this Act, shall make a report to the Mayor/Do Governor with respect to the matters as prescribed in Article 11 (1), and take preventive measures against soil contamination as prescribed in Article 11 (2), within six months after the enforcement date of this Act.

ADDENDUM <Act No. 5454, Dec. 13, 1997>

This Act shall enter into force on January 1, 1998. (Proviso Omitted.)

ADDENDUM <Act No. 5878, Feb. 8, 1999>

This Act shall enter into force on the date of its promulgation.

ADDENDA <Act No. 6452, Mar. 28, 2001>

Article 1 (Enforcement Date)

This Act shall enter into force on January 1, 2002.

Article 2 (Transitional Measures for Result of Regular Measuring)

The result of regular measuring of the measurement networks installed by the Mayor/Do Governor under the previous provisions at the time of enforcement of this Act shall be deemed to be the result of investigation of actual conditions of soil contamination under the amendments to Article 5 (2).

Article 3 (Transitional Measures for Facilities Inducing Soil Contamination)

Activities of reports, etc. filed with the Mayor/Do Governor and activities of corrective orders, etc. by the Mayor/Do Governor in connection with the facilities inducing soil contamination under the previous provisions at the time of enforcement of this Act shall be deemed to be activities against the Mayor/Do Governor or activities by the Mayor/Do Governor in connection with the facilities inducing a specific soil contamination under this Act.

Article 4 (Transitional Measures for Soil-Related Specialized Agency)

The soil-related specialized agency under the previous provisions at the time of enforcement of this Act shall be deemed to be the soil-related specialized agency designated under the amendments to Article 23-2.

Article 5 (Transitional Measures for Penalty Provisions)

In applying penalty provisions to activities committed prior to the enforcement of this Act, the previous provisions shall govern.

Article 6 Omitted.

ADDENDA <Act No. 6627, Jan. 26, 2002>

Article 1 (Enforcement Date)

This Act shall enter into force three months after the date of its promulgation.

Articles 2 through 7 Omitted.

ADDENDA <Act No. 6656, Feb. 4, 2002>

Article 1 (Enforcement Date)

This Act shall enter into force on January 1, 2003.

Articles 2 through 12 Omitted.

ADDENDA <Act No. 6846, Dec. 30, 2002>

Article 1 (Enforcement Date)

This Act shall enter into force six months after the date of its promulgation.

Articles 2 through 5 Omitted.

ADDENDA <Act No. 6893, May 29, 2003>

Article 1 (Enforcement Date)

This Act shall enter into force one year after the date of its promulgation.

Articles 2 through 6 Omitted.

ADDENDA<Act No. 7291, Dec. 31, 2004>

Article 1 (Enforcement Date)

This Act shall enter into force six months after the date of its promulgation: Provided, That the amended provisions of Articles 15-3 (2) and (3), 15-6, 23-2 (1) 1 (d) and (e) and 23-14 shall enter into force one year after the date of its promulgation.

Article 2 (Applicability concerning Soil Purification Work)

The amended provisions of Article 15-3 (2), Article 15-6 and Article 23-9 (2) shall apply to the soil purification work that is performed on and after the enforcement of this Act.

Article 3 (Applicability concerning Administrative Disposition Taken to Soil-Related Specialized Agency)

In taking an administrative disposition provided in the amended provisions of subparagraph 7 of Article 23-6 to anyone who is designated as the soil-related specialized agency at the time of the enforcement of this Act, the date on which its business commences shall be deemed the date on which this Act enters into force.

Article 4 (Transitional Measures concerning Areas Requiring Countermeasures)

The development and implementation of any countermeasure plan, restrictions on the use of lands, etc. and restrictions on any act for and in the area that is designated as an area requiring countermeasures pursuant to the previous provisions at the time of the enforcement of this Act shall be governed by the previous provisions, notwithstanding the amended provisions of Articles 18, 20 and 21.

Article 5 (Transitional Measures concerning Ground of Disqualification of Soil-Related Specialized Agency)

The amended provisions of subparagraph 4 or 5 of Article 23-3 shall not apply to anyone who is designated as the soil-related specialized agency at the time of the enforcement of this Act for 2 years from the date on which this Act enters into force.

Article 6 (Transitional Measures concerning Registration of Soil Purification Business)

Anyone who runs the soil purification business at the time of the enforcement of this Act shall have his/her business registered with the Minister of Environment within 3 months from the date on which this Acts enters into force in accordance with the amended provisions of Article 23-7.

Article 7 Omitted.

ADDENDA <Act No. 7428, Mar. 31, 2005>

Article 1 (Enforcement Date)

This Act shall enter into force one year after the date of its promulgation.
Articles 2 through 6 Omitted.
ADDENDA <Act No. 7459, Mar. 31, 2005>
Article 1 (Enforcement Date)
This Act shall enter into force one year after the date of its promulgation.
Articles 2 through 6 Omitted.
ADDENDA <Act No. 8010, Sep. 27, 2006>
Article 1 (Enforcement Date)
This Act shall enter into force one year after the date of its promulgation.
Articles 2 through 9 Omitted.
ADDENDA <Act No. 8014, Sep. 27, 2006>
Article 1 (Enforcement Date)
This Act shall enter into force one year after the date of its promulgation.
Articles 2 through 11 Omitted.
ADDENDA <Act No. 8038, Oct. 4, 2006>
Article 1 (Enforcement Date)
This Act shall enter into force one year after the date of its promulgation. (Proviso Omitted.)
Articles 2 through 11 Omitted.
ADDENDA <Act No. 8352, Apr. 11, 2007>
Article 1 (Enforcement Date)
This Act shall enter into force on the date of its promulgation. (Proviso Omitted.)
Articles 2 through 16 Omitted.
ADDENDA <Act No. 8466, May 17, 2007>
Article 1 (Enforcement Date)
This Act shall enter into force six months after the date of its promulgation.
Articles 2 through 5 Omitted.
ADDENDUM <Act No. 8469, May 17, 2007>
This Act shall enter into force six months after the date of its promulgation.
ADDENDA <Act No. 10219, Mar. 31, 2010>
Article 1 (Enforcement Date)
This Act shall enter into force on January 1, 2011.
Articles 2 through 12 Omitted.
ADDENDA <Act No. 10314, May 25, 2010>
(1) (Enforcement Date) This Act shall enter into force on the date of its promulgation.
(2) (Transitional Measures) The previous penalty provisions shall apply to the acts committed before this Act enters into force.
ADDENDA<Act No. 10551, Apr. 5, 2011>
Article 1 (Enforcement Date)
This Act shall enter into force from the date on which six months lapse after the promulgation of this Act.
Article 2 (Applicability concerning Revocation of Registration)
The amended provisions of Article 23-10 shall apply from the revocation of registration or the case where grounds for suspension of business take place for the first time after the enforcement of this Act.
Article 3 (Transitional Measures concerning Designation of Soil Environment Assessment Agency)
Any person who is designated as a soil contamination survey agency pursuant to the previous provisions of Article 23-2 (1) 1 at the time this Act enters into force may perform business of the agent to assess soil environment pursuant to the amended provisions of Article 23-2 (1) 3: Provided, That he/she shall obtain designation of the soil environment assessment agency within one year after the enforcement of this Act, meeting the requirements of facilities, equipment, and technical capability pursuant to the part other than each subparagraph of Article 23-2 (1).
ADDENDA <Act No. 11461, Jun. 1, 2012>
Article 1 (Enforcement Date)
This Act shall enter into force three months after the date of its promulgation.
Articles 2 through 10 Omitted.
ADDENDA <Act No. 11464, Jun. 1, 2012>
Article 1 (Enforcement Date)
This Act shall enter into force one year after the date of its promulgation.

Articles 2 (Applicability concerning Ship-Out and Purification of Contaminated Soil)
The amended provisions of Article 15-3 shall apply to a person who purifies contaminated soil by shipping it to other facilities on and after the enforcement of this Act.
Article 3 (General Transitional Measures concerning Dispositions, etc.)
Any act of, or toward, an administrative agency pursuant to the previous provisions at the time this Act enters into force shall be deemed an act of, or toward, an administrative agency pursuant to the corresponding provisions of this Act.
Article 4 (Transitional Measures concerning Change of Person Having Authority to Designate Soil Contamination Survey Agencies and Leakage Inspection Agencies)
Any person who has been designated as a soil contamination survey agency or a leakage inspection agency pursuant to the previous provisions of this Act at the time of this Act enters into force shall be deemed to have been designated by the Mayor/Do Governor pursuant to the amended provisions of Article 23-2 (2).
Article 5 (Transitional Measures concerning Change of Authority for Registration of Soil Purification Business)
Any person whose soil purification business has been registered pursuant to the previous provisions of this Act at the time of this Act enters into force shall be deemed that his/her soil purification business has been registered with the Mayor/Do Governor pursuant to the amended provisions of Article 23-7.
ADDENDA <Act No. 11862, Jun. 4, 2013>
Article 1 (Enforcement Date)
This Act shall enter into force on January 1, 2015.
Articles 2 through 12 Omitted.
ADDENDUM <Act No. 12522, Mar. 24, 2014>
This Act shall enter into force one year after the date of its promulgation: Provided, That the amended provisions of Articles 28 through 30 shall enter into force on the date of its promulgation.
ADDENDA <Act No. 13169, Feb. 3, 2015>
Article 1 (Enforcement Date)
This Act shall enter into force on the date of its promulgation.
Article 2 (Transitional Measures concerning Disqualifications of an Incompetent, etc.)
A person under adult guardianship or a person under limited guardianship prescribed in the amended provisions of Subparagraph 1 of Article 23-3 shall be deemed to have included a person for whom the effect of the sentence of incompetence or quasi-incompetence is maintained as provided for in Article 2 of the Addenda of a partial amended Act No. 10429 of the Civil Act.
ADDENDUM <Act No. 13533, Dec. 1, 2015>
This Act shall enter into force on the date of its promulgation: Provided, That the amended provisions of Article 12-2 shall enter into force six months after its promulgation.

Annex 582

Federal Law on Environmental Protection, No. 7-FZ, 10 January 2002

Federal Law on Environmental Protection No. 7-FZ of January 10, 2002

Adopted by the State Duma December 20, 2001
Approved by the Federation Council December 26, 2001

Chapter I. General Provisions (Articles 1-4)
Chapter II. The Fundamentals of Environmental Protection Administration (Articles 5-10)
Chapter III. The Rights and Duties of Citizens, Public and Other Non-Commercial Associations in the Field of Environmental Protection (Articles 11-13)
Chapter IV. Economic Regulation in the Field of Environmental Protection (Articles 14-18)
Chapter V. Setting Norms in the Field of Environmental Protection (Articles 19-31)
Chapter VI. Assessment of Effects on the Environment and Ecological Expert Examination (Articles 32-33)
Chapter VII. The Environmental Protection Provisions Applicable in the Case of Pursuance of Economic and Other Activities (Articles 34-56)
Chapter VIII. Ecological Disaster Zones, Emergency Situation Zones (Article 57)
Chapter IX. The Natural Facilities under Special Protection (Articles 58-62)
Chapter X. The State Environmental Monitoring (State Ecological Monitoring) (Article 63)
Chapter XI. Control in the Field of Environmental Protection (Ecological Control) (Articles 64-69)
Chapter XII. Scientific Research in the Field of Environmental Protection (Article 70)
Chapter XIII. The Fundamentals of Shaping Up an Ecological Culture (Articles 71-74)
Chapter XIV. Liabilities for a Breach of Environmental Protection Legislation and Settlement of Disputes in the Field of Environmental Protection (Articles 75-80)
Chapter XV. International Co-Operation in the Field of Environmental Protection (81-82)
Chapter XVI. Conclusive Provisions (83-84)

In accordance with the Constitution of the Russian Federation everybody has a right to a favourable environment, everybody shall preserve the nature and the environment, carefully deal with the natural wealth being a basis for the sustainable development, life and activities of the peoples inhabiting the territory of the Russian Federation.

The present Federal Law lays down a legal foundation for the state policy in the field of environmental protection as ensuring a balanced solution for socio-economic tasks, preservation of a favourable environment, biological diversity and natural resources for the purpose of meeting the needs of the present and future generations, enhancing law and order in

the field of environmental protection as well as ecological safety.

The present Federal Law governs relations in the field of interaction of the society and the nature occurring in economic and other activities affecting the natural environment as a most important component of the environment as a whole being the foundation of life on the Earth, within the territory of the Russian Federation and on the continental shelf and in the exclusive economic zone of the Russian Federation.

Chapter I. General Provisions

Article 1. Basic Terms

The following basic terms are used in the present Federal Law:
"the environment" is an aggregate of components of natural environment, natural and natural - man - made facilities and also man - made facilities;
"natural environment (hereinafter also referred to as "the nature")" is an aggregate of components of natural environment, natural and natural - man - made facilities;
"components of natural environment" is the ground, sub-soil, soils, surface and underground waters, atmospheric air, vegetation, animal world and other organisms as also the atmospheric ozone layer and the outer space adjacent to the Earth ensuring, in their aggregate, favourable conditions for the pursuance of life on the Earth;
"natural facility" is a natural ecological system, natural landscape and the components thereof that retain their natural properties;
"natural-man-made facility" is a natural facility that has been modified as the result of economic and other activity and/or a man made facility having the properties of a natural facility and having recreational or preservation significance;
"man-made facility" is a facility created by the man for the purpose of catering to the man's social needs and not having the properties of a natural facility;
"natural ecological system" is an objectively existing portion of the natural environment that has space/territorial boundaries and where live (plants, animals and other organisms) and non-live components interact as a single functional entity and are inter-related by means of exchange of substances and energy;
"natural complex" is a complex of functionally and naturally

inter-related natural facilities put together with regard to geographical and other relevant features;

"natural landscape" is a territory that has not undergone modification as a result of economic and other activity and which is characterized by a combination of specific types of terrain, soil, vegetation that have shaped up in uniform climatic conditions;

"environmental protection" is the activity of governmental bodies of the Russian Federation, governmental bodies of Russian regions, local government bodies, public and other non-commercial associations, legal entities and natural persons aimed at preserving and restoring natural environment, rational use and reproduction of natural resources, prevention of a negative effect of economic and other activities on the environment and elimination of the consequences of such effects (hereinafter also referred to as "natural environment preservation activity");

"the quality of the environment" is the condition of the environment characterized by physical, chemical, biological and other indicators and/or combination thereof;

"favourable environment" is an environment the quality of which ensures a stable operation of natural ecological systems, natural and natural-man made facilities;

"negative effect on the environment" is an effect of economic and other activity the consequences of which lead to a negative change in the quality of the environment;

"natural resources" means natural environment components, natural facilities and natural - man - made facilities which are or can be used in economic and other activity as sources of energy, production products and consumption items and have a consumer value;

"the use of natural resources" is exploitation of natural resources, involvement of such resources in economic relations, in particular, all types of effect exerted thereon in the course of economic and other activities;

"environmental pollution" is the putting of a substance and/or energy into the environment when the properties, location or quantity of the substance cause a negative effect on the environment;

"pollutant" is a substance or a compound the quantity and/or

concentration of which exceed the rates set for chemical substances, in particular, radioactive ones, other substances and micro-organisms and exert a negative effect on the environment;

"environmental norms" (hereinafter also referred to as "natural preservation norms") is established norms of the quantity of the environment and admissible effects thereon the observance of which ensures a stable operation of natural ecological systems and preservation of Ью1орса1 diversity;

"environment quality norms" is norms established in compliance with physical, chemical, biological and other indicators for the purpose of assessing the condition of the environment and the observance whereof ensures a favourable environment;

"norms of admissible effects on the environment" means norms established in compliance with the indicators of effects exerted by economic and other activities on the environment and the observance of which ensures the observance of the environment quality norms;

"norms of admissible man - made load on the environment" means norms established in compliance with the value of admissible aggregate effect of all sources on the environment and/or specific components of natural environment within specific territories and/or water areas the observance of which ensures a stable operation natural ecological systems and preservation of biological diversity;

"norms of admissible emission and dumping of chemical substances, in particular, radioactive, other substances and micro-organisms" (hereinafter referred also as "norms of admissible substance and micro-organism emission and dumping") means norms established for agents pursuing economic and other activity, in compliance with the weight of chemical substances, in particular, radioactive, other substances and micro-organisms admissible for getting into the environment from stationary, movable and other sources in a specific operating mode and with due regard to the technological norms and the observance of which ensures the observance of environmental quality norms;

"technological norm" is a norm of admissible emission or dumping of substances and micro-organisms that is set for stationary, movable and other sources, technological processes, equipment and reflect the admissible weight of emissions and dumping of

substances and micro-organisms into the environment per unit of output product;

"norms of maximum admissible concentration of chemical substances, in particular, radioactive, other substances and micro-organisms" (hereinafter also referred to as "maximum admissible concentration norms") means norms established in compliance with the indicators of maximum admissible content of chemical substances, in particular, radioactive, other substances and micro-organisms in the environment the non-observance of which can leads to environmental pollution, degradation of natural ecological systems;

"norms of admissible physical effects" means norms established in compliance with the levels of admissible effects of physical factors on the environment and the observance of which ensures the observance of environment quality norms;

"maximum limits on pollutant and micro-organism emissions and dumping" (hereinafter also referred to as "maximum emission and dumping limits") means limits on the emission and dumping of pollutants and micro-organisms into the environment set for the term of environmental protection measures, in particular introduction of the best available technologies, for the purpose of achieving norms in the field of environmental protection;

"assessment of effects on the environment" is a type of the activity of discovering, analysing and recording direct, indirect and other consequences to the environment caused by planned economic and other activities, for the purposes of making a decision as to the possibility/impossibility of their pursuance;

"environmental monitoring (ecological monitoring)" is a comprehensive system of observing the condition of the environment, assessing and forecasting the changes in the condition of the environment due to the effect of natural and man-made factors;

"state environmental monitoring (state ecological monitoring)" is the environmental monitoring performed by the governmental bodies of the Russian Federation and the governmental bodies ой4вяап regions;

"environmental control (ecological control)" is a system of measures aimed at preventing, discovering and stopping breaches of environmental protection law, ensuring the observance of

standards, in particular, norms and regulatory documents in the field of environmental protection by economic and other agents;
"environmental protection standards" (hereinafter also referred to as "nature preservation standards") means the compulsory conditions, limitations or a combination thereof established by laws, other regulatory legal acts, nature preservation norms, state standards and other regulatory environmental protection documents as applicable to economic and other activities;
"ecological audit" is an independent, comprehensive, documented assessment of observance of environmental protection standards, in particular, norms and regulatory documents, the provisions of international standards and preparation of recommendations for improvement of such activities;
"the best existing technology" is a technology based on the latest science and technology achievements aimed at reducing negative effects on the environment which has an established practical application term with due regard to economic and social factors;
"harm to the environment" is a negative change in the environment resulting from a pollution thereof that has ensued a degradation of natural ecological systems and depletion of natural resources;
"ecological risk" is the probability of onset of an event having a negative effect on the natural environment and caused by a negative effect of economic and other activities, natural and man made emergencies;
"ecological safety" is a condition when the natural environment and the vital interests of the human being are safeguarded against a possible negative effect of economic and other activities, natural and man-made emergencies as well as their aftermath.

Article 2. Environmental Protection Legislation

1. Environmental protection legislation is based on the Constitution of the Russian Federation and its is composed of the present Federal Law, the other federal laws and also other regulatory acts of the Russian Federation, laws and other regulatory legal acts of Russian regions adopted pursuant thereto.
2. The present Federal Law is effective throughout the whole

territory of the Russian Federation.

3. The present Federal Law is effective on the continental shelf and in the exclusive economic zone of the Russian Federation in keeping with the norms of international law and federal laws and it is aimed at preserving the sea environment.

4. The relations emerging in the filed of environmental protection as the basis of life and activity of the peoples inhabiting the territory of the Russian Federation, for the purpose of ensuring their right to a favourable environment shall be governed by the international treaties of the Russian Federation, the present Federal Law, other federal laws and other regulatory legal acts of the Russian Federation, laws and other regulatory legal acts of Russian regions.

5. The relations emerging in the field of protection and rational use of natural resources, their preservation and restoration shall be governed by the international treaties of the Russian Federation, the land, water, forestry legislation, the legislation on sub-soil, animal world, other legislation in the field of environmental protection and use of natural wealth.

6. The relations emerging in the field of environmental protection, to the extent it is required for the purposes of ensuring the sanitary and epidemiological well being of the public shall be governed by the legislation on the sanitary and epidemiological well being of the public and the legislation on health protection, other legislation aimed at ensuring an environment favourable for the human being.

Article 3. The Basic Principles of Environmental Protection

The economic and other activities of the governmental bodies of the Russian Federation, the governmental bodies of Russian regions, local government bodies, legal entities and natural persons that exert effects on the environment shall be pursued on the basis of the below principles:

- the observance of the human right to a favourable environment;
- the provision of favourable conditions for the activities of the human being;
- a science based combination of ecological, economic and social interests of the human being, the society and the state for the purpose of ensuring a sustained development and a favourable environment;

- the protection, reproduction and rational use of natural resources as prerequisites for ensuring a favourable environment and ecological safety;
- the responsibility of the governmental bodies of the Russian Federation, the governmental bodies of Russian regions, local government bodies for the provision of a favourable environment and ecological safety on relevant territories;
- the use of natural wealth for a pay and the reimbursement of a harm inflicted to the environment;
- the independence of environmental protection control;
- the presumption of ecological threat of a planned economic and other activities;
- the compulsory nature of assessment of effects on the environment in case when decisions are made as to the pursuance of an economic or other activity;
- the compulsory nature of the state ecological expert examination of project designs and other documentation stating feasibility of an economic and other activity capable of exerting a negative effect on the environment, creating a threat to citizens' life, health and property;
- the keeping of record of territories' natural and socio-economic peculiarities ш the planning and pursuance of economic and other activities;
- the priority of preservation of natural ecological systems, natural landscapes and natural complexes;
- the admissible extent of effects on the natural environment of economic and other activities from the perspective of environmental protection standards;
- arrangement for a reduction of the negative effect of an economic or another activity on the environment in keeping with environmental protection norms, through the use of the best existing technologies with due regard to economic and social factors;
- the compulsory nature of the participation in environmental protection of the governmental bodies of the Russian Federation, the governmental bodies of Russian regions, local government bodies, public and other non-commercial associations, legal entities and natural persons;
- the preservation of biological diversity;
- arrangement for the pursuance of integrated and individual

approaches to the setting of the environmental protection standards applicable to economic and other agents pursuing economic or other activities or planning to pursue them;
- the prohibition of an economic and another activity the environmental consequences of which cannot be predicted and of the implementation of a project capable of leading to a degradation of natural ecological systems, a change in and/or destruction of the genetic stock of plants, animals and other organisms, depletion of natural resources and other negative changes in the environment;
- the observance of everybody' s right of access to reliable information on the condition of the environment and also the participation of citizens in the decision making concerning their right to a favourable environment, in compliance with law;
- responsibility for a breach of the environmental protection legislation;
- the organization and development of a system of ecological education, the fostering and shaping up of an ecological culture;
- the participation of citizens, public and other non-commercial associations in the resolution of environmental protection problems;
- the international co-operation of the Russian Federation in the field of environmental protection.

Article 4. Environmental Protection Facilities

1. The facilities being the subject matter of environmental protection against pollution, depletion, degradation, damage, destruction and other negative effects resulting from economic and another activity are as follows:
- ground, sub-soil, soil;
- surface and underground waters;
- forests and other vegetation, animals and other organisms and the genetic stock thereof;
- the atmospheric air, the atmosphere ozone layer and the outer space adjacent to the Earth.

2. The following shall be subject to priority protection: the natural ecological systems, natural landscapes and natural complexes which have not been exposed to man-made effects.

3. The following shall be subject to special protection: the

facilities included in the List of the World Cultural Heritage and the List of the World Nature Heritage, state natural sanctuaries, in particular, biosphere, state natural game reserves, nature monuments, national, natural and dendrological parks, botanical gardens, health rehabilitation areas and health resorts, other natural complexes, the original inhabited environment and the areas of traditional habitation and economic activity of small- numbered indigenous peoples of the Russian Federation, the facilities of special nature preservation, scientific, history/culture, aesthetic, recreational, health rehabilitation and other valuable significance, the continental shelf and the exclusive economic zone of the Russian Federation and also the rare or extinction-threatened soils, forests and other vegetation, animals and other organisms and their habitats.

On health rehabilitation areas and health resorts see also:
Federal Law No. 33-FZ of March 14, 1995,
federal Law No. 26-FZ of February 23, 1995

Chapter II. The Fundamentals of Environmental Protection Administration

Article 5. The Powers of Governmental Bodies of the Russian Federation ш the Field of Relations Connected with Environmental Protection

Below are the powers of the governmental bodies of the Russian Federation in the field of relations connected with environmental protection:

- arranging for the pursuance of federal policy in the sphere of ecological development of other Russian Federation;
- elaborating and publishing federal laws and other regulatory legal acts in the field of environmental protection and control over the implementation thereof;
- elaborating, approving and bringing about the implementation of federal programs in the field of ecological development of the Russian Federation;
- announcing and establishing the legal status and regime of ecological disaster zones on the territory of the Russian Federation;
- co-ordinating and implementing environmental protection measures in ecological disaster zones;

- establishing a procedure for performance of state environmental monitoring (state ecological monitoring), forming a state system for observation over the condition of the environment and keeping this system operational;
- establishing a procedure for exercising state control in the field of environmental protection, in particular, at economic and other activity facilities, irrespective of their form of ownership, under the administration of the Russian Federation, facilities contributing to trans border environmental pollution and exerting negative effects on the environment within the territories of two and more Russian regions (federal state ecological control);
- designating the federal executive bodies responsible for state administration in environmental protection sphere;
- arranging for the protection of the environment, in particular, of sea environment on the continental shelf and in the exclusive economic zone of the Russian Federation;
- establishing a procedure for handling radioactive waste and hazardous material, exercising control over radioactive safety;
- preparing and distributing the annual state report on environmental condition and environmental protection;
- setting standards in the field of environmental protection, developing and approving environmental protection norms, state standards and other regulatory documents;
- establishing a procedure for determining the rate of payment for pollutant emissions and dumping into the environment, waste disposal and other types of negative effect on the environment;
- organizing and conducting state ecological expert examination;
- interaction with Russian regions on the matters of environmental protection;
- establishing a procedure for limiting, suspending and prohibiting economic and other activities pursued in breach of environmental protection legislation, and implementing them;
- suing for damages in the case of infliction of harm to the environment as a result of a breach of the environmental protection legislation;
- organizing and developing the ecological education system, shaping up the ecological culture providing the public with reliable information on the state of the environment;
- forming specially protected natural territories of federal

significance, world heritage nature facilities, managing the nature sanctuaries stock, keeping the Red Book of the Russian Federation;
- keeping state records of facilities exerting negative effects on the environment, classifying them depending on the level and scope of negative effect on the environment;
- keeping state records of specially protected nature territories, in particular, nature complexes and facilities as well as natural resources with due regard of their ecological significance;
- performing an economic assessment of the effects of economic and other activities on the environment;
- performing an economic assessment of nature and nature man made facilities; establishing a procedure for licensing specific types of activity in the field of environmental protection and implementing it;
- carrying on the international co-operation of the Russian Federation in the field of environmental protection;
- exercising the other powers specified in federal laws and other regulatory legal acts of the Russian Federation.

Article 6. The Powers of Governmental Bodies of Russian Regions ш the Sphere of Relations Connected with Environmental Protection

Below are the powers of governmental bodies of Russian regions in the sphere of relations connected with environmental protection:
- setting out the main guidelines for environmental protection on the territories of Russian regions with due regard to geographical, natural, socio-economic and other peculiarities of the regions;
- participating in the elaboration of federal policy in the field of ecological development of the Russian Federation and relevant programs;
- implementing the federal policy in the field of ecological development of the Russian Federation on the territories of Russian regions with due regard to their geographical, natural, socio-economic and other peculiarities;
- elaborating and enacting laws and other regulatory legal acts of Russian regions in the field of environmental protection with

due regard to the geographical, natural, socio- economic and other peculiarities of the Russian regions; monitoring the implementation;

- elaborating and approving environmental protection norms, state standards and other regulatory documents containing specific provisions, regulations and rules not below those set at the federal level;
- elaborating, approving and implementing environmental protection target programs for Russian regions;
- taking nature preservation and other measures for improvement of environmental conditions in ecological disaster zones on the territories of Russian regions;
- organizing and implementing, in the manner established by Russian law, a state environmental monitoring (state ecological monitoring), forming and arranging for the operation of territorial environmental observation systems on the territories of Russian regions;
- exercising state control in the filed of environmental protection (state ecological control) over the economic and other agents, irrespective of their forms of ownership, located on the territories of Russian regions, except for economic and other agents subject to federal state ecological control;
- performing an economic assessment of the effects of economic and other activities on the environment;
- holding persons at fault accountable under administrative and other law;
- suing for damages relating to a harm inflicted to the environment as a result of a breach of the environmental protection legislation;
- forming specially protected natural territories of regional significance, exercising administration and control in the field of protection and use of such territories;
- organizing and developing an ecological education system and shaping up ecological culture on the territories of Russian regions;
- limiting, suspending and/or prohibiting economic and other activities performed in breach of the environmental protection legislation, within the scope of their powers on the territories of Russian regions;
- providing the public with reliable information on

environmental conditions on the territories of Russian regions;
- keeping record of facilities and sources of negative effects on the environment on the territories of Russian regions;
- keeping the Red Book of a Russian region; carrying on ecological certification;
- regulating other issues in the field of environment protection within the scope of their powers.

Article 7. The Powers of Local Government Bodies ш the Field of Relations Connected with Environmental Protection

The powers of local government bodies in the field of relations connected with environmental protection shall be determined in compliance with federal laws.

Article 8. The Executive Governmental Bodies Responsible for State Administration in the Field of Environmental Protection

1. State administration in the field of environmental protection shall be performed by the federal executive governmental bodies authorized in the manner established by the Constitution of the Russian Federation and the Federal Constitutional Law on the Government of the Russian Federation.
2. The governmental bodies of Russian regions responsible for state administration in the field of environmental protection shall be designated by the Russian regions.

On the specifically-authorized state bodies of the Russian Federation in the field of environmental protection see Decision of the Government of the Russian Federation No. 1594 of December 30, 1998

See Regulations on the Co-Ordination Council of Specifically Authorized State Bodies of the Russian Federation in the Field of Environmental Protection endorsed by Order of the State Ecological Committee of the Russian Federation No. 338 of May 12, 2000

Article 9. Delineation of Powers in the Field of Relations Connected with Environmental Protection between the Governmental Bodies of the Russian Federation and the Governmental Bodies of Russian Regions

1. Delineation of powers in the field of relations connected with environmental protection between the governmental bodies of

the Russian Federation and the governmental bodies of Russian regions shall be effected by the Constitution of the Russian Federation and federal laws as well as agreements on delineation of cognisance and powers between the governmental bodies of the Russian Federation and the governmental bodies of Russian regions.

2. Agreements between federal executive governmental bodies and executive governmental bodies of Russian regions on the transfer of a portion of powers in the field of relations connected with environmental protection, in particular, in the field of a state ecological expert examination of the facilities subject to compulsory state ecological examination conducted on the level of Russian regions shall be concluded in compliance with the Constitution of the Russian Federation and federal laws.

Article 10. The Administration in the Field of Environmental Protection Performed by Local Government Bodies

Local government bodies shall perform administration in the field of environmental protection ш compliance with the present Federal Law and other regulatory legal acts of the Russian Federation, laws and other regulatory legal acts of Russian regions, the charters of municipal entities and regulatory legal acts of local government bodies.

Chapter III. The Rights and Duties of Citizens, Public and Other Non-Commercial Associations ш the Field of Environmental Protection

Article 11. The Rights and Duties of Citizens ш the Field of Environmental Protection

1. Each citizen is entitled to a favourable environment, its protection against negative effects caused by economic and other activities, natural and man made emergencies, to a reliable information on the condition of the environment and to reimbursement of a harm. inflicted to the environment.

According to the Constitution of the Russian Federation everybody is entitled to a favourable environment, reliable information on the condition thereof and to reimbursement for a harm inflicted to one' s health or property by an ecological offence

2. Citizens are entitled to:

- form public associations, funds and other non-commercial organizations carrying on their activities in the field of environmental protection;
- file applications with governmental bodies of the Russian Federation, governmental bodies of Russian regions, local government bodies, other organizations and officials asking for timely, complete and reliable information on environmental conditions in the area where they reside and on the measures taken for the. protection thereof;
- take part in meetings, rallies, demonstrations, marches and picketing, collection of signatures for petitions, referendums on environmental protection issues and other actions not conflicting with Russian law;
- put forward proposals for a public ecological expert examination and take part in the conduct thereof in the established manner;
provide assistance to governmental bodies of the Russian Federation, governmental bodies of Russian regions, local government bodies in the resolution of environmental protection issues;
- file the following with governmental bodies of the Russian Federation, governmental bodies of Russian regions, local government bodies and other organizations: complaints, applications and proposals on issues concerning environmental protection, negative effects on the environment and to obtain timely and well-substantiated replies;
- file complaints with a court claiming reimbursement for a harm inflicted to the environment;
- exercise the other rights envisaged by the legislation.
3. Citizens shall:
- preserve the nature and the environment;
- display a careful attitude to the nature and natural wealth;
observe other legislative provisions.

Article 12. The Rights and Duties of Public and Other Non-Commercial Associations Pursuing Their Activities in the Field of Environmental Protection

1. The public and other non-commercial associations pursuing their activities in the field of environmental protections are entitled to:

- elaborate, disseminate information about and implement in the established manner environmental protection programs, protect the rights and lawful interests of citizens in environmental protection sphere, recruit citizens on voluntary basis for performing environmental protection activity;
- out of their own funds and raised funds, pursue activities and disseminate information about such activities in the field of environmental protection, reproduction of natural resources, ensuring ecological safety;
- provide assistance to governmental bodies of the Russian Federation, governmental bodies of Russian regions, local government bodies ш the resolution of environmental protection issues;
- organize meetings, rallies, demonstrations, marches and picketing, collection of signatures for petitions and take part in them under Russian law, 1ay down proposals for referendums on environmental protection issues and for discussions on project designs concerning environmental protection;
- ask governmental bodies of the Russian Federation, governmental bodies of Russian regions, local government bodies and other organizations and officials for timely, complete and reliable information on environmental conditions, environmental protection measures, the circumstances and facts of economic and other activities that threaten the environment and citizens' life, health and property;
- take part, in the established manner, in the making of economic and other decisions capable of exerting a negative effect on the environment, citizens' life, health and property;
- file the following with governmental bodies of the Russian Federation, governmental bodies of Russian regions, local government bodies and other organizations: complaints, applications and proposals on issues concerning environmental protection, negative effects on the environment and to obtain timely and well-substantiated replies;
- organize and hold in the established manner hearings on issues concerning design, location of facilities the economic and other activity whereof is capable of inflicting a harm to the environment, threaten citizens' life, health and property;
- organize and conduct in the established manner a public ecological examination;

- recommend their representatives for taking part in a stat ecological expert examination; file the following with governmental bodies of the Russian Federation, governmental bodies of Russian regions, local government bodies, a court: petitions for repealing decisions on design, location, construction, modification, operation of facilities the economic and other activity whereof is capable of exerting a negative effect on the environment, petitions for suspending and terminating economic and other activities exerting a negative effect on the environment;
- file complaints with a court claiming reimbursement of a harm inflicted to the environment;
- exercise the other rights envisaged by the legislation.
2. While they pursue their activities in the filed of environmental protection public and other non-commercial associations shall observe environmental protection provisions.

Article 13. The System of State Measures for Ensuring the Right to a Favourable Environment

1. The governmental bodies of the Russian Federation, governmental bodies of Russian regions, local government bodies and officials shall provide assistance to citizens, public and other non-commercial associations in the implementation of their rights in the field of environmental protection.
2. In the case of deployment of facilities the economic and other activities of which can harm the environment the decision whereby their location is determined shall be taken with due regard to the opinion of the public or results of a referendum.
3. Officials obstructing citizens, public and other non-commercial associations in the pursuance of activity in the field of environmental protection, implementation of their rights specified in the present Federal Law and other federal laws, other regulatory legal acts of the Russian Federation shall be held accountable in the established manner.

Chapter IV. Economic Regulation in the Field of Environmental Protection

Article 14. Environmental Protection Economic Regulation Methods

The methods of economic regulation in the field of environmental protection shall be as follows:

- the elaboration of state socio-economic development forecasts on the basis of ecological forecasts;
- the elaboration of federal programs for ecological development of the Russian Federation and target environmental protection programs for Russian regions;
- the elaboration and implementation of environmental protection measures for the purposes of preventing a harm to the environment;
- the institution of a charge for negative effects on the environment;
- the setting of maximum limits on pollutant and micro-organism emission and dumping, maximum limits on industrial and consumption waste disposal and other types of negative effect on the environment;
- the conduct of an economic assessment of nature facilities and nature man made facilities; the conduct of an economic assessment of the effects exerted by economic and other activities on the environment;
- the granting of tax and other privileges in the case of introduction of the best existing technologies, non-traditional types of energy sources, the use of secondary resources and waste recycling and also in the case of other effective environmental protection measures under Russian law;
- support to entrepreneurial, innovative and other activities (in particular, ecological insurance) aimed at protecting the environment;
- the reimbursement of a harm to the environment in the established manner;
- other economic regulation measures for improving and effective implementation of environmental protection.

Article 15. Federal Programs in the Field of Ecological Development of the Russian Federation, Target Environmental Protection Programs for Russian Regions and Environmental Protection Measures

1. For the purpose of planning, elaboration and implementation of environmental protection measures federal programs for ecological development of the Russian Federation and target programs for protection of the environment of Russian regions shall be elaborated.

The procedure for elaborating, financing and implementing federal programs for ecological development of the Russian Federation shall be established in compliance with Russian law.

The procedure for elaborating, financing and implementing target programs for protecting the environment of Russian regions shall be established under the legislation of the Russian regions.

2. The elaboration of federal programs for ecological development of the Russian Federation and target programs for protection of the environment of Russian regions shall be effected with due regard to citizens' and public associations' proposals.

3. The planning and elaboration of environmental protection measures shall be done with due regard to state socio-economic development forecasts, federal programs for ecological development of the Russian Federation, target programs for protection of the environment of Russian regions as based on the scientific research aimed at resolving environmental protection problems.

4. The legal entities and individual entrepreneurs pursuing economic and other activities exerting negative effects on the environment shall plan, elaborate and implement environmental protection measures in the manner established by legislation.

Article 16. Payment for a Negative Effect on the Environment

1. A negative effect on the environment shall require a payment.

The forms of payment for negative effect on the environment shall be determined by federal laws.

2. Below are the types of negative effect on the environment:

- pollutant and other substance emission into the atmospheric air;
- pollutant, other substance and micro-organism dumping into bodies of water, underground bodies of water and water-collection areas; pollution of sub-soil, soil;
- industrial and consumption waste disposal;
- pollution of the environment with noise, heat, electromagnetic, ionizing and other physical factors;
- other types of педабче effect on the environment.

3. The procedure for calculating and collecting payment for a negative effect on the environment shall be established by the

legislation of the Russian Federation.

4. The making of the payment specified in Item 1 of the present article shall not relieve economic and other agents harmless from responsibility for implementing environmental protection measures and reimbursing a harm to the environment.

On the procedure for determining payment and setting the maximum rate thereof for environment pollution, waste disposal and other types of harmful effect see Decision of the Government of the Russian Federation No. 632 of August 28, 1992

Article 17. Entrepreneurial Activity Pursued for the Purpose of Environmental Protection

1. An entrepreneurial activity pursued for the purpose of environmental protection shall be supported by the state.

2. The state support to an entrepreneurial activity pursued for the purpose of environmental protection shall be effected by means of granting tax and other privileges under law.

Article 18. Ecological Insurance

On ecological insurance also see the Model Regulations on the Procedure for Voluntary Ecological Insurance in the Russian Federation (endorsed by the Ministry of Natural Resources of the Russian Federation and the Russian State Insurance Company, Nos. 04- 04/72-6132, 22 of December 3, November 20, 1992)

1. Ecological insurance shall be pursued for the purpose of protecting the proprietary interest of legal entities and natural persons for the case of ecological risks.

2. Compulsory state ecological insurance may be pursued in the Russian Federation.

3. Ecological insurance in the Russian Federation shall be pursued in compliance with the legislation of the Russian Federation.

Chapter V. Setting Norms in the Field of Environmental Protection

Article 19. The Fundamentals of Norm-Setting in the Field of Environmental Protection

1. Norm-setting in the field of environmental protection shall be performed for the purpose of state regulation of the effects of economic and other activities on the environment that

guarantee the preservation of a favourable environment and ecological safety.

2. Norm-setting in the field of environmental protection shall mean the setting of norms of environment quality, admissible effect on the environment in the course of pursuance of economic and other activities, other environmental protection norms and also state standards and other regulatory documents in the field of environmental protection.

3. Environmental protection norms and regulatory documents shall be endorsed and put into force on the basis of the latest scientific and technological achievements with due regard to international environmental protection rules and standards.

Norm-setting in the field of environmental protection shall be effected ш the manner established by the Government of the Russian Federation.

Article 20. The Standards Governing the Elaboration of Environmental Protection Norms

The elaboration of environmental protection norms shall include the following:

- the conduct of scientific research work for substantiating environmental protection norms; the conduct of expert examination, the approval and publication of environmental
- protection norms, in the established manner;
- the establishment of grounds for the elaboration or review of environmental protection norms;
- the performance of control over the application and observance of environmental protection norms;
- the formation and keeping of a comprehensive environmental protection norms database;
- the assessment and forecasting of ecological, social and economic consequences of application of environmental protection norms.

Article 21. Environment Quality Norms

1. Environmental quality norms shall be set for the purpose of assessing the condition of the environment in order to preserve natural ecological systems, the genetic stock of plants, animals and other organisms.

2. Environment quality norms are as follows:

- norms set in compliance with the chemical indicators of condition of the environment, in particular, the norms of maximum admissible chemical substance concentration, in particular, those concerning radioactive substances;
- norms set in compliance with physical indicators of condition of the environment, in particular, radioactivity and heat level indicators;
- norms set in compliance with the biological indicators of condition of the environment, in particular, the species and groups of plants, animals and other organisms used as indicators of environment quality and also the indicators of maximum admissible micro-organism concentration;
- other environment quality norms.

See maximum admissible chemical concentrations in soils

Order of the State Committee for Fisheries of the Russian Federation No. 100 of June 28, 1995 has approved the List of Maximum Admissible Concentrations and OBUV of Harmful Substances for Fishery Waters

On August 14, 1995 the State Committee for Fisheries of the Russian Federation approved the Procedure for Organizing and Approving Maximum Admissible Concentrations and OBUV of Harmful Substances in Fishery Waters

3. When environment quality norms are being set account shall be taken of the natural peculiar features of territories and water areas, the purpose of natural facilities and nature-man made facilities, specially protected territories, in particular specially protected natural territories and also natural landscapes of special nature preservation importance.

Article 22. The Norms of Admissible Effect on the Environment

1. For the purpose of preventing a negative effect on the environment exerted by economic and other activities the following shall be established for legal entities and natural persons being users of natural wealth: the norms of admissible effect on the environment as follows:
- the norms of admissible substance and micro-organism emission and dumping;
- the norms of industrial and consumption waste production and maximum limits on the disposal thereof;

- the norms of admissible physical effects (the quantity of heat, the levels of noise, vibration, ionizing irradiation, electromagnetic field strength and other physical effects);
- the norms of admissible withdrawal of components of the environment; the norms of admissible human load on the environment;
- the norms of other admissible effects on the environment in the pursuance of economic and other activity established by the legislation of the Russian Federation and the legislation of the Russian regions for environmental protection purposes.

2. The norms of admissible effect on the environment shall ensure the observance of the environment quality поппи with due regard to the natural peculiarities of territories and water areas.

3. If they exceed the set norms of admissible effect on the environment economic and other agents shall be held accountable under law depending on the harm inflicted to the environment.

Decision of the Government of the Russian Federation No. 182 of March 2, 2000 established
that the ecological norms of atmospheric air quality, the methods of determination of the ecological norms of atmospheric air quality, the maximum limits of physical effect on the atmospheric air, the maximum admissible (critical) loads on ecological systems and other ecological norms intended for protecting the atmospheric air shall be set and reviewed by the State Environmental Protection Committee of the Russian Federation

See the Rules of Elaboration and Approval of the Norms of Waste Production and Maximum Limits on the Disposal Thereof endorsed by Decision of the Government of the Russian Federation No. 461 of June 16, 2000

Order of the Ministry of Natural Resources of the Russian Federation of July 19, 1995 endorsed the Norms of Specific Pollutant Emission into the Atmospheric Air for Bakeries]

Article 23. The Norms of Admissible Substance and Micro-Organism Emission and Dumping

1. The norms of admissible substance and micro-organism emission and dumping shall be set for stationary, movable and other sources of effect on the environment by economic and other

agents proceeding on the norms of admissible human load on the environment, the norms of environment quality and also technological norms.

2. Technological norms shall be set for stationary, movable and other sources on the basis of use of the best existing technologies with the account taken of economic and social factors.

3. It the norms of admissible substance and micro-organism emission and dumping cannot be observed maximum limits may be set on emissions and dumping under permits effective only within the term of performance of environmental protection measures, introduction of the best existing technologies and/or implementation of other nature preservation projects with due regard to a phased achievement of the set norms of admissible substance and micro-organism emission and dumping.

The setting of maximum limits on emissions and dumping may be done only if there exist emission and dumping reduction plans approved by the executive governmental bodies responsible for state administration in the field of environmental protection.

4. The emissions and dumping of chemicals, in particular, radioactive ones, otehr substances and micro-organisms into the environment within the set norms of admissible substance and micro-organism emission and dumping, the maximum limits on emission and dumping are allowed under permits issued by the executive governmental bodies responsible for state administration in the field of environmental protection.

Article 24. The Norms of Industrial and Consumption Waste Production and the Maximum Limits on the Disposal Thereof

The norms of industrial and consumption waste production and maximum limits on the disposal thereof shall be set for the purposes of preventing their negative effect on the environment, in compliance with law.

Article 25. The Norms of Admissible Physical Effects on the Environment

The norms of admissible physical effects on the environment shall be set for each source of such effects on the basis of the norms of admissible human load on the environment, the norms of environment quality with due regard to the influence of other

sources of physical effects.

Article 26. The Norms of Admissible Withdrawal of Components of the Environment

1. "Norms of admissible withdrawal of components of the environment" are norms set in compliance with limitations on the scope of their withdrawal for the purposes of preserving natural and nature-man-made facilities, ensuring a stable operation of natural ecological systems and preventing their degradation.

2. The norms of admissible withdrawal of components of the environment and a procedure for setting such norms shall be defined by the legislation on sub-soil, water, forestry, animal world and other legislation in the field of environmental protection, nature use and in compliance with the provisions governing environmental protection, protection and reproduction of specific types of natural resources established by the present Federal Law, other federal laws and other regulatory legal acts of the Russian Federation in the field of environmental protection.

Article 27. The Norms of Admissible Human Load on the Environment

1. The norms of admissible human load on the environment shall be set for economic and other agents for the purpose of assessing and regulating the effect of all stationary, movable and other sources of effect on the environment located within specific territories and/or water areas.

2. The norms of admissible human load on the environment shall be set for each type of effect of economic and another activity on the environment and the aggregate effect of all the sources located on such territories and/or water areas.

3. When norms of admissible human effect on the environment is being set account shall be taken of the natural peculiar features of specific territories and/or water areas.

Article 28. Other Environmental Protection Norms

For the purposes of state regulation of the effects of an economic or another activity on the environment, assessment of environment quality under the present Federal Law, other federal laws and other regulatory legal acts of the Russian Federation,

laws and other regulatory legal acts of the Russian Federation other environmental protection norms may be established.

Article 29. State Standards and Other Regulatory Documents ш the Field of Environmental Protection

1. Environmental protection state standards and other regulatory documents shall establish the following:

- environmental protection requirements, regulations and rules applicable to products, works, services and to relevant control methods;
- limitations on economic and other activities for the purpose of their negative effects on the environment;
- a procedure for organizing environmental protection activities and managing such activities.

2. Environmental protection state standards and other regulatory documents shall be elaborated with due regard to scientific and technological achievements and the provisions of international rules and standards.

3. State standards for new machinery, technologies, materials, substances and other products, technological processes, storage, transportation, use of such products, in particular after its transition into the category of industrial and consumption waste shall take into account environmental protection requirements, regulations and rules.

Article 30. Licensing Specific Types of Activity ш the Field of Environmental Protection

1. Specific types of activity in the field of environmental protection shall be subject to licensing.

2. A list of specific types of activity in the field of environmental protection subject to licensing shall be established by federal laws.

Article 31. Ecological Certification

1. Ecological certification shall be performed for the purpose of ensuring an ecologically- safe pursuance of economic and other activities on the territory of the Russian Federation.

2. Ecological certification may be compulsory or voluntary.

3. Compulsory ecological certification shall be performed in the manner determined by the Government of the Russian Federation.

Chapter VI. Assessment of Effects on the Environment and Ecological Expert Examination

On ecological expert examination see also the following:

Federal Law No. 174-FZ of November 23, 1995 on Ecological Expert Examination,

Decision of the Government of the Russian Federation No. 698 of June 11, 1996 on Endorsing the Regulations on the Procedure for Accomplishing State Ecological Expert Examination,

the Rules of Conducting State Expert Examination endorsed by order of the State Ecological Committee of the Russian Federation No. 280 of June 17, 1997,

the Uniform Form of a State Ecological Expert Examination Statement endorsed by Order of the Ministry of Natural Resources of the Russian Federation No. 392 of September 28, 1995

Article 32. Conducting an Assessment of Effects on the Environment

1. An assessment of effects on the environment shall be conducted in respect of a planned economic or another activity capable of exerting a direct or indirect effect on the environment, irrespective of the organizational legal forms thereof.
2. An assessment of effects on the environment shall be conducted during the elaboration of all alternative versions of pre-design, in particular, pre-investment as well as design documentation that substantiates the planned economic and other activity, with the participation of public associations.
3. The requirements applicable to environmental effect assessment materials shall be established by the federal executive governmental bodies responsible for state administration in the field of environmental protection.

Article 33. Ecological Expert Examination

1. Ecological expert examination shall be conducted for the purpose of finding out if a planned economic and another activity comply with environmental protection provisions.
2. A procedure for conducting an ecological expert examination shall be established by the Federal Law on Ecological Expert Examination.

Chapter VII. The Environmental Protection Provisions Applicable in the Case of Pursuance of Economic and Other Activities

Article 34. The General Provisions Governing Environmental Protection in the Case of Location Determination, Design, Construction, Modification, Commissioning, Operation, Conservation and Demolition of Buildings, Houses , Structures and Other Facilities

1. The location determination, design, construction, modification, commissioning, operation, conservation and demolition of the buildings, houses, structures and other facilities exerting a direct or indirect negative effect on the environment shall done in compliance with environmental protection provisions. In such a case arrangement shall be made for measures for environmental protection, restoration of natural environment, rational use and reproduction of natural resources, ensuring ecological safety.
2. A breach of environmental protection provisions shall ensue a suspension of the location determination, design, construction, modification, commissioning, operation, conservation and demolition of the buildings, houses, structures and other facilities under prescriptions of the executive governmental bodies responsible for state administration in the field of environmental protection.
3. The termination, in full scope, of the location determination, design, construction, modification, commissioning, operation, conservation and demolition of the buildings, houses, structures and other facilities in the case of a breach of environmental protection provisions shall be effected under a decision of a court and/or arbitration tribunal.

On the standards applicable to an ecological feasibility study in pre-design and design documentation for the construction of facilities intended for economic and other activities see the Instructions endorsed by Order of the Ministry of ХаШга1 Resources of the Russian Federation No. 539 of December 29, 1995

Article 35. The Provisions Governing Environmental Protection ш the Case of Location Determination for Buildings,

Houses, Structures and Other Facilities

1. When location is determined for buildings, houses, structures and other facilities arrangements shall be made for the observance of provisions in the field of environmental protection, restoration of natural environment, rational use and reproduction of natural resources, ensuring ecological safety with due regard to short-term and long-term ecological, demographic and other consequences of the operation of these facilities and the observance of the priority of preservation of a favourable environment, biological diversity, rational use and reproduction of natural resources.

2. The determination of location of buildings, houses, structures and other facilities shall be done in the observance of law if there is a positive state ecological examination statement.

See the Land Code of the Russian Federation No. 136-FZ of October 25, 2001

3. In cases when the placement of buildings, houses, structures and other facilities affects the lawful interests of citizens decisions shall be adopted with due regard to the results of referendums conducted on relevant territories.

On the compulsory use of the procedure and results of the environmental effect assessment in the elaboration of pre-p1an, pre-design and design documentation see Letter of the Ministry of Natural Resources No. 01-20/65-5568 of December 14, 1993

Article 36. The Environmental Protection Provisions Applicable to the Design of Buildings, Houses, Structures and Other Facilities

1. When buildings, houses, structures and other facilities are designed account shall be taken of the normes of admissible human load on the environment, measures shall be arranged for preventing and eliminating environmental pollution and also for disposing of industrial and consumption waste, resource-saving, low-waste and other best existing technologies shall be used as assisting in environmental protection, restoration of natural environment, rational use and reproduction of пагцга1 resources.

2. It is prohibited to change the value of design work and approved designs by means of deleting planned environmental protection measures incorporated in such work or designs in the

case of design of construction, modification, technical refurbishment, conservation and demolition оЕЬш1йпу, houses, structures and other facilities.

3. Designs not covered by positive state ecological expert examination statements shall not be subject to approval and the financing thereof is prohibited.

Article 37. The Environmental Protection Provisions Applicable to the Construction and Modification of Buildings, Houses, Structures and Other Facilities

1. The construction and modification of buildings, houses, structures and other facilities shall be performed under approved designs covered by positive state ecological expert examination statements, in observance of environmental protection provisions as well as sanitary and construction standards, rules and regulations.

2. The construction and modification of buildings, houses, structures and other facilities is prohibited until the approval of the designs and until the physical allocation of plots of land and also alteration of approved designs is prohibited to the detriment of environmental protection provisions.

3. When buildings, houses, structures and other facilities are being constructed and modified measures shall be taken for protecting the environment, restoring natural environment, re-cultivating land, arranging landscapes in compliance with Russian law.

Article 38. The Environmental Protection Provisions Applicable to the Commissioning of Buildings, Houses, Structures and Other Facilities

1. Buildings, houses, structures and other facilities shall be commissioned on the condition that the environmental protection clauses of their designs have been fully complied with, under the certificates of the acceptance commissions formed to accept the buildings, houses, structures and other facilities as incorporating representatives of the federal executive governmental bodies responsible for state administration in the field of environmental protection.

2. It is prohibited to commission the following: buildings, houses, structures and other facilities not featuring technical

facilities and technologies intended to deactivate and safely dispose of industrial and consumption waste, deactivate and dump pollutants and capable of ensuring the observance of established environmental protection standards. Also the following is prohibited: the commissioning of facilities not featuring environment pollution control facilities, without the completion of designed works of environmental protection, restoration of natural environment, re-cultivation of land, landscaping works under Russian law.

3. The heads and members of acceptance commissions responsible for commissioning of buildings, houses, structures and other facilities shall be accountable under Russian administrative and other law for the commissioning of the buildings, houses, structures and other facilities if such facilities fail to comply with the provisions of environmental protection legislation.

Article 39. The Environmental Protection Provisions Applicable to the Operation and Decommissioning of Buildings, Houses, Structures and Other Facilities

1. The legal entities and natural persons operating buildings, houses, structures and other facilities shall observe approved technologies and standards in the field of environmental protection, restoration of natural environment, rational use and reproduction of natural resources.

2. The legal entities and natural persons operating buildings, houses, structures and other facilities shall arrange for the observance of environment quality norms on the basis of use of technical facilities and technologies intended to deactivate and safely dispose of industrial and consumption waste, deactivate pollutant emissions and dumping and also other best existing technologies capable of ensuring the observance of environmental protection standards, shall implement measures for restoration of natural environment, re- cultivation of land, landscaping under law.

3. The decommissioning of buildings, houses, structures and other facilities shall be accomplished in compliance with the environmental protection legislation if there exist design documentation approved in the established manner.

4. When buildings, houses, structures and other facilities are

being decommissioned it shall be necessary to elaborate and implement measures for restoration of natural environment, in particular, reproduction of components of natural environment, to provide a favourable environment.

5. An alteration in the functional purpose of buildings, houses, structures and other facilities shall be effected on the approval of the executive governmental bodies responsible for state administration in the field of environmental protection.

See the Temporary Rules of Protecting Environment from Industrial and Consumption Waste in the Russian Federation endorsed by Letter of the Ministry of Natural Resources of the Russian Federation No. 01-15/29-2115 of July 21, 1994

Article 40. The Environmental Protection Provisions Applicable to the Placement, Design, Construction, Modification, Commissioning and Operation of Power Industry Facilities

1. The placement, design, construction, modification, commissioning and operation of power industry facilities shall be accomplished in compliance with the provisions of Articles 34 - 39 of the present Federal Law.

2. When thermal power plants are being designed and constructed provision shall be made for their being equipped with high-efficiency pollutant emission/dumping purification facilities as well as for the use of environment - friendly types of fuel and safe industrial waste disposal.

3. When hydraulic power plants are being placed, designed, constructed, modified, commissioned and operated account shall be taken of relevant regions' actual need for electrical power and also of the peculiarities of terrain.

When the said facilities are being placed provisions shall be made for measures for the preservation of water bodies, water-collection areas, aquatic biological resources, land, soil, forests and other vegetation, biological diversity, measures ensuring a steady operation of natural ecological systems, preservation of natural landscapes, specially protected natural territories and monuments of nature and also measures shall be taken for a timely disposal of timber and fertile soil layer in the case of clear up and flooding of the beds of reservoirs and other necessary measures for preventing negative changes in natural environment, preservation of a water regimen capable of

ensuring most favourable conditions of the reproduction of aquatic biological resources.

4. When nuclear plants, including atomic power plants are being placed, designed, constructed, commissioned and operated protection of the environment from the radiation effects of these plants shall be ensured, the established procedure and norms of technological process, the requirements issued by the federal executive governmental bodies authorized to perform state supervision and control in radiation safety shall be observed and state atomic energy safety regulation shall be performed, measures shall be taken for ensuring a full radiation safety for the environment and the public in compliance with Russian law and the generally accepted principles and norms of international law, nuclear plant personnel training and upgrading shall be ensured.

5. The placement of nuclear plants, in particular, atomic power plants shall be done under project designs and other substantiating materials contained in state ecological (and other) expert examination statements required under Russian law, that confirm the ecological and radiation safety of the nuclear plants.

6. Nuclear plant (in particular, atomic power plant) location designs shall contain solutions that ensure a safe decommissioning thereof.

See Sanitary Rules SP 2.6.758 — 99 "Ionising Irradiation, Radiation Safety. Radiation Safety Norms (NRB-99)" endorsed by the Chief State Sanitary Inspector on July 2, 1999

Article 41. The Environmental Protection Provisions Applicable to the Placement, Design, Construction, Modification, Commissioning, Operation and Decommissioning of Military and Defence Facilities, Weapons and Materiel

1. The environmental protection provisions applicable to the placement, design, construction, modification, commissioning, operation and decommissioning of buildings, houses, structure and other facilities shall fully extend to military and defence facilities, weapons and materiel, except for emergencies that obstruct observance of the environmental protection provisions.

2. A list of the emergencies obstructing the observance of environmental protection provisions in the case of placement,

design, construction, modification, commissioning, operation and decommissioning of military and defence facilities, weapons and materiel shall be determined by the legislation of the Russian Federation.

Article 42. The Environmental Protection Provisions Applicable to the Operation of Agricultural-Purpose Facilities

1. When agricultural purpose facilities are being operated environmental protection provisions shall be observed, measures for preservation of land, water bodies, plants, animals and other organisms from negative effects of economic and other activities on the environment shall be taken.

2. While they pursue their activities the agricultural organizations pursuing the production, procurement and processing of agricultural products, other agricultural organizations shall observe environmental protection provisions.

3. Agricultural-purpose facilities shall have the necessary sanitary-protective zones and purification facilities that prevent pollution of soils, surface and underground waters, water-collection areas and the atmospheric air.

See the Instructions on Ecological Substantiation of Economic and Other Activities endorsed by Order of the Ministry of Natural Resources of the Russian Federation No. 539 of December 29, 1995

Article 43. The Environmental Protection Provisions Applicable to Amelioration of Land, the Placement, Design, Construction, Modification, Commissioning and Operation of Amelioration Systems and Stand-Alone Hydraulic Engineering and Waterway Facilities

In the case of amelioration of land, placement, design, construction, modification, commissioning and operation of ameliorative systems and stand-alone hydraulic engineering and waterway facilities measures shall be taken for maintaining a water economic balance and cost-efficient use of water, preservation of and, soil, forests and other vegetation, animals and other organisms and also the prevention of other negative effects on the environment in the course of implementation of amelioration measures. Land amelioration shall not lead to a deterioration in the condition of the environment, break the

stable operation of natural ecological systems.
See also Federal Law No. 4-FZof January 10, 1996 on Land Amelioration

Article 44. The Environmental Protection Provisions Applicable to the Placement, Design, Construction, Modification 0f Urban and Rural Inhabited Localities

1. In the case of placement, design, construction, modification of urban and rural inhabited localities one shall observe environmental provisions that ensure a favourable condition of the environment for the activities of the human being as well as for the habitation of plants, animals and other organisms, astable operation of natural ecological systems.

The location of buildings, houses, structures and other facilities shall be chosen with due regard to environmental protection provisions, sanitary hygienic norms and urban construction standards.

2. When urban and rural inhabited localities are being designed and developed one shall observe environmental protection provisions, take measures for sanitary purification, deactivation and safe disposal' of industrial and consumption waste, for the observance of the norms of admissible substance and micro-organism emissions and dumping and also for restoration of natural environment, re-cultivation of land, landscaping and other measures for ensuring environmental protection and ecological safety under law.

3. For environments protection purposes protective and security zones shall be established in urban and rural inhabited localities, in particular, sanitary protection zones, planted territories, "green" zones including forest/park zones and other protective and security zones with limited nature use regime withdrawn from an intensive economic use.

Article 45. The Environmental Protection Provisions Applicable to the Manufacture and Operation of Motor Road Vehicles and Other Vehicles

1. The manufacture of motor road vehicles and other vehicles shall be pursued in compliance with environmental protection provisions.

2. The legal entities and natural persons operating motor road

vehicles as well as other vehicles exerting negative effects on the environment shall observe the norms of admissible substance and micro- organism emissions and dumping and also take measures for deactivating pollutants, in particular, neutralisation thereof, reducing noise level and other negative effects on the environment.

3. Relations in the field of manufacture and operation of motor road and other vehicles shall be governed by law.

Article 46. The Environmental Protection Provisions Applicable to the Placement, Design, Construction, Modification, Commissioning and Operation of Oil and Gas Production Facilities, the Facilities Intended for Processing, Transporting, Storing and Selling 011, Gas and Petroleum Products

1. The placement, design, construction, modification, commissioning and operation of oil and gas production facilities, the facilities intended for processing, transporting, storing and selling oil, gas and petroleum/gas products shall be effected in compliance with the provisions established by the environmental protection legislation.

2. In the case of placement, design, construction, modification, commissioning and operation of oil and gas production facilities, the facilities intended for processing, transporting, storing and selling oil, gas and petroleum/gas products provision shall be made for effective purification and deactivation of the waste resulting from the production and gathering of oil (casing head) gas and mineralised water, re-cultivation of broken and polluted land, reduction of negative effects on the environment and also compensation for a damage inflicted to the environment during the construction and operation of the said facilities.

3. The construction and operation of oil and gas production facilities, the facilities intended for processing, transporting, storing and selling oil, gas and petroleum/gas products shall be permitted if there exist polluted land restoration designs for the zones of temporary and/or permanent land allocation, positive state ecological expert examination statements and other state expert examination statements required under law, financial guarantees for the completion of

such projects.

4. The construction and operation of oil and gas production facilities, the facilities intended for processing, transporting and storing oil and gas located within the areas of water bodies, on the continental shelf and in the exclusion economic zone of the Russian Federation shall be permitted if there exist positive state ecological expert examination statements and other state expert examination statements required by law after polluted lands have been restored.

Article 47. The Environmental Protection Provisions Applicable to the Production, Circulation and Deactivation of Potentially-Hazardous Chemicals, in Particular Radioactive Ones, Other Substances and Micro-Organisms

1. The production and circulation of potentially-hazardous chemicals, in particular, radioactive ones, other substances and micro-organisms shall be permitted on the territory of the Russian Federation after the completion of the necessary toxicological-hygienic and toxicological study of the substances, the establishment of a procedure for handling them, nature preservation norms and state registration of the substances under Russian law.

2. The deactivation of potentially hazardous chemical and biological substances shall be effected if there exist design and technological documentation approved in the established procedure under law.

Article 48. The Environmental Protection Provisions Applicable to the Use of Radioactive Substances and Nuclear Materials

1. Legal entities and natural persons shall observe the rules of manufacture, storage, transportation, use, burial of radioactive substances (sources of ionising irradiation) and nuclear materials, abstain from exceeding the established maximum admissible ionizing irradiation norms, and if they are exceeded, immediately notify the executive governmental bodies in charge of radiation safety of the high radiation levels being a hazard for the environment and human health, take measures for eliminating radiation contamination in specific areas.

2. The legal entities and natural persons which fail to ensure

the observance of the rules of handling radioactive substances and nuclear materials and also radioactive waste shall be held accountable under Russian law.

3. The importation of radioactive waste and nuclear materials from foreign states into the Russian Federation to be stored or buried here and also the under-water burial, the space- burial of radioactive waste and nuclear materials are prohibited, except for the cases established by the present Federal Law.

See also Direction of the State Customs Committee of the Russian Federation No. 01-12/71 of July 8, 1992

4. The importation into the Russian Federation from foreign states of irradiated nuclear reactor fuel elements for the purpose of temporary technological storage and/or processing is permitted in case when state ecological expert examination and other state expert examinations have been completed in respect of the relevant project as required by Russian law, and a feasibility study indicates a general reduction in radiation exposure risk and an increase in ecological safety as a result of implementation of the project.

The importation into the Russian Federation of irradiated nuclear reactor fuel elements shall be performed under international agreements of the Russian Federation.

The procedure for importing irradiated nuclear reactor fuel elements into the Russian Federation shall be established by the Government of the Russian Federation on the basis of the general principles of non proliferation of nuclear weapons, environmental protection and the safeguarding of the economic interests of the Russian Federation with due regard to the priority ranking of the right to return the radioactive waste resulting from the processing to the state from which the nuclear materials have originated or to arrange for the return thereof.

On the ad hoc commission on importation of foreign made irradiated fuel elements into the territory of the Russian Federation see Decree of the President of the Russian Federation No. 828 of July 10, 2001

Article 49. The Environmental Protection Provisions Applicable to the Use of Chemicals in Agriculture and Forestry

1. Legal entities and natural persons' shall observe the rules

of manufacture, storage, transportation and use of the chemicals used in agriculture and forestry, environmental protection provisions and also take measures for preventing the negative effects of economic and other activities and elimination of harmful consequences in order to ensure environment quality, a stable operation of natural ecological systems and preservation of natural landscapes under Russian law.

2. The use of non-degradable toxic chemicals is prohibited.

See the Procedure for Assessing the Amount of Damage from Chemical Land Pollution endorsed by the State Committee for Land Policy of the Russian Federation on November 10, 1993 and the Ministry of Natural Resources of the Russian Federation on November 18, 1993

Article 50. Protection of the Environment from Negative Biological Effects

1. The following is prohibited: the production, breeding and use of plants, animals and other organisms not inherent to natural ecological systems and also those artificially created, without the elaboration of effective measures for preventing their uncontrolled reproduction, a positive state ecological expert examination statement, a permission by the federal executive governmental bodies responsible for state administration in the field of environmental protection, other federal executive governmental bodies in compliance with their competence and Russian law.

2. Where hazardous production facilities are being placed, designed, constructed, modified, commissioned, operated and decommissioned, or technologies are used which are connected with micro-organisms' negative effect on the environment environmental protection provisions, nature preservation norms, in particular, those concerning the maximum admissible concentration of micro-organisms, state standards and other environmental protection regulatory documents shall be observed.

3. The legal entities and natural persons pursuing activities connected with the possibility of a negative micro-organisms' effect on the environment shall arrange for environmentally-friendly production, transportation, use, storage, placement and deactivation of micro- organisms, elaborate and implement measures for preventing accidents and disasters, prevent and

eliminate the consequences of negative micro-organisms' effect on the environment.

Article 51. The Environmental Protection Provisions Applicable to Industrial and Consumption Waste Handling

See Federal Law of the Russian Federation No. 89-FZ of June 24, 1998 on Industrial and Consumption Waste

Decision of the Government of the Russian Federation No. 1098 of September 13, 1996 endorsed a Federal Target Program "Waste"

1. Industrial and consumption waste, ш particular, radioactive waste, shall be subject to collection, use, deactivation, transportation, storage and burial the conditions and techniques of which shall be environmentally - friendly and be governed by Russian law.

2. The following is hereby prohibited:

- the dumping of industrial and consumption waste, in particular, radioactive waste in surface and underground bodies of water, water-collection areas, sub- soil and soil;
- the placement of hazardous waste and radioactive waste on territories adjacent to urban and rural inhabited localities, forest/park, health resort, health rehabilitation, recreational areas, animal migration routes, near fish spawning areas and in other places where it can create a threat to the environment, natural ecological systems and human health;
- the burial of hazardous waste and radioactive waste in the water-collection areas of underground bodies of water used as water-supply sources, for health treatment or mineral resource recovery purposes;
- the importation of hazardous waste and radioactive waste into the Russian Federation for the purpose of burial and deactivation.

3. Relations in the field of industrial and consumption waste and also hazardous waste and radioactive waste handling shall be regulated by a relevant legislation of the Russian Federation.

Article 52. The Environmental Protection Provisions Applicable to the Institution of Protection and Preservation Zones

1. Protection and preservation zones shall be instituted for the

purpose of ensuring a stable operation of natural ecological systems, protecting natural complexes, natural landscapes and specially-protected natural territories from pollution and other negative effects of economic and other activities.

2. For the purpose of protecting conditions for the activities of the human being, the habitat of plants, animals and other organisms protection and preservation zones shall be established around industrial zones and facilities engaged in economic and other activities that exert a negative effect on the environment, in particular sanitary protection zones, "green zones" in the blocks and micro-districts of urban and rural inhabited localities as incorporating forest park zones and other restricted nature use zones.

3. The procedure for instituting and creating protection and preservation zones shall be regulated by law.

Article 53. The Environmental Protection Provisions Applicable to Property Privatisation and Nationalisation

In the case of property privatisation and nationalization arrangement shall be made for environmental protection measures and compensation of a damage inflicted to the environment.

Article 54. Protection of the Atmospheric Ozone Layer

The protection of atmospheric ozone layer against ecologically hazardous changes shall be ensured by means of regulating the manufacture and use of ozone-unfriendly substances under international treaties of the Russian Federation, the generally accepted norms of international law and Russian law.

See Decision of the Government of the Russian Federation No. 526 of May 24, 1995 on Top- Priority Measures for Implementation of the Vienna Convention on Preservation of the Ozone Layer and the Montreal Protocol on Ozone - Unfriendly Substances

Decision of the Government of the Russian Federation No. 563 of May 8, 1996 endorsed the List of Ozone-Unfriendly Substances and the List of the Products Containing Ozone - Unfriendly Substances the Importation into the Russian Federation and Exportation from the Russian Federation of Which Is Subject to State Regulation

Article 55. Protection of the Environment from Negative Physical Effects

1. When they pursue economic and other activities the governmental bodies of the Russian Federation, the governmental bodies of Russian regions, local government bodies, legal entities and natural persons shall take the necessary measures for preventing and eliminating the negative effect of noise, vibration, electric and electromagnetic, magnetic fields and other negative physical effects on the environment in urban and rural inhabited localities, recreation zones, the habitats of wild animals and birds, including their breeding areas, natural ecological systems and natural landscapes.

2. Where urban and rural inhabited localities are being designed and developed, production facilities are being designed, constructed, modified and operated, new machinery is being developed and commercialized, transportation means are being manufactured and operated measures shall be elaborated to ensure the observance of admissible physical effect norms.

3. It is prohibited to exceed admissible physical effect norms.

Article 56. Sanctions for a Breach of Nature Preservation Provisions

In the case of a breach of the nature preservation provisions of the present chapter the activity pursued in breach of the said provisions may be subjected to limitation, suspension or termination in the manner established by Russian law.

Chapter VIII. Ecological Disaster Zones, Emergency Zones

See the Criteria for Assessing the Ecological Situation of a Territory for the Purpose of Revealing Emergency Ecological Zones and Ecological Disaster Zones endorsed by the Ministry of Natural Resources of the Russian Federation of November 30, 1992

Article 57. Procedure for Establishing Ecological Disaster Zones, Emergency Zones

1. The procedure for declaring and establishing the ecological disaster zone regime shall be set out by the legislation on ecological disaster zones.

2. Environmental protection in emergency zones shall be established by the federal law on protection of the public and

territories from natural and man-made emergencies, other federal laws and other regulatory legal acts of the Russian Federation, laws and other regulatory legal acts of Russian regions.

On the materials to be filed for the purposes of state ecological expert examination in the case of classifying a specific territory as an ecological emergency zone see Order of the Ministry of Natural Resources of the Russian Federation No. 113 of March 28, 1996

Chapter IX. The Natural Facilities under Special Protection

Article 58. The Protective Measures for Natural Facilities

1. The natural facilities of special nature preservation, scientific, historical and cultural, aesthetic, recreational, health rehabilitation and another valuable significance are under special protection. For the purpose of protecting such natural facilities a special legal regime shall be established, in particular, specially protected natural territories shall be created.
2. The procedure for the creation and operation of specially protected natural territories shall be regulated by the legislation on specially protected natural territories.
3. State natural sanctuaries, in particular, state natural biosphere sanctuaries, state natural game reserves, monuments of nature, national parks, dendrological parks, nature parks, botanical gardens and other specially protected territories of special nature protection, scientific, historical and cultural, aesthetic, recreational, health rehabilitation and another valuable significance shall make up natural sanctuary resources.

On state natural sanctuaries see also the following:

Federal Law No. 33-FZ of March 14, 1995,

Decision of the Government of the RSFSR No. 48 of December 18, 1991

On state natural game reserves see also:

Federal Law No. 33-FZ of March 14, 1995

Order of the Ministry of Natural Resources of the Russian Federation No. 14 of January 25, 1993,

Order of the Ministry of Natural Resources of the Russian Federation No. 20 of January 16, 1996

On national parks see also:

Federal Law No. 33-FZ of March 14, 1995,

Decision of the Council of Ministers of the Russian Federation No. 769 of August 10, 1993

On monuments of nature see also:

Federal Law No. 33-FZ of March 14, 1995,

Order of the Ministry of Natural Resources of the Russian Federation No. 15 of January 25, 1993,

Order of the Ministry of Natural Resources of the Russian FederationNo.20of January 16, 1996

4. The exemption of the lands of natural sanctuary resources is prohibited, except for the cases specified in federal laws.

5. Lands within the territories where specially protected natural facilities of special nature protection, scientific, historical and cultural, aesthetic, recreational, health rehabilitation and another valuable significance are located shall not be subject to privatisation.

Article 59. The Legal Regime of Natural Facility Protection

1, The legal regime of protection of a natural facility shall be established by the legislation on environmental protection, natural and cultural heritage and other legislation.

2. An economic and another activity exerting a negative effect on the environment and leading to the degradation and/or destruction of specially protected natural facilities of special nature protection, scientific, historical and cultural, aesthetic, recreational, health rehabilitation and another valuable significance is hereby prohibited.

Article 60. Protection of Rare and Extinction-Threatened Plants, Animals and Other Organisms

1. For the purposes of protecting and keeping record of rare and extinction threatened plants, animals and other organisms the Red Book of the Russian Federation is instituted as well as the Red Books of Russian regions. The plants, animals and other organisms classified as the species mentioned in the Red Books shall be subject to withdrawal from economic use throughout the country. For the purposes of preserving rate and extinction-threatened plants, animals and other organisms their genetic stock shall be preserved in low-temperature genetic banks and also in an artificial environment. Activities leading to a reduction in the numbers of these plants, animals and other

organization and deteriorating their environment are prohibited.

On the Red Book of the Russian Federation see Decision of the Government of the Russian Federation No. 158 of February 19, 1996

See Order of the Ministry of Natural Resources of the Russian Federation No. 126 of may 4, 1994 on Endorsing the Rates of Charge for a Damage Inflicted by an Illegal Procurement or Destruction of Fauna and Flora Objects

2. The procedure for protecting rate and extinction-threatened plants, animals and other organisms, the procedure for keeping the Red Book of the Russian Federation, the Red Books of Russian regions and also the procedure for preserving their genetic stock in low- temperature genetic banks and in an artificial environment shall be determined by the environmental protection legislation.

The Regulations on the Procedure for Keeping the Red Book of the Russian Federation has been endorsed by Order of the State Committee for Environmental Protection of the Russian Federation No. 419-a of October 3, 1997

3. The importation into the Russian Federation, exportation out of the Russian Federation and transit carriage via the Russian Federation and also circulation of rate and extinction-threatened plants, animals and other organisms, their most precious species, in particular the plants, animals and other organisms covered by international treaties of the Russian Federation shall be regulated by the legislation of the Russian Federation with due regard to the generally accepted principles and norms of international law.

Article 61. Protection of the Vegetation Resources of Urban and Rural Inhabited Localities

1. The vegetation resources of urban and rural inhabited localities is made up of vegetation zones, in particular, territories covered by trees and bushes and territories covered by grass- type vegetation within the boundaries of these inhabited localities.

2. Protection of the vegetation resources of urban and rural inhabited localities means a system of measures that ensures the preservation and development of the vegetation resources and that is required for normalizing ecological situation and

creating a favourable environment.

Economic and other activities exerting a negative effect on these territories and preventing them from their performing the functions of ecological, sanitary-hygienic and recreational purposes are prohibited on vegetation resources territories.

3. State regulation in the field of protection of the vegetation resources of urban and rural inhabited localities shall be effected in compliance with the legislation.

Article 62. Protection of Rare and Disappearance-Threatened Soils

1. Rare and disappearance threatened soils shall be subject to state protection and a Red Book of Soils of the Russian Federation and Red Books of Soils of Russian regions shall be instituted for soil recording and protecting purposes, with the procedure for keeping the books being determined by the soil protection legislation.

2. The procedure for classifying soils as rare and disappearance threatened and also the procedure for setting up the regimes of use of the plots of land the soils of which are classified as rare and disappearance-threatened shall be established by the legislation.

Chapter X. The State Environmental Monitoring (State Ecological Monitoring)

Article 63. The Organization of State Environmental Monitoring (State Ecological Monitoring)

1. State environmental monitoring (state ecological monitoring) shall be pursued under Russian law and the law of Russian regions for the purposes of observing the condition of the environment, in particular, the condition of the environment in the areas where man- made sources of effects are located and observing the effect of these sources on the environment and also to cater for the need of the state, legal entities and natural persons for trustworthy information required for preventing and/or reducing the unfavorable consequences of a change in environmental conditions.

2. The procedure for organizing and pursuing state environmental monitoring (state ecological monitoring) shall be established by the Government of the Russian Federation.

3. Information on environmental conditions and changes therein obtained through state environmental monitoring (state ecological monitoring) shall be used by the governmental bodies of the Russian Federation, the governmental bodies of Russian regions, local government bodies for the purpose of elaborating socio-economic forecasts and making relevant decisions, elaborating federal programs in the field of ecological development of the Russian Federation, target programs in the field of protection of the environment of Russian regions and environmental protection measures.

The procedure for the provision of information on the condition of the environment shall be regulated by the legislation.

Chapter XI. Control in the Field of Environmental Protection (Ecological Control)

Article 64. The Tasks of Environmental Protection Control (Ecological Control)

1. Environmental protection control (ecological control) shall be exercised to ensure that the governmental bodies of the Russian Federation, the governmental bodies of Russian regions, local government bodies, legal entities and natural persons implement the environmental protection legislation, observe environmental protection provisions, in particular, norms and regulatory documents, and also ensure ecological safety.
2. State, industrial, municipal and public environmental protection control shall be exercised in the Russian Federation.

See the Rules of Performance of State Ecological Control by the Officials of the Ministry of Environmental Protection and Natural Resources of the Russian Federation and the Territorial Bodies Thereof of April 17, 1996

Article 65. State Environmental Protection Control (State Ecological Control)

1. State environmental protection control (state ecological control) shall be exercised by federal executive governmental bodies and the executive governmental bodies of Russian regions.

State environmental protection control (state ecological control) shall be exercised in the manner established by the Government of the Russian Federation.

2. According to the present Federal Law, other federal laws a

list of the facilities subject to federal state ecological control shall be determined by the Government of the Russian Federation.

3. A list of officials of the federal governmental body responsible for federal state ecological control (federal state environmental protection inspectors) shall be established by the Government of the Russian Federation.

4. A list of officials of the governmental bodies of Russian regions responsible for state ecological control (state environmental protection inspectors of the Russian regions) shall be established in compliance with the legislation of the Russian regions.

5. Combination of state environmental protection control (state ecological control) functions and the functions of economic use of natural resources is prohibited.

Article 66. The Rights, Duties and Liability of State Environmental Protection Inspectors

1. When they exercise their service duties within their scope of powers state environmental protection inspectors shall be, in the established manner, entitled:

- for inspection purposes, to visit organizations, facilities intended for economic and other activities, irrespective of the form of ownership thereof, in particular, facilities subject to state protection, defense facilities, civil defense facilities, to get acquainted with documents and other materials required for state ecological control purposes;

On the conduct of state ecological control in restricted-access administrative territorial entities, in restricted-access, special restricted-access and special importance facilities of the Armed Forces of the Russian Federation and the state ecological expert examination of weapons and materiel, military installations and military activities see the Regulations endorsed by Decision of the Government of the Russian Federation No. 461 of May 18, 1998

- to verify the observance of norms, state standards and other regulatory environmental protection documents, the operation of purification plants and other deactivation devices, monitoring facilities as well as implementation of environmental protection plans and measures;

- to verify the observance of environmental protection provisions, norms and rules in the case of placement, construction, commissioning, operation and decommissioning of industrial and other facilities;
- to verify the observance of the requirements laid down in a state ecological expert examination statement and introduce proposals for such an expert examination;
- to issue demands and prescriptions addressed to legal entities and natural persons for the elimination of a breach of the environmental protection legislation and of nature preservation provisions where such a breach has been discovered in the course of state ecological control;
- to suspend economic and other activities of legal entities and natural persons when they breach the environmental protection legislation;
- to hold accountable under administrative law persons at fault for a breach of the environmental protection preservation;
- exercise the other powers specified by the legislation.
2. State environmental protection inspectors shall:
- prevent, discover and stop breaches of the environmental protection legislation;
- explain to persons in breach of the environmental protection legislation their rig and duties;
- observe the provisions of law.

On the vesting of the said powers in officials of the Ministry of Environmental Protect and Natural Resources of the Russian Federation and the territorial bodies thereof: Decision of the Government of the Russian Federation No. 718 of July 17, 1995

3. The decisions of state environmental protection inspectors are subject to appeal un' Russian law.

See Federal Law No. 134 FZ of August 8, 2001 on Protection of the Rights of Le, Entities and Individual Entrepreneurs in the Case of State Control (Supervision)

4. State environmental protection inspectors shall be subject to state protection according to Russian law.

Article 67. Industrial Environmental Protection Control (Industrial Ecological Control)

1. Industrial environmental protection control (industrial ecological control) shall exercised for the purpose of ensuring the implementation, during economic and another activity, of measures for protection of the environment, rational use and restoration of natural resources and also for the purpose of observance of environmental protection provisions the environmental protection legislation.
2. Economic and other agents shall provide information on the organization of industrial ecological control to the executive governmental bodies and local government bodies responsible for state and municipal control respectively, in the manner established by law.

Article 68. Municipal Environmental Protection Control (Municipal Ecological Control) and Public Environmental Protection Control (Public Ecological Control)
1. Municipal environmental protection control (municipal ecological control) on territory of a municipal entity shall be exercised by local government bodies or by bodies authorized by them.
2. Municipal environmental protection control (municipal ecological control) on the territory of a municipal entity shall be exercised in keeping with the legislation of the Russian Federation and in the manner established by regulatory legal acts of loc government bodies.
3. Public environmental protection control (public ecological control) shall exercised for the purpose of implementing everybody's right to a favorable environment and preventing violation of the environmental protection legalization.
4. Public environmental protection control (public ecological control) shall exercised by public and other non-commercial associations in compliance with the constitutions/charters and also by citizens in compliance with law.
5. The results of public environmental protection control (public ecological control) presented to governmental bodies of the Russian Federation, governmental bodies t Russian regions, local government bodies shall be subject to compulsory consideration in the manner established by law.

Article 69. State Records of the Facilities Exerting

Negative Effects on the Environment

1. State records of the facilities exerting negative effects on the environment shall be kept for the purposes of state regulation of nature preservation activity and also current and long-term planning of measures for a reduction of the effects of economic and other activities on the environment.

2. State records of the facilities exerting negative effects on the environment and also the assessment of such effects on the environment shall be kept/performed in the manner established by law.

3. Facilities exerting negative effects on the environment and information on their effects on the environment shall be a subject matter of statistical records.

Chapter XII. Scientific Research in the Field of Environmental Protection

Article 70. Scientific Research in the Field of Environmental Protection

1. Scientific research in the field of environmental protection shall be pursued for the purposes of social, economic and ecologically- balanced development of the Russian Federation, creation of a scientific foundation for environmental protection, elaboration of science based measures for improvement and restoration of the environment, for ensuring a stable operation of natural ecological systems rational use and reproduction of natural resources, ensuring ecological safety.

2. Scientific research in the field of environmental protection shall be pursued for the below purposes:

the elaboration of concepts, scientific forecasts and plans for preservation and restoration of the environment;

the assessment of consequences of negative effects of economic and other activities on the environment;

the improvement of the environmental protection legislation, creation of norms, state standards and other regulatory documents in the field of environmental protection;

the elaboration and improvement of indicators of complex assessment of effects on the environment, the methods and techniques for the determination thereof;

the development and creation of best technologies in the field of environmental protection and rational use of natural

resources;
the elaboration of programs for rehabilitating territories classified as ecological disaster zones;
the elaboration of measures for preservation and development of the natural potential and recreational potential of the Russian Federation;
for other purposes in the field of environmental protection.
3. Scientific research in the field of environmental protection shall be carried out by scientific organizations in keeping with the federal law on science and state scientific and technological policy.

Chapter XIII. The Fundamentals of Shaping Up an Ecological Culture

Article 71. The General and Comprehensive Nature of Ecological Culture

For the purposes of the shaping up of an ecological culture and professional training of environmental protection specialists a general and comprehensive ecological education system is established which incorporates pre-school and general education, secondary vocational and higher professional education, post-graduate professional studies, vocational/professiona1 re-training and upgrading and also dissemination of ecological knowledge, in particular, by means of the mass media, museums, libraries, culture institutions, nature preservation institutions, sports and tourism organizations.

Article 72. Teaching in Ecology in Educational Institutions

1. In pre-school educational institutions, general education institutions and additional education institutions, irrespective of the orientation and organizational legal form thereof, the discipline "fundamentals of ecology" shall be taught.
2. According to the orientation of educational institutions engaged in vocational/professiona1 training, re-training and upgrading of specialists arrangement shall be made for the teaching of the disciplines "environmental protection", "ecological safety" and "rational use of natural wealth".

Article 73. Training of the Heads of Organizations and Specialists in Environmental Protection and Ecological Safety

1. The heads of organizations and the specialists responsible for decision-making in the course of economic and other activities exerting or capable of exerting negative effects on the environment should have undergone training in the field of environmental protection and ecological safety.
2. The training of heads of organizations and specialists in the field of environmental protection and ecological safety responsible for decision-making in the course of economic and other activities exerting or capable of exerting negative effects on the environment shall be carried out in compliance with law.

Article 74. Ecological Enlightenment

1. Ecological enlightenment shall be pursued for the purposes of shaping up an ecological culture in the society, fostering a careful attitude to the nature, rational use of natural resources by means of disseminating ecological knowledge on ecological safety, information on the condition of the environment and on the use of natural resources.
2. Ecological enlightenment, in particular, the provision of information to the public on the environmental protection legislation and ecological safety legislation shall be pursued by the governmental bodies of the Russian Federation, the governmental bodies of Russian regions, local government bodies, public associations, the mass media and also by educational institutions, culture institutions, museums, libraries, nature preservation institutions, sports and tourism organizations, other legal entities.

Chapter XIV. Liabilities for a Breach of Environmental Protection Legislation and Settlement of Disputes in the Field of Environmental Protection

On the measures taken for eliminating ecological offences and holding persons at fault accountable, the paperwork see the Rules of State Ecological Control for the Officials of the Ministry of Environmental Protection and Natural Resources of the Russian Federation and the Territorial Bodies Thereof endorsed by the Ministry of Environmental Protection and Natural Resources of the Russian Federation on April 17, 1996.

Article 75. The Types of Liability for a Breach of the Environmental Protection Legislation

Property, disciplinary, administrative and criminal liability under law is established for a breach of the environmental protection legislation.

See the Code of Administrative Offences of the RSFSR

On liability for an ecological crime see the Criminal Code of the Russian Federation No. 63- FZ of June 13, 1996

Article 76. Settling Disputes in the Field of Environmental Protection

Disputes in the field of environmental protection shall be settled in a court in compliance with law.

Article 77. The Duty of a Full Compensation of a Damage Inflicted to the Environment

1. The legal entities and natural persons which have inflicted a damage to the environment by polluting, depleting, damaging, destroying it, by irrational use of natural resources, degrading and destroying natural ecological systems, natural complexes and natural landscapes and another violation of the environmental protection legislation shall compensate it in full under law.
2. A damage to the environment inflicted by a person pursuing an economic or another activity, in particular an activity covered by a positive state ecological expert examination statement, including in particular, the activity of withdrawing components from the environment, shall be compensated by the customer and/or the person pursuing the economic or the other activity.
3. A damage inflicted to the environment by an economic or another agent shall be compensated in compliance with the rates and environmental damage calculation methods approved in the established manner, or in the absence thereof, on the basis of actual expenses incurred for restoration of deteriorated condition of the environment, with due regard to losses incurred, in particular profit missed.

Article 78. Procedure for Compensating a Damage Inflicted to the Environment by a Breach of the Environmental Legislation

1. The compensation of a damage inflicted to the environment by a breach of the environmental protection legislation shall be

effected either voluntarily or under a court decision or an arbitration court decision.

The amount of damage inflicted to the environment by a breach of the environmental protection legislation shall be calculated on the basis of actual expenses incurred for the restoration of deteriorated condition of the environment with due regard to the losses incurred, including missed profit, and also in compliance with re-cultivation and other restoration works designs, or in the absence thereof, in compliance with the rates and methods for calculation of the amount of an environmental damage approved by the executive governmental bodies responsible for state administration in the field of environmental protection.

See the Methods for Assessing a Damage and Calculating the Amount of a Damage Resulting from Destruction of Animal Objects and Breaking of Their Habitat endorsed by the State Environmental Protection Committee of the Russian Federation on April 28, 2000

See the Methodological Directions on the Assessment and Compensation of a Damage Inflicted to the Environment as a Result of Ecological Offences endorsed by the State Environmental Protection Committee of the Russian Federation on September 6, 1999

See the Methods for Calculating the Amount of a Damage Resulting from Underground Water Pollution endorsed by the State Environmental Protection Committee of the Russian Federation, the Ministry of Natural Resources of the Russian Federation, the Ministry of Finance of the Russian Federation on February 11, 1998, May 31, June 1, 1999

See the rates for calculation of an amount of charge for a damage inflicted by legal entities and natural persons through an illegal recovery or destruction of animal objects classified as objects of hunting endorsed by Order of the Ministry of Agriculture and Foodstuffs of the Russian Federation No. 399 of May 25, 1999

2. Under a court decision or an arbitration court decision a harm inflicted to the environment by a breach of the environmental protection legislation may be compensated by means of vesting the defendant with the duty to restore the deteriorated condition of the environment on the defendant' own

account in compliance with a restoration works design.
3. An action relating to compensation of a harm inflicted to the environment by a breach of the environmental protection legislation may be brought within 20 years.

Article 79. Compensation of a Harm Inflicted to Citizens' Health and Property as a Result of a Breach of the Environmental Protection Legislation

1. A harm inflicted to citizens' health and property by a negative effect on the environment resulting from the economic and other activities of legal entities and natural persons shall be subject to compensation in full.
2. The determination of the scope and amount of compensation for a harm inflicted to citizens' health and property resulting from a breach of the environmental protection legislation shall be performed in compliance with law.
See the List of Regulatory Legal Documents Recommended for Use in the Assessment and Compensation of a Harm Inflicted as a Result of Ecological Offences endorsed by Order of the State Environmental Protection Committee of the Russian FederationNo.448 of July 23, 1998

Article 80. Claims for Limitation, Suspension or Termination of Persons' Activities Pursued in Breach of the Environmental Protection Legislation

Claims for limitation, suspension or termination of persons' activities pursued in breach of the environmental protection legislation shall be considered by a court or an arbitration court.

Chapter XV. International Co-Operation in the Field of Environmental Protection

Article 81. The Principles of International Co-Operation in the Field of Environmental Protection

The Russian Federation shall pursue international co-operation in the field of environmental protection in keeping with the generally accepted principles and norms of international law and international treaties of the Russian Federation in the field of environmental protection.

See the Agreement on the Co-Operation of Member-States of the Commonwealth of Independent Countries in the Field of Ecology and Environmental Protection of February 8, 1992

Article 82. The International Treaties of the Russian Federation in the Field of Environmental Protection

1. The international treaties of the Russian Federation in the field of environmental protection which, for the purposes of their application, do not require the adoption of Russian national acts shall be applicable directly to relations emerging in the course of environmental protection activities. In other cases an international treaty of the Russian Federation on environmental protection shall be applied together ил& the relevant regulatory legal act that has been adopted for the purpose of implementing the provisions of the international treaty of the Russian Federation.

2. If the environmental protection rules set out an international treaty of the Russian Federation differ from the rules set out in the present Federal Law the rules of the international treaty shall apply.

1. The international treaties of the Russian Federation in the field of environmental protection which, for the purposes of their application, do not require the adoption of Russian national acts shall be applicable directly to relations emerging in the course of environmental protection activities. In other cases an international treaty of the Russian Federation on environmental protection shall be applied together with the relevant regulatory legal act that has been adopted for the purpose of implementing the provisions of the international treaty of the Russian Federation.

2. If the environmental protection rules set out an international treaty of the Russian Federation differ from the rules set out in the present Federal Law the rules of the international treaty shall apply.

Chapter XVI, Conclusive Provisions

Article 83. The Entry Into Force of the Present Federal Law

The present Federal Law shall enter into force as of the date of the formal publication thereof.

Article 84. Bringing Regulatory Legal Acts in Line with the Present Federal Law

1. The present Federal Law shall supersede the following, effective from the date of its entry into force:

Law of the RSFSR No. 2060-1 of December 19, 1991 on Environmental Protection (Gazette of the Congress of People' s Deputies of the Russian Federation and the Supreme Soviet of the Russian Federation, item 457, No. 10, 1992), except for Article 84 which shall become invalid at the time of entry into force of the Code of Administrative Offences of the Russian Federation;

Law of the Russian Federation No. 2397-1 of February 21, 1992 on Amending Article 20 of the Law of the RSFSR on Environmental Protection (Gazette of the Congress of People' s Deputies of the Russian Federation and the Supreme Soviet of the Russian Federation, item 459, No. 10, 1992);

Article 4 of Law of the Russian Federation No. 5076-1 on Amending the Law of the RSFSR on the Sanitary-Epidemiological Well-Being of the Population, the Law of the Russian Federation on Protection of Consumers' Rights, the Law of the Russian Federation on Environmental Protection (Gazette of the Congress of People's Deputies of the Russian Federation and the Supreme Soviet of the Russian Federation, item 1111, No. 29, 1993);

Federal Law No. 93-FZ of July 10, 2001 on Amending Article 50 of the Law of the RSFSR on Environmental Protection (Collection of the Legislation of the Russian Federation, item 2948, N 29, 2001). o. 29, 2001).

2. The Decision of the Supreme Soviet of the RSFSR No. 2061-1 of December 19, 1991 on the Procedure for Putting Into Force of the Law of the RSFSR on Environmental Protection(Gazette of the Congress of People’s Deputies of the Russian Federation and the Supreme Soviet of the Russian Federation, item 458, No. 10, 1992) shall become invalid simultaneously with Article 84 of the Law of the RSFSR on Environmental Protection.

3. The President of the Russian Federation and the Government of the Russian Federation shall bring their regulatory legal acts in line with the present Federal Law.

President of the Russian Federation
V.Putin

Annex 583

Wastes Control Act, 11 April 2007, as amended from time to time and updated in 2015

WASTES CONTROL ACT

Wholly Amended by Act No. 8371, Apr. 11, 2007
Amended by Act No. 8466, May 17, 2007
Act No. 8486, May 25, 2007
Act No. 8613, Aug. 3, 2007
Act No. 8789, Dec. 21, 2007
Act No. 9770, jun. 9, 2009
Act No. 9931, Jan. 13, 2010
Act No. 10219, Mar. 31, 2010
Act No. 10389, Jul. 23, 2010
Act No. 10615, Apr. 28, 2011
Act No. 10888, Jul. 21, 2011
Act No. 11998, Aug. 6, 2013
Act No. 12321, Jan. 21, 2014
Act No. 13038, Jan. 20, 2015
Act No. 13411, Jul. 20, 2015

KLRI KOREA LEGISLATION RESEARCH INSTITUTE

Article 1 (Purpose)

The purpose of this Act is to contribute to environmental conservation and the enhancement of the people's quality of life by reducing the generation of wastes to the maximum extent possible and treating generated wastes in an environment-friendly manner. *<Amended by Act No. 10389, Jul. 23, 2010>*

Article 2 (Definitions)

The terms used in this Act shall be defined as follows: *<Amended by Act No. 8466, May 17, 2007; Act No. 9770, Jun. 9, 2009; Act No. 9931, Jan. 13, 2010; Act No. 10389, Jul. 23, 2010; Act No. 13038, Jan. 20, 2015>*

1. The term "wastes" means such materials as garbage, burnt refuse, sludge, waste oil, waste acid, waste alkali, and carcasses of animals, which have become no longer useful for human life or business activities;
2. The term "household wastes" means any wastes other than industrial wastes;
3. The term "industrial wastes" means any wastes generated from places of business with discharge or emission facilities installed and managed in accordance with the Clean Air Conservation Act, the Water Quality and Aquatic Ecosystem Conservation Act, or the Noise and Vibration Control Act, or any other places of business specified by Presidential Decree;

4. The term "designated wastes" means the industrial wastes specifically enumerated by Presidential Decree as harmful substances, such as waste oil and waste acid which may contaminate their surroundings, or medical wastes which may cause harm to human bodies;

5. The term "medical wastes" means the wastes specifically enumerated by Presidential Decree among the wastes discharged from public health and medical institutions, veterinary clinics, testing and inspection institutions and other similar institutions, which may cause harm to human bodies by infection or otherwise and need to be specially controlled for public health and environmental conservation such as parts and extracts of human bodies and carcasses of laboratory animals;

5-2. The term "medical waste-only container" means a container used to hold, collect, transport, or preserve any medical wastes to prevent infection or other hazards caused by medical wastes;

5-3. The term "treatment" means the collection, transportation, storage, recycling, and treatment of wastes;

6. The term "treatment" means both interim treatment, such as incineration, neutralization, fragmentation and solidification, and terminal treatment, such as landfill and discharging into the sea;

7. The term "recycling" means any of the following activities:

(a) Reusing or reclaiming wastes or making wastes reusable or reclaimable;

(b) Recovering energy prescribed in subparagraph 1 of Article 2 of the Energy Act or making such energy recoverable from wastes, or using wastes as fuel, as prescribed by Ordinance of the Ministry of Environment;

8. The term "waste treatment facilities" means both interim and terminal waste treatment facilities and waste recycling facilities, as specified by Presidential Decree;

9. The term "waste minimization facilities" means facilities specified by Presidential Decree for minimizing discharge of wastes by reducing the quantity of wastes generated in a manufacturing process and by recycling wastes within a place of business.

Article 2-2 (Detailed Classification of Wastes)

Detailed classification of wastes concerning the kinds and recycling types of wastes shall be prescribed by Ordinance of the Ministry of Environment in consideration of the generation source, constituents, harmfulness, etc. of wastes.

Article 3 (Scope of Application)

(1) This Act shall not apply to the following substances: *<Amended by Act No. 8466, May 17, 2007; Act No. 8789, Dec. 21, 2007; Act No. 10389, Jul. 23, 2010; Act No. 10888, Jul. 21, 2011; Act No. 10911, Jul. 25, 2011; Act No. 13038, Jan. 20, 2015>*

1. A radioactive substance prescribed in the Nuclear Safety Act or a material contaminated by such substance;

2. A gaseous substance not contained in a container;

3. Wastewater flowing into, or discharged into public waters from, a facility established for the prevention of water contamination prescribed in the Water Quality and Aquatic Ecosystem

Conservation Act;

4. Livestock excreta prescribed in the Act on the Management and Use of Livestock Excreta;

5. Sewage and excreta prescribed in the Sewerage Act;

6. A livestock carcass, a polluted thing, a thing subject to ban on importation, or a thing rejected in a quarantine inspection under Article 22 (2), 23, 33 or 44 of the Act on the Prevention of Contagious Animal Diseases;

7. A carcass of an aquatic animal, a polluted facility or thing, a thing subject to ban on importation, and a thing rejected in a quarantine inspection, to which Articles 17 (2), 18 and 34 (1) and subparagraphs of Article 25 (1) of the Aquatic Life Disease Control Act apply;

8. Ammunitions scrapped pursuant to Article 13-2 of the Act on the Management of Military Supplies;

9. A carcass of an animal treated at an animal cemetery established and operated by a person registered for funeral services for animals prescribed in Article 32 (1) of the Animal Protection Act.

(2) Discharging wastes into the sea under this Act shall be governed by the Marine Environment Management Act.

Article 3-2 (Basic Principles of Waste Management)

(1) Every business entity shall reduce the generation of wastes to the maximum extent possible by improving the manufacturing process, etc. of products and minimize the discharge of wastes by recycling his/her own wastes.

(2) Every person shall take prior appropriate measures with respect to the discharge of wastes to prevent any harm to environs or the health of residents.

(3) Waste treatment shall be properly managed in a manner that reduces their quantities and degree of hazard or otherwise is consistent with environmental conservation and the protection of the people's health.

(4) Any person who causes environmental pollution by discharging wastes shall be responsible for restoring the affected environs and bear the expenses incurred in restoring the damage caused by such pollution.

(5) To the extent possible, wastes generated domestically shall be treated within the Republic of Korea and the importation of wastes shall be restrained.

(6) Wastes shall be recycled rather than incinerated, buried, or treated in another way, in order to contribute to the improvement of resource productivity.

Article 4 (Duties of State and Local Governments)

(1) The Mayor of a Metropolitan Autonomous City, the Governor of a Special Self-Governing Province, or the head of a Si/Gun/Gu (the head of a Gu refers to the head of an autonomous Gu; hereinafter the same shall apply) shall ascertain the current status of wastes discharged and treated within his/her jurisdiction; install and operate waste treatment facilities so that wastes can be properly treated; conduct affairs relating to waste treatment efficiently by improving the methods of treating wastes and raising the skills and quality of the persons in charge; and endeavor to remind residents and business entities of the importance

of protecting the environment and to restrain the generation of wastes. *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010; Act No. 11914, Jul. 16, 2013>*

(2) The Special Metropolitan City Mayor, Metropolitan City Mayors, and Do Governors shall provide the heads of Sis/Guns/Gus with technical and financial assistance to help them fulfill their duties prescribed in paragraph (1) and shall also coordinate waste treatment services within their jurisdiction. *<Amended by Act No. 8613, Aug. 3, 2007>*

(3) The State shall ascertain the current status of designated wastes discharged and treated, and take measures necessary for proper treatment of such wastes.

(4) The State shall support research on and development of technology for waste treatment, provide the Special Metropolitan City Mayor, Metropolitan City Mayors, the Mayor of a Metropolitan Autonomous City, Do Governors, and the Governor of a Special Self-Governing Province (hereinafter referred to as "Mayor/Do Governor") and the head of each Si/Gun/Gu with technical and financial assistance necessary for them to fulfill their duties prescribed in paragraphs (1) and (2), and shall also coordinate waste treatment services with the Special Metropolitan City, Metropolitan Cities, Special Self-Governing Cities, Dos, and Special Self-Governing Provinces (hereinafter referred to as "City/Do"). *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 11914, Jul. 16, 2013>*

Article 5 (Multi-regional Waste Management)

(1) If the Minister of Environment, the Mayor/Do Governor or the head of a Si/Gun/Gu deems it necessary to treat wastes generated from at least two Cities/Dos or Sis/Guns/Gus with an integrated system for a multiple number of regions, he/she may solely or jointly install and operate multi-regional waste treatment facilities (including public treatment facilities for designated wastes).(1)

(2) The Minister of Environment, the Mayor/Do Governor, or the head of a Si/Gun/Gu may entrust a person designated by Ordinance of the Ministry of Environment to install or manage the multi-regional treatment facilities prescribed in paragraph (1).

Article 6 (Charges for Waste Treatment in Waste Treatment Facilities)

(1) An institution that has installed and operates a waste treatment facility prescribed in Article 4 (1) or 5 (1) may charge expenses incurred in treating wastes brought into the facility (hereinafter referred to as the "waste treatment charge") on persons who bring wastes into such facility.

(2) In cases falling under paragraph (1), where a waste treatment facility has been installed and is operated jointly by at least two local governments, the waste treatment charge shall be determined by an agreement between the local governments.

(3) The amount of waste treatment charge shall be prescribed by Ordinance of the Ministry of Environment if the State is responsible for collecting it, while such amount shall be prescribed by Municipal Ordinance if a local government is responsible for collecting it.

Article 7 (Citizens' Duties)

(1) Every citizen shall keep natural and living environments clean and endeavor to reduce and recycle wastes.

(2) Every owner, occupant, and manager of a parcel of land or a building shall endeavor to keep clean the parcel of land or building owned, occupied, or managed by him/her, and shall implement general clean-up in accordance with the plan prepared by the Mayor of a Special Self-Governing City the Governor of a Special Self-Governing Province, or the head of a Si/Gun/Gu. *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 11914, Jul. 16, 2013>*

Article 8 (Prohibition against Dumping Wastes)

(1) No one shall treat wastes in any area other than the places and facilities provided for the collection of wastes by the Mayor of a Metropolitan Autonomous City, the Governor of a Special Self-Governing Province, the head of a Si/Gun/Gu, or the manager of a facility, such as a public park or road. *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 11914, Jul. 16, 2013>*

(2) No one shall bury or incinerate wastes in any area other than the landfill sites permitted, approved or reported under this Act: Provided, That the foregoing shall not apply to incineration at places specified under the proviso to Article 14 (1), as prescribed by ordinance of the competent Special Self-Governing City, Special Self-Governing Province, or Si/Gun/Gu. *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 11914, Jul. 16, 2013>*

(2) No one shall bury or incinerate wastes in any area other than the landfill sites permitted, approved or reported under this Act: Provided, That the foregoing shall not apply to incineration at places specified under the proviso to Article 14 (1), as prescribed by ordinance of the competent Metropolitan Autonomous City, Special Self-Governing Province, or Si/Gun/Gu. *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 11914, Jul. 16, 2013>*

(3) The Mayor of a Metropolitan Autonomous City, the Governor of a Special Self-Governing Province, or the head of a Si/Gun/Gu may order the owner, occupant, or manager of a parcel of land or building to take necessary measures in compliance with the relevant ordinance of the competent local government, if the owner, occupant, or manager fails to keep clean the property under his/her control pursuant to Article 7 (2). *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 11914, Jul. 16, 2013>*

Article 9 (Master Plans for Waste Management)

(1) The Mayor/Do Governor shall prepare a master plan for proper management of wastes generated within his/her jurisdiction once every ten years in compliance with the guidelines prescribed by the Minister of Environment, subject to the approval of the Minister of Environment. The foregoing shall also apply to any revision to any matter approved. In such cases, the Minister of Environment shall, whenever he/she approves a master plan or a revision thereto, consult with the heads of the relevant central administrative agencies.

(2) The head of a Si/Gun/Gu shall prepare a master plan for management of wastes generated within his/her jurisdiction once every ten years and submit it to the Mayor/Do Governor.

(3) The master plan prescribed in paragraphs (1) and (2) shall contain the following details:

1. Overview of the population, residental patterns, industrial structure, and distribution, geographical environment, etc. within his/her jurisdiction;

2. The quantity of wastes generated by categories and the estimated quantity of wastes in the future;

3. Current status of and future plan for waste management;

4. Matters concerning reduction, recycling, and conversion of wastes into resources;

5. Current status of food wastes treatment facilities installed and a plan to install such facilities;

6. Matters concerning collection, transportation, and storage of wastes and improvement of equipment and containers for wastes;

7. Plan for securing financial sources.

Article 10 (Comprehensive Plans for Waste Management)

(1) The Minister of Environment shall prepare a comprehensive plan for nationwide waste management based on the master plans for waste management under Article 9 (1) and the results of statistical researches on wastes under Article 11 (hereinafter referred to as a "comprehensive plan") once every ten years for proper management of wastes generated throughout the country.

(2) The Minister of Environment may review the feasibility of the comprehensive plan for revision once every five years after the date on which the comprehensive plan is finalized.

(3) If the comprehensive plan is revised under paragraph (2), the Mayor/Do Governor shall also revise the master plan for waste management under Article 9 (1), reflecting the revised details of the comprehensive plan in the master plan, and submit it to the Minister of Environment for approval.

(4) The master plan shall contain the following details:

1. Evaluation of the previous master plan;

2. Circumstances and prospects for waste management;

3. Basic principles of the master plan;

4. Policy on waste management by sectors;

5. Plan for securing financial sources.

Article 11 (Statistical Research on Wastes)

(1) The Minister of Environment, each Mayor/Do Governor, and the head of each Si/Gun/Gu shall conduct research on the current status of different types of wastes generated and treated, status of waste treatment business and other related industries, and resource productivity improvement including waste recycling rates, in order to secure basic data and information necessary for formulating policies on wastes. *<Amended by Act No. 10389, Jul. 23, 2010>*

(2) Matters necessary for the items, timing, and methods of research conducted under paragraph (1) shall be prescribed by Ordinance of the Ministry of Environment. *<Newly Inserted by Act No. 10389, Jul. 23, 2010>*

Article 12 Deleted. *<by Act No. 13038, Jan. 20, 2015>*

Article 13 (Standards for Waste Treatment, etc.)

(1) Anyone who intends to treat wastes shall comply with the standards and methods prescribed by Presidential Decree: with respect to wastes that are made readily recyclable in view of the principles of recycling wastes and matters to be observed under Article 13-2 (hereinafter referred to as "intermediately processed wastes"), relaxed standards and methods may separately be prescribed by Presidential Decree.

<Amended by Act No. 10389, Jul. 23, 2010; Act No. 13411, Jul. 20, 2015>

(2) Medical wastes shall be treated by using medical waste-only containers that have passed inspections conducted in accordance with Article 25-2 (4) (hereinafter referred to as "exclusive container"). *<Newly Inserted by Act No. 10389, Jul. 23, 2010; Act No. 13038, Jan. 20, 2015>*

Article 13-2 (Principles of Recycling Wastes and Matters to be Observed)

(1) Anyone may recycle wastes unless he/she violates any of following:

1. The wastes shall not cause harm to living environment by discharging airborne particulates, bad odor, volatile organic compounds, air pollutants, etc.;

2. The wastes shall not contaminate soil, hydroecological system, or underground water by leaking harmful substances, such as seeping water, heavy metals, etc.;

3. The wastes shall not cause harm to humans by generating noise or vibration;

4. He/she shall comply with the matters prescribed by Presidential Decree, such as the prevention of harm to humans or environment, in the course of using wastes as recycling products or raw materials by eliminating or stabilizing harmful substances including heavy metals;

5. He/she shall comply with the recycling standards prescribed by Ordinance of the Ministry of Environment.

(2) Notwithstanding paragraph (1), any of the following wastes shall be prohibited or restricted from recycling:

1. Asbestos wastes;

2. Wastes containing polychlorinated biphenyls (PCBs) in at least the concentration prescribed by Ordinance of the Ministry of Environment;

3. Medical wastes (excluding placenta);

4. Wastes prescribed by Presidential Decree among the wastes highly likely to cause harm to human bodies and environment, such as toxic wastes.

(3) The types and level of methods to prevent and reduce contamination and the matters to be observed, such as the standards, methods, etc. of dealing with wastes, to comply with the principles prescribed in the subparagraphs of paragraph (1) and (2) shall be prescribed by Ordinance of the Ministry of Environment.

Article 13-3 (Environmental Assessment when Recycling Wastes)

(1) Notwithstanding Article 13-2 (1), any of the following persons shall undergo assessment of the methods to evade or eliminate harmful effects caused by recycling of the relevant wastes on human health or environment by examining and predicting such effects and the adequacy of recycling technology (hereinafter referred to as "environmental assessment of recycling"), conducted by an agency for environmental assessment of recycling under Article 13-4 (1). The same shall also apply where any important matters prescribed by Ordinance of the Ministry of Environment, including the kinds of wastes and the types of recycling, are changed:

1. A person who intends to recycle wastes or any material made by mixing wastes with soil, etc., in the amount of at least that prescribed by Ordinance of the Ministry of Environment, for such use as cover

soil, fill material, road substratum material, etc. or by means prescribed by Ordinance of the Ministry of Environment by bring them into contact with soil, underground water, surface water, etc. (including where at least two persons intend to recycle them jointly);

2. A person who intends to recycle wastes for which no principles of recycling wastes or matters to be observed are determined under Article 13-2.

(2) Notwithstanding paragraph (1), a person who intends to manufacture any fertilizers, the legal standards for which have been formulated under Article 4 of the Fertilizer Control Act, or a person who intends to recycle wastes by the methods prescribed by Ordinance of the Ministry of Environment, may recycle the relevant wastes without undergoing an environmental assessment of recycling.

(3) A person who has undergone an environmental assessment of recycling under paragraph (1) shall submit the results thereof to the Minister of Environment and obtain his/her approval for the recycling of the relevant wastes.

(4) After examining whether the applicant meets the requirements for approval prescribed by Presidential Decree in consideration of the results of the environmental assessment of recycling received pursuant to paragraph (3), the Minister of Environment may grant approval under paragraph (3).

(5) In granting approval pursuant to paragraph (4), the Minister of Environment may impose conditions prescribed by Ordinance of the Ministry of Environment, such as the term of validity of the approval and the quantity of wastes, to reduce harm, etc. to be caused to national health or environment.

(6) Where a person who has obtained approval under paragraph (3) falls under any of the following, the Minister of Environment shall revoke such approval. In such cases, if the approval is revoked, the recycling of the relevant wastes shall be suspended without delay:

1. Where he/she recycles wastes differently from the matters approved pursuant to paragraph (3);

2. Where he/she submits the results of an environmental assessment of recycling pursuant to paragraph (3) by deceit or other illegal means;

3. Where he/she violates any condition of approval imposed pursuant to paragraph (5).

(7) Except as otherwise prescribed in paragraphs (1) through (6), matters necessary for procedures and methods of environmental assessment of recycling, procedures for approval, etc. shall be prescribed by Ordinance of the Ministry of Environment.

Article 13-4 (Designation, etc. of Agency for Environmental Assessment of Recycling)

(1) The Minister of Environment shall, for the specialized and technical environmental assessment of recycling, designate an agency for environmental assessment of recycling among the following institutions or organizations and issue a certificate of designation:

1. National or public research institutes;

2.The Korea Environment Corporation under the Korea Environment Corporation Act;

3. Other institutions or organizations prescribed by Presidential Decree.

(2) A person who intends to be designated as an agency for environmental assessment of recycling shall file an application with the Minister of Environment meeting the requirements for technical personnel,

facilities, equipment, etc. prescribed by Ordinance of the Ministry of Environment. The same shall also apply where he/she intends to modify any important matters prescribed by Ordinance of the Ministry of Environment.

(3) Upon receipt of a request for an environmental assessment of recycling, an agency for environmental assessment of recycling shall prepare a report on environmental assessment of recycling including the following matters, in accordance with the standards and methods prescribed by Ordinance of the Ministry of Environment:

1. Current status of the area subject to environmental assessment;
2. Prediction and assessment of environment effects pertaining to the recycling of wastes, including the effects of wastes or materials made by adding wastes on soil, underground water and surface water when they leach out;
3. Measures for preventing and eliminating environmental risks;
4. Plans for monitoring environmental change;
5. Matters prescribed by Ordinance of the Ministry of Environment for the environmental assessment of recycling of wastes for which no principles or matters to be observed are formulated under Article 13-2.

(4) No agency for environmental assessment of recycling shall allow a third party to conduct any environmental assessment of recycling using its name or trade name or lend its certificate of designation as an agency for environmental assessment of recycling.

(5) The Minister of Environment shall periodically examine whether the operation of an agency for environmental assessment of recycling is appropriate.

(6) Where an agency for environmental assessment of recycling falls under any of the following, the Minister of Environment may revoke the designation or order a suspension of business fixing a period not exceeding six months: Provided, That in cases falling under subparagraph 1 or 2, such designation shall be revoked:

1. Where it has obtained the designation or designation for modification by deceit or other illegal means;
2. Where it has conducted any environmental assessment of recycling during the business suspension period;
3. Where it has failed to meet the requirements for designation prescribed in the former part of paragraph (2);
4. Where it has modified any important matters without obtaining designation for modification, in violation of the latter part of paragraph (2);
5. Where it has prepared a report on environmental assessment of recycling under paragraph (3) by deceit or other illegal means;
6. Where it has allowed a third party to conduct any environmental assessment of recycling using its name or trade name or has lent its certificate of designation as an agency for environmental assessment of recycling, in violation of paragraph (4).

(7) Except as otherwise prescribed in paragraphs (1) through (6), necessary matters concerning the standards and procedures for designation of an agency for environmental assessment of recycling, periodic inspection, etc. shall be prescribed by Ordinance of the Ministry of Environment.

(8) Subparagraphs 1 through 4 and 6 of Article 26 shall apply mutatis mutandis to the grounds for disqualification of an agency for environmental assessment of recycling referred to in paragraph (1). In such cases, "waste management business" shall be construed as "agency for environmental assessment of recycling" and "permit" as "designation".

Article 13-5 (Hazard Criteria of Recycled Products or Materials)

(1) Where the Minister of Environment deems that any products or materials that are produced by recycling wastes may cause harm to human health or the environment, he/she shall formulate and publicize the Hazard Criteria of such recycled products or materials (hereinafter referred to as "Hazard Criteria") after consulting with the heads of the central administrative agencies.

(2) No person shall manufacture or distribute recycled products or materials using wastes that fail to meet the Hazard Criteria.

(3) The Minister of Environment may test, analyze, or investigate the actual conditions of manufacturing or distribution of any products or materials produced by recycling wastes in order to ascertain whether they are in compliance with the Hazard Criteria thereof.

(4) Matters necessary for the testing, analysis, and investigation of actual conditions under paragraph (3) shall be prescribed by Ordinance of the Ministry of Environment.

(5) If, as a result of the testing, analysis or investigation of actual conditions under paragraph (3), a person is found to have manufactured or distributed any products or materials in violation of the Hazard Criteria, the Minister of Environment may order him/her to take necessary actions, such as the recall and destruction of the relevant products or materials.

(6) Where the Minister of Environment deems that any products or materials, the Hazard Criteria of which are publicized pursuant to paragraph (1) and which are manufactured by recycling wastes require a certain control, he/she may enter into an agreement with the head of the relevant local government, the manufacturer of the said products or materials, etc. that requires them to disclose the use and quantities of each type of wastes, the heavy metal contents of such wastes, and other information.

Article 14 (Treatment, etc. of Household Wastes)

(1) The Mayor of a Metropolitan Autonomous City, the Governor of a Special Self-Governing Province, or the head of a Si/Gun/Gu shall be responsible for treating household wastes discharged within his/her jurisdiction: Provided, That a specific area designated by the Mayor of Metropolitan Autonomous City, the Governor of a Special Self-Governing Province or, the head of a Si/Gun/Gu, as prescribed by Ordinance of the Ministry of Environment, shall be excluded from his/her jurisdictional areas. <*Amended by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010; Act No. 11914, Jul. 16, 2013*>

(2) The Mayor of a Metropolitan Autonomous City, the Governor of a Special Self-Governing Province, or the head of a Si/Gun/Gu may authorize a person specified by Presidential Decree to treat household

wastes prescribed in paragraph (1) on his/her behalf, as prescribed by ordinance of the competent local government. *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010; Act No. 11914, Jul. 16, 2013>*

(3) Notwithstanding the main sentence of paragraph (1), and paragraph (2), any person who has filed a report on waste treatment pursuant to Article 46 (1) (hereinafter referred to as "person who has filed a report on waste treatment") may collect, transport, or recycle the wastes specified by Ordinance of the Ministry of Environment, such as waste paper, scrap metal, and waste cooking oil (only permitted where waste cooking oil classified as household wastes is collected and transported by a special storage tank or container sealed with no chance of leakage), among household wastes. *<Newly Inserted by Act No. 10389, Jul. 23, 2010; Act No. 11914, Jul. 16, 2013>*

(4) A person who collects and transports household wastes prescribed in paragraph (3) may transfer the wastes specified by Ordinance of the Ministry of Environment, among household wastes collected by him/her, to any of the following persons: *<Newly Inserted by Act No. 11914, Jul. 16, 2013>*

1. A person who directly collects and recycles wastes generated from products and packing materials manufactured, imported, or sold by him/her (including persons specified by Ordinance of the Ministry of Environment, among persons entrusted with recycling), among manufacturers or importers of products and packing materials specified in Article 16 (1) of the Act on the Promotion of Saving and Recycling of Resources;
2. A person who has obtained permission for waste recycling business specified in Article 25 (5) 5 or 7;
3. A person who has filed a report on waste treatment;
4. Any other persons specified by Ordinance of the Ministry of Environment.

(5) The Mayor of a Metropolitan Autonomous City, the Governor of a Special Self-Governing Province, or the head of a Si/Gun/Gu may collect service charges for the treatment of household wastes pursuant to paragraph (1), depending on the kind, quantity, etc. of the household wastes discharged. In such cases, the service charges shall be collected in the manner of selling standard waste bags, waste marks, etc. (hereinafter referred to as "standard waste bags and marks"), as prescribed by ordinance of the competent local government; but the service charges for food wastes may be collected in the manner of charging an amount calculated according to the discharged quantity. *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010; Act No. 11465, Jun. 1, 2012; Act No. 11914, Jul. 16, 2013>*

(6) When the Mayor of a Metropolitan Autonomous City, the Governor of a Special Self-Governing Province, or the head of a Si/Gun/Gu intends to impose and collect service charges for the treatment of food wastes pursuant to paragraph (5), he/she may use the electronic information processing program under Article 45 (2). In such cases, information required for calculating service charges shall be entered in the electronic information processing program prescribed in Article 45 (2), as prescribed by Ordinance of the Ministry of Environment. *<Newly Inserted by Act No. 11914, Jul. 16, 2013>*

(7) The Mayor of a Metropolitan Autonomous City, the Governor of a Special Self-Governing Province, or the head of a Si/Gun/Gu may authorize a person to produce, distribute, or sell standard waste bags and marks on his/her behalf, as prescribed by municipal ordinances. *<Newly Inserted by Act No. 10389, Jul. 23,*

2010; Act No. 11914, Jul. 16, 2013>

(8) When the Mayor of a Metropolitan Autonomous City, the Governor of a Special Self-Governing Province, or the head of a Si/Gun/Gu intends to authorize a person to collect and transport household wastes on his/her behalf pursuant to paragraph (2), he/she shall comply with the following: *<Newly Inserted by Act No. 10389, Jul. 23, 2010; Act No. 11914, Jul. 16, 2013; Act No. 12321, Jan. 21, 2014; Act No. 13038, Jan. 20, 2015>*

1. The cost shall be calculated in accordance with the standards prescribed by Ordinance of the Ministry of Environment, and the initial calculation thereof shall be entrusted to any cost accounting service agency provided for in Article 9 of the Enforcement Rule of the Act on Contracts to which a Local Government is a Party;

2. The standards for evaluating the performance of persons authorized to collect and transport household wastes on behalf of local authorities (including the levels of resident satisfaction and the working conditions of street cleaners) shall be prescribed by ordinance of each local government, and the performance shall be evaluated at least once a year according to the evaluation standards. In such cases, each local government shall organize an evaluation team with civilian experts, etc. to evaluate the performance of such persons;

3. If the evaluation of performance is completed pursuant to subparagraph 2, the results shall be posted on the website of relevant local government for at least six months from the date of such evaluation, and if the results of such evaluation reveal that the standards prescribed by ordinance of the relevant local government are not met, measures, such as business suspension and the cancellation of the contract for collection and transportation of household wastes on behalf of local authorities shall be taken, as prescribed by Ordinance of the Ministry of Environment;

4. If a contract for collection and transportation of household wastes on behalf of local authorities is concluded, the terms and conditions of such contract shall be posted on the website of the local government for at least six months from the date of such conclusion;

5. Upon the expiration of a contract for collection and transportation of household wastes on behalf of local authorities under subparagraph 4, the details of expenditure incurred in such collection and transportation shall be posted on the website of the relevant local government within six months from the date of such expiration, for at least six months;

6. If a person (including the representative of a corporation) who collects and transports household wastes on behalf of local authorities is sentenced to any of the following punishments, the contract for vicarious execution shall be cancelled without delay:

(a) Where he/she is sentenced to a punishment of a fine or heavier punishment by committing a crime that falls under Article 133 of the Criminal Act;

(b) Where he/she is sentenced to a punishment of a fine or heavier punishment (in cases of punishment of a fine, limited to a fine of at least three million won) by committing a crime that falls under Article 347, 347-2, 356, or 357 of the Criminal Act (in cases falling under Article 347 or 356,

including cases where he/she is aggravatingly punished under Article 3 of the Act on the Aggravated Punishment, etc. of Specific Economic Crimes);

7. Any person who has been sentenced to punishment that falls under any item of subparagraph 6 in relation to a contract to collect and transport household wastes on behalf of local authorities, and for whom three years have yet to elapse from the date of such sentence shall not be entitled to enter into any contract to collect and transport household wastes.

(9) If the Minister of Environment deems it necessary in relation to collection and transportation of household wastes on behalf of local authorities, he/she may require the Mayor of a Metropolitan Autonomous City, the Governor of a Special Self-Governing Province, or the head of a Si/Gun/Gu to submit necessary data or to take corrective measures, and may inspect and ascertain whether standards for the collection and transportation of household wastes are complied with. Upon receipt of a request from the Minister of Environment to submit necessary data or to take corrective measures in such cases, the Mayor of a Metropolitan Autonomous City, the Governor of a Special Self-Governing Province, or the head of a Si/Gun/Gu shall comply therewith, in the absence of extenuating circumstances. *<Newly Inserted by Act No. 10389, Jul. 23, 2010; Act No. 11914, Jul. 16, 2013; Act No. 12321, Jan. 21, 2014>*

Article 14-2 (Imposition of Penalty Surcharges on Persons Authorized to Collect and Transport Household Wastes)

(1) Where the Mayor of a Metropolitan Autonomous City, the Governor of a Special Self-Governing Province, or the head of a Si/Gun/Gu intends to order any person authorized to collect and transport household wastes on his/her behalf to suspend the business under Article 14 (8) 3, he/she may impose a penalty surcharge not exceeding 100 million won on such person in lieu of the suspension of business, as prescribed by Presidential Decree, if the suspension of business is likely to result in the accumulation of wastes not properly treated, and consequently causes or is likely to cause harm to the health of local residents.

(2) Unpaid penalty surcharges imposed under paragraph (1) shall be collected in the same manner as delinquent local taxes are collected.

(3) Penalty surcharges collected under paragraphs (1) and (2) shall become the revenue of the relevant Metropolitan Autonomous City. Special Self Governing Province, or Si/Gun/Gun, and shall be used for the purposes of use specified by Presidential Decree, including the expansion of multi-regional waste treatment facilities.

Article 14-3 (Formulation, etc. of Plans to Restrain Generation of Food Wastes)

(1) In order to reduce the generation of food wastes (including agricultural, fishery, and livestock wastes; the same shall apply hereinafter) generated to the maximum extent possible within the jurisdiction of the Mayor of a Metropolitan Autonomous City, the Governor of a Special Self-Governing Province, or the head of a Si/Gun/Gu, and properly treat food wastes generated, he/she shall formulate and implement a plan to restrain the generation of food wastes, including the following matters, and shall annually evaluate the outcomes of implementation thereof:

1. The current status of the generation and treatment of food wastes;

2. The estimated quantity of food wastes generated in the future and a plan for proper treatment of the wastes;

3. The targets goals for restraining the generation of food wastes and a strategic plan for achieving the target goals;

4. The current status of food wastes treatment facilities installed and a plan to install such facilities;

5. A strategic plan for technical and financial assistance in restraining the generation of food wastes and properly treating such wastes (including a plan for securing funds therefor).

(2) The interval for formulating a plan under paragraph (1), the method of evaluation, and other necessary matters shall be prescribed by Ordinance of the Ministry of Environment.

Article 15 (Cooperation, etc. of Household Waste dischargers in Treatment)

(1) The owner, occupant, or manager of a parcel of land or a building from which household wastes are discharged (hereinafter referred to as "household waste discharger") shall either treat such wastes directly in a manner to avoid any harm to the conservation of the living environment or reduce the discharged quantity of wastes, as prescribed by ordinance of the competent Metropolitan Autonomous City, Special Self-Governing Province, or Si/Gun/Gu. *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 11914, Jul. 16, 2013>*

(2) Each household waste discharger shall separate household wastes that he/she is unable to treat directly under paragraph (1) and shall separately keep such wastes by type, nature, and condition, as prescribed by ordinance of the competent Metropolitan Autonomous City, Special Self -Governing Province, or Si/Gun/Gu. *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 11914, Jul. 16, 2013>*

(3) Deleted. *<by Act No. 11914, Jul. 16, 2013>*

Article 15-2 (Obligations of Persons Discharging Food Wastes, etc.)

(1) Any of the persons specified by Presidential Decree, among persons who discharge large quantities of food wastes, shall comply with rules prescribed by ordinance of the competent Metropolitan Autonomous City, Special Self-Governing Province, or Si/Gun/Gu, for restraining the generation of food wastes and properly treating such wastes.

(2) A person discharging food wastes under paragraph (1) shall report on his/her plan to restrain the generation of food wastes and properly treat such wastes to the competent local authority, such as the Mayor of a Metropolitan Autonomous City, the Governor of a Special Self-Governing Province, or the head of a Si/Gun/Gu, as prescribed by Ordinance of the Ministry of Environment. The foregoing shall also apply to modifications to any reported matters specified by Ordinance of the Ministry of Environment.

(3) Notwithstanding Article 14 (1) or 18 (1), a person discharging food wastes under paragraph (1) shall collect, transport, or recycle generated food wastes directly or entrust any of the following persons with the collection, transportation, or recycling of such wastes:

1. A person who has installed and operates a waste treatment facility under Article 4 or 5;

2. A person who has obtained permission for waste collection and transportation business under Article 25 (5) 1;

3. A person who has obtained permission for waste recycling business under any provision of Article 25 (5) 5 through 7;

4. A person who has filed a report on waste treatment (limited to the persons who have filed a report on the treatment of food wastes for recycling).

(4) Persons discharging food wastes under paragraph (1) may jointly collect, transport, or recycle food wastes generated from each place of business, as prescribed by Ordinance of the Ministry of Environment, or may jointly install and operate waste treatment facilities. In such cases, they shall establish a joint steering organization, and appoint one representative of the organization.

Article 16 (Conclusion of Agreements)

(1) The Mayor/Do Governor or the head of a Si/Gun/Gu may enter into agreements with persons who discharge wastes within his/her jurisdiction or an organization of such persons in order to restrain the generation of wastes and properly treat such wastes.

(2) Matters necessary for the objectives of the agreement under paragraph (1) and the method of and procedure for performance of such agreements shall be prescribed by ordinance of the competent local government.

(3) The Mayor/Do Governor or the head of a Si/Gun/Gu may provide a person who enters into agreements with the competent local government under paragraph (1) with such support as necessary for performing such agreements.

Article 17 (Obligations, etc. of Industrial Waste dischargers)

(1) A person who discharges wastes from his/her place of business (hereinafter referred to as "industrial waste discharger") shall comply with the following provisions: *<Amended by Act No. 10389, Jul. 23, 2010; Act No. 13038, Jan. 20, 2015; Act No. 13411, Jul. 20, 2015>*

1. He/she shall request a waste analysis agency prescribed in Article 17-2 (1) to ascertain in advance whether any wastes which can be classified as designated wastes depending on the content of toxic substances prescribed by Ordinance of the Ministry of Environment, among wastes generated from his/her place of business, fall under designated wastes;

1-2. He/she shall treat all wastes generated from his/her place of business in compliance with the standards and methods for waste treatment under Article 13 and the principles of recycling wastes and matters to be observed under Article 13-2;

2. The generation of industrial wastes shall reduced to the maximum extent possible by installing waste-reducing facilities in a manufacturing process, developing technology, recycling wastes, and in any other way;

3. An industrial waste discharger who intends to entrust waste treatment to someone under Article 18 (1) shall ascertain whether the entrusted person has the capability to treat wastes in compliance with the standards for and methods of waste treatment under Article 13 or in view of the principles of recycling

wastes and matters to be observed under Article 13-2 before such entrustment: Provided, That the foregoing shall not apply where he/she entrusts waste treatment to a person who has installed and operates waste treatment facilities under Article 4 or 5.

(2) Industrial waste dischargers specified by Ordinance of the Ministry of Environment shall report on the types and quantity of industrial wastes generated, to the Mayor of a Metropolitan Autonomous City, the Governor of a Special Self-Governing Province, or the head of a Si/Gun/Gu, as prescribed by Ordinance of the Ministry of Environment. The foregoing shall also apply to any modification to reported matters specified by Ordinance of the Ministry of Environment. *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 11914, Jul. 16, 2013>*

(3) A business entity that discharges designated wastes prescribed by Ordinance of the Ministry of Environment shall submit each of the following documents to the Minister of Environment for verification before processing such wastes under Article 18 (1): Provided, That where persons prescribed by Ordinance of the Ministry of Environment, including those operating a motor vehicle maintenance business as defined in subparagraph 8 of Article 2 of the Motor Vehicle Management Act, collect and transport designated wastes together with other persons, their representative shall submit such documents to the Minister of Environment for verification: *<Newly Inserted by Act No. 8613, Aug. 3, 2007; Act No. 13038, Jan. 20, 2015>*

1. Waste treatment plans including the following matters:
   (a) Trade name, locations of the places of business, and category of business;
   (b) Types and volume of wastes to be discharged, and interval for discharge;
   (c) Plan for transport and treatment of wastes;
   (d) Plan for joint treatment of wastes (applicable only to cases of joint treatment);
   (e) Other matters prescribed by Ordinance of the Ministry of Environment;
2. Waste analysis reports prepared by a waste analysis agency prescribed in Article 17-2 (1);
3. If the treatment of designated wastes is entrusted, documents attesting the acceptance of entrustment from a person entrusted with such affairs.

(4) If a person who has obtained verification under paragraph (3) falls under any of the following cases, he/she shall submit relevant documents to the Minister of Environment and obtain the verification of such modification: *<Newly Inserted by Act No. 8613, Aug. 3, 2007; Act No. 11465, Jun. 1, 2012; Act No. 13038, Jan. 20, 2015>*

1. Where he/she intends to change his/her trade name;
2. Where he/she intends to change the location of his/her place of business;
3. Where the monthly average volume of designated wastes discharged (which shall be calculated based on the quantity discharged for one year after obtaining verification or verification for modification) is at least 10 percent and is increasing by at least the percentage prescribed by Ordinance of the Ministry of Environment;

4. Where the volume of designated wastes newly or additionally discharged (in cases of additional discharge, the quantity shall be calculated by adding the quantity previously discharged) falls under a case subject to the verification of a plan for treatment of controlled wastes referred to in paragraph (3);

5. Where he/she intends to change the treatment method by kind of designated wastes or a waste treatment business operator;

6. Where he/she intends to alter the number of places of business for joint treatment or the kinds of wastes jointly treated (applicable only to cases of joint treatment).

(5) Industrial waste dischargers operating the type of business prescribed by Presidential Decree in excess of any of the scales prescribed by Presidential Decree comply with the guidelines publicized by the Minister of Environment and the heads of relevant central administrative agencies jointly in accordance with the basic policy and procedure prescribed by Ordinance of the Ministry of Environment in order to restrain the generation of industrial wastes under paragraph (1) 2. *<Amended by Act No. 8613, Aug. 3, 2007>*

(6) If an industrial waste discharger transfers his/her business to another person or dies, or a corporation discharging industrial wastes is merged with another corporation, the transferee or successor, or the corporation surviving the merger or resulting form the consolidation shall succeed to the rights and obligations relating to such industrial wastes. *<Amended by Act No. 8613, Aug. 3, 2007>*

(7) A person who has acquired the whole or any part of the place of business of an industrial waste discharger by an auction under the Civil Execution Act, the realization of property under the Debtor Rehabilitation and Bankruptcy Act, the sale of seized property under the National Tax Collection Act, the Customs Act or the Framework Act on Local Taxes, or other procedures corresponding thereto, shall succeed to the rights and obligations relating to such industrial wastes. *<Newly Inserted by Act No. 8613, Aug. 3, 2007; Act No. 10219, Mar. 31, 2010; Act No. 10389, Jul. 23, 2010>*

Article 17-2 (Designation of Professional Waste Analysis Agencies)

(1) In order to perform specialized affairs relating to the testing and analysis of wastes, the Minister of Environment may designate any of the following agencies as a specialized agency for testing and analysis of wastes (hereinafter referred to as "professional waste analysis agency"):

1. The Korea Environment Corporation under the Korea Environment Corporation Act (hereinafter referred to as the "Korea Environment Corporation");

2. The Sudokwon Landfill Site Management Corporation under the Act on the Establishment and Management of Sudokwon Landfill Site Management Corporation;

3. The Public Health and Environment Research Institute under the Public Health and Environment Research Institute Act;

4. Other institutions deemed by the Minister of Environment as having capability in the testing and analysis of wastes.

(2) If any institution under paragraph (1) 4 intends to be designated as a professional waste analysis agency, it shall file an application for designation with the Minister of Environment after being equipped with facilities, equipment, and technical ability prescribed by Presidential Decree.

(3) If an institution designated as a professional waste analysis agency under paragraph (1) 4 intends to modify any of the important matters prescribed by Ordinance of the Ministry of Environment, it shall obtain designation for modification of such matter from the Minister of Environment.

(4) When designating an institution referred to in any subparagraph of paragraph (1) as a professional waste analysis agency, or designating for modification, the Minister of Environment shall issue a certificate of designation to the relevant agency and publicly announce the details thereof by publishing them in the Official Gazette or posting them on its website, etc.

(5) Article 26 shall apply mutatis mutandis to disqualifications for a professional waste analysis agency referred to in paragraph (1) 4. In such cases, "waste management business" shall be construed as "professional waste analysis agency", "permission" as "designation", and "Article 27 (excluding paragraphs (1) 2 and (2) 20)" as "Article 17-5 (excluding paragraphs (1) 2 and (2) 6)", respectively.

Article 17-3 (Matters to be Observed by Professional Waste Analysis Agencies)

(1) No professional waste analysis agency shall allow another person to use its name or trade name in performing any affairs relating to the testing and analysis of wastes nor shall it lend its certificate of designation to another person.

(2) Each professional waste analysis agency shall comply with the standards for fair testing of environmental pollution in the field of wastes under Article 6 of the Environmental Testing and Inspection Act.

(3) In addition to the matters to be observed under paragraphs (1) and (2), each professional waste analysis agency shall comply with the matters to be observed, prescribed by Ordinance of the Ministry of Environment, including keeping records of, preservation, etc. of the results of testing and analysis.

Article 17-4 (Evaluation of Professional Waste Analysis Agencies)

(1) The Minister of Environment may evaluate testing and analysis capabilities of professional waste analysis agencies.

(2) Items to be evaluated, standards, methods, etc. for the evaluation under paragraph (1) shall be prescribed by Ordinance of the Ministry of Environment.

Article 17-5 (Revocation, etc. of Designation of Professional Waste Analysis Agencies)

(1) If any professional waste analysis agency falls under any of the following cases, the Minister of Environment shall revoke its designation:

1. Where the designation has been obtained by fraud or other improper means;

2. Where it falls under any of the disqualifications prescribed in subparagraphs of Article 26 which applies mutatis mutandis under Article 17-2 (5): Provided, That where any executive officers of a corporation falls under subparagraph 6 of Article 26, the same shall not apply if another executive officer is appointed to replace him/her within two months from the date the ground for disqualification has occurred;

3. Where it performs any affairs relating to testing or analysis during a period of business suspension.

(2) If any professional waste analysis agency falls under any of the following cases, the Minister of Environment may revoke the designation or order to fully or partially suspend its business for a fixed period within six months:

1. Where it fails to meet the standards for facilities, equipment and technical ability referred to in Article 17-2 (2);

2. Where it modifies any designated matter without obtaining designation for modification under Article 17-2 (3);

3. Where it violates any of the matters to be observed under Article 17-3;

4. Where the result of evaluation conducted under Article 17-4 fails to meet any of the standards prescribed by Ordinance of the Ministry of Environment;

5. Where it issues any waste analysis report, the content of which is different from the fact, intentionally or by gross negligence;

6. Where it fails to commence its business within one year after being designated, or suspends its business continuously for at least one year without any justifiable grounds.

(3) Upon revoking designation or ordering business suspension under paragraph (1) or (2), the Minister of Environment shall announce the details thereof in the way of publishing them in the Official Gazette, posting on website, etc.

Article 18 (Treatment of Industrial Wastes)

(1) Every industrial waste discharger shall either treat wastes generated from his/her place of business by him/herself or entrust the treatment of such wastes to a person who has obtained permission for waste treatment business under Article 25 (3), a person who has filed a report on waste treatment, a person who has installed and operates a waste treatment facility under Article 4 or 5, a person who has obtained permission for industrial waste treatment business under Article 21 of the Construction Waste Recycling Promotion Act, or a person who has filed for registration of the business of discharging wastes into the sea under Article 70 (1) 1 of the Marine Environment Management Act. *<Amended by Act No. 10389, Jul. 23, 2010>*

(2) Deleted. *<by Act No. 13411, Jul. 20, 2015>*

(3) A person who discharges, collects, transports, recycles, or treats any industrial wastes specified by Ordinance of the Ministry of Environment shall record matters concerning the delivery and receipt of wastes on the electronic information processing program under Article 45 (2), as prescribed by Ordinance of the Ministry of Environment, whenever he/she discharges, collects, transports, recycles, or treats such wastes: Provided, That in cases of medical wastes, such matters shall be recorded in the electronic information processing program under Article 45 (2), as prescribed by Ordinance of the Ministry of Environment, by means of radio frequency. *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010>*

(4) The Minister of Environment shall make information on delivery and receipt of wastes recorded under paragraph (3) available to, and printable by a person who discharges, collects, and transports, recycles, or

treats such wastes, and the process of discharging, collecting and transporting, recycling, or treating such wastes searchable and verifiable by the head of the competent Si/Gun/Gu or the Mayor/Do Governor having jurisdiction over the person who discharges, collects and transports, recycles, or treats such wastes. *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010>*

(5) At least two industrial waste dischargers as specified by Ordinance of the Ministry of Environment may jointly collect, transport, recycle or treat wastes generated from their places of business, as prescribed by Ordinance of the Ministry of Environment. In such cases, such industrial waste dischargers may establish a joint operating organization, appoint one of them as the representative of such joint operating organization, and jointly install and operate waste treatment facilities. *<Amended by Act No. 10389, Jul. 23, 2010>*

(6) Deleted. *<by Act No. 8613, Aug. 3, 2007>*

Article 19 (Obligations of Industrial Waste Treatment Business Entities)

(1) A person who transports industrial wastes pursuant to Article 18 (3) shall be well aware of a delivery number needed to ascertain information concerning the delivery and receipt of wastes recorded on the electronic information processing program under Article 45 (2) while transporting such wastes, and notify the competent administrative agencies or their public officials of such delivery number upon their request. *<Amended by Act No. 10389, Jul. 23, 2010>*

(2) If a person who is entrusted to treat wastes is unable to industrial wastes specified by Ordinance of the Ministry of Environment due to business suspension, temporary shutdown, permanent closure of his/her business, prohibition, etc. from use of waste treatment facilities, he/she shall inform the waste dischargers who have entrusted him/her to treat such wastes of such fact, without delay, as prescribed by Ordinance of the Ministry of Environment.

Articles 20 and 23 Deleted. *<by Act No. 8613, Aug. 3, 2007>*

Article 24 Deleted. *<by Act No. 13411, Jul. 20, 2015>*

Article 24-2 (Declaration for Import or Export of Wastes)

(1) A person who intends to import or export waste specified and publicly notified by the Minister of Environment shall, as prescribed by Ordinance of the Ministry of Environment ,file a declaration with the Minister of Environment along with documents stating matters prescribed by Ordinance of the Ministry of Environment, such as the types and quantity of wastes and plans for treatment, etc.

(2) In order to modify any major matter prescribed by Ordinance of the Ministry of Environment, among the matters declared under paragraph (1), a modification of declaration shall be filed.

(3) If a person who has filed a declaration under paragraph (1) or (2) falls under any of the following subparagraphs, the Minister of Environment may order him/her to take the relevant wastes out of the country or otherwise to take necessary measures: *<Newly Inserted by Act No. 10389, Jul. 23, 2010>*

1. Where he/she has imported any wastes that are different from those declared pursuant to paragraph (1) or (2);

2. Where he/she has imported any wastes that cause or are likely to cause any harm to public health or environmental conservation, which was unexpected at the time of filing a declaration thereon pursuant to paragraph (1) or (2).

Article 24-3 (Treatment, etc. of Imported Wastes)

(1) A person who has filed an import declaration under Article 24-2 (1), or a person who has obtained permission for importation under the Act on the Transboundary Movement of Hazardous Wastes and Their Disposal shall treat such imported wastes (hereinafter referred to as "imported wastes") directly or entrust the treatment of such wastes to any of the following persons: *<Amended by Act No. 10389, Jul. 23, 2010; Act No. 11980, Jul. 30, 2013>*

1. A person who has installed and operates waste treatment facilities under Article 4 or 5;
2. A person who has obtained permission for waste treatment business under Article 25 (3);
3. A person who has filed a declaration on waste treatment.

(2) A person who has filed an import declaration under Article 24-2 (1), or who transports, recycles, or treats such imported wastes shall record matters concerning the delivery and receipt of wastes on the electronic information processing program under Article 45 (2), as prescribed by Ordinance of the Ministry of Environment, whenever he/she imports, transports, recycles, or treats such wastes. *<Amended by Act No. 10389, Jul. 23, 2010>*

(3) A person who transports wastes imported under Article 24-2 (1) shall be well aware of a delivery number needed to ascertain information concerning the delivery and receipt of wastes recorded on the electronic information processing program under Article 45 (2) while transporting such wastes, and notify the competent administrative agencies or their public officials of such number upon request. *<Amended by Act No. 10389, Jul. 23, 2010>*

(4) A person who treats imported wastes shall do so in accordance with the standards for and methods of treating industrial wastes, among those standards for and methods of waste treatment pursuant to Article 13, or the principles of recycling wastes or matters to be observed under Article 13-2. *<Amended by Act No. 10389, Jul. 23, 2010; Act No. 13411, Jul. 20, 2015>*

(5) No imported wastes may be exported in the same state or condition as they were imported.

Article 25 (Waste Treatment Business)

(1) Any person (excluding any person who intends to recycle household wastes, other than food wastes, and any person who has filed a report on waste treatment) who intends to engage in the collection, transportation, recycling, or treatment of wastes (hereinafter referred to as "waste treatment business") and to treat designated wastes shall submit a waste treatment business plan to the Minister of Environment, while such person who intends to treat any wastes, other than designated wastes, shall submit such plan to the competent Mayor/Do Governor, as prescribed by Ordinance of the Ministry of Environment. The foregoing shall also apply to any modification to the significant matter specified by Ordinance of the Ministry of Environment. *<Amended by Act No. 10389, Jul. 23, 2010>*

(2) The Minister of Environment or the relevant Mayor/Do Governor shall examine a waste treatment business plan submitted under paragraph (1) in view of the following matters, and notify the person who has submitted such plan the acceptability thereof: *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010; Act No. 13038, Jan. 20, 2015>*

1. Whether the person who wishes to obtain permission for waste treatment business (including an executive officer, in cases of a corporation) is disqualified under Article 26;
2. Whether the location, etc. of waste treatment facilities violates other Acts;
3. Whether facilities, equipment or technical capability stated in the waste treatment business plan meets the criteria for permission under paragraph (3);
4. Whether the establishment and operation of waste treatment facilities have an impact on human health or the neighboring environment, such as deterioration of the quality of water in a water-source protection area referred to in Article 7 of the Water Supply and Waterworks Installation Act or causing difficulty in fulfilling the Environmental Quality Standards established under Article 12 of the Framework Act on Environmental Policy.

(3) A person, in receipt of a notice of acceptability pursuant to paragraph (2) shall, within two years (six months, in cases of the waste collection and transportation business under paragraph (5) 1; three years, in cases of the waste treatment business that requires the installation of incinerators and landfill facilities) from the date of receipt of such notice, be equipped with such facilities, equipment, and technical capability in compliance with the standards prescribed by Ordinance of the Ministry of Environment, and shall thereby obtain permission for each business type, type of waste, and area of treatment from the Minister of Environment with respect to designated wastes, and from the Mayor/Do Governor with respect to other wastes. In such cases, if a person who has received a notice of acceptability pursuant to paragraph (2) files an application for permission upon being equipped with securing facilities, equipment, and technical human resources in compliance with the relevant business plan, the Minister of Environment or the Mayor/Do Governor shall promptly grant such permission. *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010>*

(4) The Minister of Environment or the relevant Mayor/Do Governor may extend the period of application for permission up to one year (six months, in cases of the waste collection and transportation business under paragraph (5) 1; two years, in cases of the terminal waste treatment business under subparagraph 3 of the same paragraph and the general waste treatment business under subparagraph 4 of the same paragraph), upon request, for persons who have failed to file an application within the period referred to in paragraph (3) due to a natural disaster or other extenuating circumstances. *<Newly Inserted by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010>*

(5) The classification and operational details of waste treatment business shall be as follows: *<Amended by Act No. 10389, Jul. 23, 2010; Act No. 13411, Jul. 20, 2015>*

1. Waste collection and transportation business: A business that either collects wastes and transports them to a recycling or treatment facility or collects and transports wastes to export them;

2. Interim waste treatment business: A business that specializes in interim treatment of wastes, such as incineration or physical, chemical or biological treatment, or other treatment in a manner acknowledged and publicized by the Minister of Environment as a safe way to intermediately treat wastes, with facilities for interim treatment of wastes;

3. Terminal waste treatment business: A business that specializes in final treatment of wastes, such as landfills (excluding discharging into the sea) with facilities for final treatment of wastes;

4. General waste treatment business: A business that performs both interim and final treatment of wastes with facilities for interim and final treatment of wastes;

5. Interim waste recycling business: A business that manufactures intermediately processed wastes with facilities for recycling of wastes;

6. Terminal waste recycling business: A business that performs the recycling of intermediately processed wastes in accordance with the principles of recycling wastes or matters to be observed under Article 13-2, with facilities for recycling of wastes;

7. General waste recycling business: A business that conducts both interim recycling business and terminal recycling business with facilities for recycling of wastes.

(6) A person who has obtained permission for waste treatment business under any of paragraph (5) 2 through 7 may directly collect and transport wastes for treatment without permission for waste collection and transportation business under subparagraph 1 of the said paragraph. *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010>*

(7) When the Minister of Environment or a Mayor/Do Governor grants permission under paragraph (3), he/she may add necessary conditions thereto in order to promote the living convenience of residents, protect the neighboring environment, and efficient manage the relevant waste treatment business: Provided, That the condition that restricts the business territory may be added to permission for the business of collecting and transporting household wastes, in which case the Mayor/Do Governor may not restrict the business territory to an administrative unit smaller than a Si/Gun/Gu. *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010>*

(8) Any person who has obtained permission for waste treatment business under paragraph (3) (hereinafter referred to as "waste treatment business operator") shall neither allow another person to use his/her name or trade name in waster treatment nor lend his/her permit to another person. *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010>*

(9) Each waste treatment business operator shall comply with the following matters to be observed: *<Amended by Act No. 13038, Jan. 20, 2015>*

1. He/she shall store wastes at an adequate place, such as a storage facility located within its place of business permitted or temporary storage facility approved, as prescribed by Ordinance of the Ministry of Environment;

2. He/she shall not store wastes in excess of the volume or period prescribed by Ordinance of the Ministry of Environment;

3. He/she shall not accept entrustment of the treatment of wastes if it is impracticable to treat them at his/her own treatment facility or exceeds his/her disposal capacity;

4. In contracting for treatment of wastes, he/she shall comply with the matters to be observed, prescribed by Ordinance of the Ministry of Environment, such as the preparation and keeping of the contract.

(10) Any person who intends to engage in a business collecting, transporting, or treating medical wastes shall install and operate such facilities, equipment, and place of business as required for collecting, transporting, or treating such wastes separately from other wastes. *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010>*

(11) When a person who has obtained permission under paragraph (3) intends to modify any significant matter prescribed by Ordinance of the Ministry of Environment, he/she shall obtain permission for such modification, and shall also file a report on modification, if the modification involves any matter other than significant matters specified by Ordinance of the Ministry of Environment. *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 13411, Jul. 20, 2015>*

(12) If any of the following applies to a person who intends to treat both designated wastes and any wastes, other than designated wastes, in the same treatment facility, such person shall be deemed to have obtained a notice of acceptability, permission, or permission for modification from the Mayor/Do Governor or have filed a report on modification to the Mayor/Do Governor in relation to such non-designated wastes: *<Amended by Act No. 8613, Aug. 3, 2007>*

1. Where he/she has been notified by the Minister of Environment that his/her waste treatment plan is acceptable under paragraph (2);

2. Where he/she has obtained permission for waste treatment business granted by the Minister of Environment pursuant to paragraph (3);

3. Where he/she has obtained permission for modification of waste treatment business granted by the Minister of Environment or has filed a report on modification to the Minister of Environment pursuant to paragraph (11).

(13) Any person who seeks entitlement to the constructive notice of acceptability, permission, permission for modification, or report on modification from or to the Mayor/Do Governor under paragraph (12) in connection with any wastes other than designated wastes shall submit relevant documents prescribed by Ordinance of the Ministry of Environment simultaneously at the time he/she submits a waste treatment business plan or files an application for permission, permission for modification, or a report on modification to or with the Minister of Environment. *<Amended by Act No. 8613, Aug. 3, 2007>*

(14) The Minister of Environment shall, upon receiving the relevant documents under paragraph (13), hear the opinion of the competent Mayor/Do Governor, while he/she shall, upon dispatching a notice of acceptability, granting permission or permission for modification, or receiving a report on modification, inform the competent Mayor/Do Governor of the contents thereof. *<Amended by Act No. 8613, Aug. 3, 2007>*

(15) Any of the following persons who intends to operate a waste treatment business may file an application for permission under paragraph (3) without undergoing the procedures set forth in paragraphs (1) and (2): *<Newly Inserted by Act No. 10389, Jul. 23, 2010; Act No. 11914, Jul. 16, 2013>*

1. A person who intends to operate a waste treatment business within an industrial complex as defined in subparagraph 8 of Article 2 of the Industrial Sites and Development Act;
2. A person who intends to operate a waste treatment business within a recycling complex under Article 34 of the Act on the Promotion of Saving and Recycling of Resources;
3. A person who intends to operate a waste recycling business under any of paragraph (5) 5 through 7.

Article 25-2 (Exclusive Container Manufacturing Business)

(1) A person who intends to engage in manufacturing of exclusive containers as a business (hereinafter referred to as "exclusive container manufacturing business") shall be registered with the Minister of Environment meeting the requirements for facilities, equipment, etc. enumerated in the standards prescribed by Ordinance of the Ministry of Environment; where he/she intends to modify any significant matter prescribed by Ordinance of the Ministry of Environment among the registered matters, he/she shall be subject to modification of registration; and where he/she intends to modify a matter prescribed by Ordinance of the Ministry of Environment among other matters, he/she shall file a report on modification.

(2) Matters necessary for the procedures, etc. for registration, modification of registration, or reporting on modification under paragraph (1) shall be prescribed by Ordinance of the Ministry of Environment.

(3) Matters necessary for the standards, etc. for the structure, specification, quality, and indication of exclusive containers that a person registered under paragraph (1) (hereinafter referred to as "exclusive container manufacturer") is eligible to manufacture shall be prescribed by Ordinance of the Ministry of Environment.

(4) Each exclusive container manufacturer shall undergo an inspection on whether the structure, specification, quality, and indication of manufactured exclusive containers comply with the standards referred to in paragraph (3), as prescribed by Ordinance of the Ministry of Environment. In such cases, matters necessary for inspection institutions, methods and procedures for inspection, etc. shall be prescribed by Ordinance of the Ministry of Environment.

(5) No exclusive container manufacturer shall allow another person to use his/her name or trade name in manufacturing exclusive containers nor lend his/her certificate of registration to another person.

(6) Each exclusive container manufacturer shall comply with the matters to be observed, prescribed by Ordinance of the Ministry of Environment, such as manufacturing of the exclusive containers conforming to the standards referred to in paragraph (3).

Article 26 (Disqualifications)

None of the following persons shall be granted permission for a waste management business or registered for an exclusive container manufacturing business: *<Amended by Act No. 13038, Jan. 20, 2015>*

1. A minor, a person under adult guardianship, or a person under limited guardianship;

2. A person who has been declared bankrupt, but not yet reinstated;

3. A person in whose case two years have not yet passed since his/her sentence for imprisonment with labor or heavier punishment declared by a court was completely fulfilled, or an exemption from the execution of the sentence was made definite;

4. A person who was sentenced to a suspended sentence of imprisonment with labor or heavier punishment and is still under the period of suspension;

5. A person in whose case two years have not to elapse since his/her permission to operate waste management business was revoked under Article 27 (excluding paragraphs (1) 2 and (2) 20) or his/her registration for an exclusive container manufacturing business was revoked under Article 27-2 (excluding paragraphs (1) 2 and (2) 2);

6. A corporation in whose case one of its executive officers falls under any provision of subparagraphs 1 through 4.

Article 27 (Revocation, etc. of Permission)

(1) If a waste treatment business entity falls under any of the following cases, the Minister of Environment or the competent Mayor/Do Governor shall revoke permission for the waste treatment business: *<Amended by Act No. 11914, Jul. 16, 2013; Act No. 13038, Jan. 20, 2015>*

1. Where he/she has obtained permission by fraudulent or other illegal means;

2. Where he/she falls under any reason for disqualification prescribed in the subparagraphs of Article 26: Provided, That the following cases where measures are taken as classified below shall be excluded:

(a) Where a person among executives of the corporation falls under subparagraph 6 of Article 26: To appoint an executive to replace him/her, within two months from the date a ground for disqualification occurred;

(b) Where an inheritor who has succeeded to the rights and obligations under Article 33 (1) falls under any subparagraph of Article 26: To transfer the relevant rights and obligations to another person within six months from the date the inheritance has commenced;

3. Where he/she fails to take measures in accordance with the main sentence of Article 40 (1);

4. Where he/she fails to comply with a renewal order under Article 40 (8);

5. Where he/she operates business while the business is suspended.

(2) If a waste treatment business operator falls under any of the following cases, the Minister of Environment or the relevant Mayor/Do Governor may revoke permission or order suspension of the whole or a part of his/her business, specifying a period not exceeding six months: *<Amended by Act No. 10389, Jul. 23, 2010; Act No. 13038, Jan. 20, 2015; Act No. 13411, Jul. 20, 2015>*

1. Where he/she discharges, buries, or incinerates industrial wastes, in violation of Article 8 (1) or (2);

2. Where he/she treats wastes, in violation of Article 13 or 13-2;

2-2. Where he/she fails to take measures as ordered under Article 13-5 (5);

3. Where he/she fails to record matters concerning the delivery and receipt of waste on the electronic information processing program, in violation of Article 18 (3);

4. Where he/she fails to carry documents, etc. or notify the competent administrative agencies or public officials of the delivery number despite their request while transporting wastes, in violation of Article 19 (1);

5. Where he/she conducts business that exceeds the extent of types or details of business under Article 25 (5);

6. Where he/she violates conditions imposed under Article 25 (7);

7. Where he/she permits other persons to use his/her name or trade name and treat wastes, or lends his/her permit to another person, in violation of Article 25 (8);

8. Where he/she stores wastes or violates rules, in violation of Article 25 (9);

9. Where he/she fails to install and operate separate facilities, equipment or place of business to collect, transport, or treat wastes, in violation of Article 25 (10);

10. Where he/she amends matters that require permission or reporting without obtaining permission for modification or filing a report on modification under Article 25 (11);

11. Where he/she fails to undergo inspections in violation of Article 30 (1) or (2), or operates waste treatment facilities without obtaining an acceptability decision, in violation of Article 30 (3);

12. Where he/she operates waste treatment facilities, not meeting standards for its maintenance under Article 31 (1);

13. Where he/she fails to comply with an order of correction or suspension of use under Article 31 (4);

14. Where he/she fails to comply with an order of closure under Article 31 (5);

15. Where he/she fails to comply with an order of measure or inspection under Article 31 (7);

16. Where he/she fails to report on the succession of rights or obligations under Article 33 (3);

17. Where he/she fails to record and keep books, in violation of Article 36 (1);

18. Where he/she fails to comply with an order under Article 39-3, 40 (2) and (3), or 48;

19. Where he/she fails to reserve in advance a performance guarantee bond under Article 52 (1);

20. Where he/she fails to open business within one year after obtaining permission, or suspends such business closed for at least one year consecutively without just grounds.

Article 27-2 (Revocation, etc. of Registration of Exclusive Container Manufacturing Business)

(1) If an exclusive container manufacturer falls under any of the following cases, the Minister of Environment shall revoke his/her registration:

1. Where he/she has been registered by fraudulent or other illegal means;

2. Where he/she falls under any ground for disqualification prescribed in subparagraphs of Article 26: Provided, That where there is any person who falls under subparagraph 6 of Article 26 from among executive officers of a corporation, the same shall not apply if the executive officer is replaced within two months;

3. Where he/she performs business during a period of business suspension prescribed in paragraph (2).

(2) If an exclusive container manufacturer falls under any of the following cases, the Minister of Environment may choose to revoke his/her registration or order to fully or partially suspend his/her

business for a fixed period within six months:

1. Where he/she amends any registered matter without making modification to registration or filing a report on modification, in violation of Article 25-2 (1), or makes modification to registration or files a report on modification by illegal means;

2. Where he/she fails to commence business or has no business performance within one year after the registration was made (excluding cases where the report on business suspension has been filed);

3. Where he/she manufactures exclusive containers by using facilities and equipment of another person which are not registered under Article 25-2 (1);

4. Where he/she manufactures exclusive containers other than those registered under Article 25-2 (1);

5. Where he/she fails to meet any of the standards for registration referred to in Article 25-2 (1);

6. Where he/she manufactures and distributes any exclusive containers not conforming to the structure, specification, quality or indication referred to in Article 25-2 (3) or fails to undergo an inspection under Article 25-2 (4);

7. Where he/she allows another person to operate business by using his/her name or trade name or lends his/her certificate of registration, in violation of Article 25-2 (2);

8. Where he/she fails to comply with matters to be observed, in violation of Article 25-2 (6);

9. Where he/she rejects, interferes with, or evades an inspection of relevant documents, facilities, equipment, etc. conducted under Article 39.

Article 28 (Imposition of Penalty Surcharges on Waste Treatment Business Entities)

(1) If the Minister of Environment or the relevant Mayor/Do Governor intends to order the suspension of business to a waste treatment business entity under Article 27, but he/she finds that the suspension of business falls under any of the following cases, he/she may impose a penalty surcharge not exceeding 100 million won, in lieu of the suspension of business, as prescribed by Presidential Decree: *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010>*

1. Where the suspension of business prevents a customer of the business from commissioning waste treatment to the business, resulting in wastes accumulated in the customer's place of business, so that the customer's business is likely to suffer enormous impediment;

2. Where environmental pollution caused by wastes stored by the relevant waste treatment business entity, or wastes accumulated by a customer of the business, poses or is likely to pose a health hazard to local residents;

3. Where it is deemed necessary to require the waste treatment business entity to continue his/her business due to a natural disaster or other inevitable circumstances.

(2) The amount of penalty surcharges to be imposed under paragraph (1) depending on the type and severity of an offense and other necessary matters, shall be prescribed by Presidential Decree.

(3) If a penalty surcharge imposed under paragraph (1) is not paid, the Minister of Environment shall collect the penalty surcharge in the same manner as delinquent national taxes are collected, while a Mayor/Do Governor shall collect such penalty surcharge in accordance with the Act on the Collection, etc.

of Non-Local-Tax Revenues. <*Amended by Act No. 11998, Aug. 6, 2013*>

(4) Penalty surcharges collected under paragraphs (1) and (3) shall be spent by each collecting authority for purposes prescribed by Presidential Decree, including expansion of multi-regional waste treatment facilities.

Article 29 (Installation of Waste Treatment Facilities)

(1) Waste treatment facilities shall be installed in conformity with the standards prescribed by Ordinance of the Ministry of Environment, but no waste incineration facility shall be installed or operated, unless it conforms to the size prescribed by Ordinance of the Ministry of Environment.

(2) If any person other than those who hold, or have applied for, a licence for a waste management business under Article 25 (3), wishes to install any waste treatment facility, he/she shall obtain approval from the Minister of Environment: Provided, That the foregoing shall not apply where it is intended to install a waste treatment facility under subparagraph 1, while a person who intends to install a waste treatment facility under subparagraph 2 shall file a report thereon with the Minister of Environment:

1. A waste treatment installed and operated by a school, a research institution, or other person specified by Ordinance of the Ministry of Environment for the purposes of testing and research as prescribed by Ordinance of the Ministry of Environment;
2. A waste treatment facility of a scale prescribed by Ordinance of the Ministry of Environment.

(3) A person who intends to change any of such important matters as specified by Ordinance of the Ministry of Environment among the matters approved or reported under paragraph (2) shall obtain approval for such modification or submit a report on such modification, as applicable.

(4) A person who installs a waste treatment facility shall, when he/she intends to start operating the facility after the completion of the installation works, submit a report thereon to the head of the competent administrative agency depending upon which of the following facilities is involved:

1. For a waste treatment facility installed by a waste management business entity: The administrative agency responsible for licensing under Article 25 (3);
2. For any waste treatment facility other than those falling under subparagraph 1: The administrative agency responsible for approval or reporting under Article 29 (2).

Article 30 (Inspection of Waste Treatment Facilities)

(1) A person who has completed the installation of a waste treatment facility specified by Ordinance of the Ministry of Environment shall undergo an inspection conducted by an inspection agency designated by Ordinance of the Ministry of Environment. The foregoing shall also apply to cases prescribed by Ordinance of the Ministry of Environment in which approval for, or a reporting on, modification has been obtained or filed for pursuant to Article 29 (3).

(2) A person who has installed and operates a waste treatment facility under paragraph (1) shall undergo an inspection conducted by an inspection agency under paragraph (1) at a regular interval prescribed by Ordinance of the Ministry of Environment. In such cases, the waste treatment facility shall be deemed to have undergone a periodic inspection if it has undergone a technical diagnosis under Article 13 of the

Environmental Technology and Industry Support Act within the period set for such inspection (excluding failure to comply with a request made under Article 13 (3) of the Environmental Technology and Industry Support Act). *<Amended by Act No. 10615, Apr. 28, 2011; Act No. 11465, Jun. 1, 2012>*

(3) No one may use any waste treatment facility that has failed to pass an inspection under paragraph (1) or (2): Provided, That the foregoing shall not apply where such facility is operated for the purposes of inspection.

(4) Procedures and standards for the inspection conducted under paragraphs (1) and (2), guidelines for the management of inspection institutions, and other necessary matters shall be prescribed by Ordinance of the Ministry of Environment.

Article 31 (Management of Waste Treatment Facilities)

(1) Anyone who has installed and operates a waste treatment facility shall maintain and manage such facility in compliance with the guidelines for the management, as prescribed by Ordinance of the Ministry of Environment.

(2) Anyone who has installed and operates a waste treatment facility specified by Presidential Decree shall take measurements of pollutants discharged from the waste treatment facility or arrange for a measuring institution specified by Ordinance of the Ministry of Environment to take such measurements, and shall submit a report on the results thereof to the Minister of Environment.

(3) Anyone who has installed and operates a waste treatment facility specified by Presidential Decree shall examine the impact that the installation and operation of such waste treatment facility has on its neighboring areas every three years, and shall submit a report on the results thereof to the Minister of Environment.

(4) If a waste treatment facility fails to meet the standards for installation under Article 29 (1) or the standards for management under paragraph (1) of this Article in its installation, maintenance or management or fails to pass an inspection conducted pursuant to Article 30 (1) or (2), the Minister of Environment may order the person who has installed and operates the facility to take measures for improving the facility within such period as prescribed by Ordinance of the Ministry of Environment or suspend the operation of such facility (excluding cases where such facility fails to pass an inspection conducted pursuant to Article 30 (1) or (2)). *<Amended by Act No. 10389, Jul. 23, 2010>*

(5) If a person to whom an order to improve or suspend the operation has been issued pursuant to paragraph (4) fails to perform as ordered or if it is found that such person is unable to perform as ordered, the Minister of Environment may order him/her to close down the facility permanently. *<Amended by Act No. 8613, Aug. 3, 2007>*

(6) If a person who has installed a landfill facility for wastes fails to close down his/her facility permanently within the fixed period even after receiving an order for closedown under paragraph (5), the Minister of Environment may have a person prescribed by Presidential Decree take procedures for the closedown, such as final soil covering, on his/her behalf and use, for such expenses, advance reserve of performance guarantee bond for follow-up management deposited by the person who has installed the

landfill facility for wastes under Article 52 (1). In such cases, if the amount of expenses exceeds the amount of advance reserve of performance guarantee bond for follow-up management, the amount of excess may be collected from the person who has received such order. *<Newly Inserted by Act No. 13038, Jan. 20, 2015>*

(7) If a person who has installed and operates a waste treatment facility fails to perform his/her duty to measure pollutants in accordance with paragraph (2) or fails to examine its impact on its neighboring areas in accordance with paragraph (3), the Minister of Environment may order the person to take such measurement of pollutants or to examine such impact within a period prescribed by Ordinance of the Ministry of Environment. *<Amended by Act No. 8613, Aug. 3, 2007>*

(8) The pollutants that shall be measured in accordance with paragraph (2), the cycle of such measurements, the reporting on the results thereof, and other necessary matters shall be prescribed by Ordinance of the Ministry of Environment.

(9) The method and scope of assessments made under paragraph (3), the report on the results thereof, and other necessary matters shall be prescribed by Ordinance of the Ministry of Environment.

(10) The Minister of Environment shall disclose the results of measurements taken under paragraph (2) and the results of assessments made under paragraph (3) to the public, as prescribed by the Official Information Disclosure Act.

Article 32 (Permission, Reporting, etc. Deemed Granted or Filed under other Acts or Subordinate Statutes)

(1) Where a person who intends to install a waste treatment facility has obtained approval under Article 29 (2) or has filed a report thereon, where he/she installs a waste treatment facility under subparagraph 1 of the said paragraph, or where he/she has obtained permission for a waste treatment business under Article 25 (3), he/she shall be deemed to have obtained or filed the following permission or reports in relation to the waste treatment facility: *<Amended by Act No. 8466, May 17, 2007; Act No. 9770, Jun. 9, 2009; Act No. 10389, Jul. 23, 2010>*

1. Permission for, or reporting on, the installation of emission facilities under Article 23 (1) and (2) of the Clean Air Conservation Act;
2. Permission for, or reporting on, the installation of emission facilities under Article 33 (1) and (2) of the Water Quality and Aquatic Ecosystem Conservation Act;
3. Permission for, or reporting on, the installation of emission facilities under Article 8 (1) and (2) of the Noise and Vibration Control Act.

(2) Where a person who intends to install a waste treatment facility specified by Ordinance of the Ministry of Environment in order to concurrently treat food waste and livestock excreta obtains permission for a waste treatment business under Article 25 (3) or has obtained approval or has filed a report under Article 29 (2) and installs a waste treatment facility under Article 29 (2) 1, he/she shall be deemed to have obtained the following approval or permission in relation to the waste treatment facility: *<Newly Inserted by Act No. 11465, Jun. 1, 2012>*

1. Approval for the installation of a public treatment facility under Article 24 (3) of the Act on the Management and Use of Livestock Excreta;

2. Permission to operate a livestock excreta treatment business under Article 28 of the Act on the Management and Use of Livestock Excreta.

(3) Where a person who has installed a waste treatment facility files a report under Article 29 (4), he/she shall be deemed to have filed each of the following reports: *<Amended by Act No. 8466, May 17, 2007; Act No. 10389, Jul. 23, 2010; Act No. 11465, Jun. 1, 2012>*

1. A report on the commencement of operation of emission facilities under Article 30 of the Clean Air Conservation Act;

2. A report on the commencement of the operation of discharging facilities under Article 37 of the Water Quality and Aquatic Ecosystem Conservation Act;

3. Deleted. *<by Act No. 9770, Jun. 9, 2009>*

(4) Whenever the Minister of Environment or a Mayor/Do Governor intends to grant approval for the installation of a waste treatment facility or permission for a waste treatment business, he/she shall consult with the heads of relevant administrative agencies, if such facility or business involves any of the matters set forth in the subparagraphs of paragraphs (1) through (3). *<Amended by Act No. 11465, Jun. 1, 2012>*

(5) The Minister of Environment shall determine guidelines for processing permits, approval, or reports deemed granted or filed under paragraphs (1) through (3) and publicly announce the guidelines. *<Newly Inserted by Act No. 8613, Aug. 3, 2007; Act No. 11465, Jun. 1, 2012>*

Article 33 (Succession to Rights, Obligations, etc.)

(1) Where a waste treatment business operator, a person who has obtained approval for the installation of a waste treatment facility or has filed a report thereon under Article 29, or a person who has filed a report on waste treatment, or an exclusive container manufacturer transfers the waste treatment business, the waste treatment facility, a facility under Article 46 (1), or an exclusive container manufacturing business to another person, where such person dies, or where the corporation has merged with another corporation if such person is a corporation, the transferee, successor, or the corporation surviving the merger or newly established in the course of the merger shall succeed to the rights and obligations under such permission, approval, registration, or report. *<Amended by Act No. 10389, Jul. 23, 2010; Act No. 13038, Jan. 20, 2015>*

(2) Any person who has acquired a waste treatment facility, etc. from a waste treatment business operator, a person who has obtained approval for the installation of such waste treatment facility or has filed a report thereon under Article 29, a person who has filed a report on waste treatment, or an exclusive container manufacturer by an auction under the Civil Execution Act, the realization of property under the Debtor Rehabilitation and Bankruptcy Act, the sale of seized property under the National Tax Collection Act, the Customs Act or the Framework Act on Local Taxes, or other procedures corresponding thereto, shall succeed to the rights and obligations relating to the relevant permission, approval, registration, or report. In such cases, permission or approval granted to the former waste treatment business operator or the person who has installed the waste treatment facility, the report filed by the person who has filed a

report on waste treatment, or the registration of the exclusive container manufacturer, becomes void. *<Newly Inserted by Act No. 10389, Jul. 23, 2010; Act No. 13038, Jan. 20, 2015>*

(3) A person who has succeeded to the rights and obligations under paragraph (1) or (2) shall report the fact to the Minister of Environment or the competent Mayor/Do Governor, as prescribed by Ordinance of the Ministry of Environment. *<Amended by Act No. 10389, Jul. 23, 2010>*

(4) Upon receipt of a report under paragraph (3), the Minister of Environment or a Mayor/Do Governor shall ascertain whether the reported fact is legitimate. *<Newly Inserted by Act No. 11914, Jul. 16, 2013>*

(5) When the Minister of Environment or a Mayor/Do Governor intends to access the electronic computer network or data concerning criminal history records and certification of family relation in order to ascertain the legitimacy under paragraph (4), he/she may request cooperation from the head of the relevant agency, and the head of the relevant agency shall comply therewith, except in extenuating circumstances. *<Newly Inserted by Act No. 11914, Jul. 16, 2013>*

Article 34 (Technical Manager)

(1) A person who has installed and manages a waste treatment facility specified by Presidential Decree shall employ a technical manager who shall take charge of technical affairs relating to the maintenance and management of such facility (including where the person him/herself holds qualifications as a technical manager and takes charge of such technical management) or shall make a contract on technical management services with a person specified by Presidential Decree as capable of taking charge of technical management.

(2) Matters necessary for qualifications as technical managers, contracts on technical management services, etc. under paragraph (1) shall be prescribed by Ordinance of the Ministry of Environment.

Article 35 (Training Courses for Persons in Charge of Waste Disposal)

(1) Any of the following persons shall take training courses provided by an educational institution designated by Ordinance of the Ministry of Environment: *<Amended by Act No. 13038, Jan. 20, 2015; Act No. 13411, Jul. 20, 2015>*

1. Any of the following persons in charge of waste treatment:
   (a) Technical personnel who engage in a waste treatment business;
   (b) Technical managers of a waste treatment facility;
   (c) Other persons prescribed by Presidential Decree;
2. Technical personnel of a professional waste analysis agency;
3. Technical personnel of an agency for environmental assessment of recycling designated under Article 13-4.

(2) An employer of a person who is obligated to take the training courses under paragraph (1) shall provide the person with an opportunity to take the courses.

(3) Every employer of a person who is obligated to take the training courses under paragraph (1) shall bear the expenses for such training courses under the provisions of the said paragraph.

Article 36 (Keeping of Books and Records)

(1) The following persons shall keep books, as prescribed by Ordinance of Ministry of Environment, to record the details of the wastes generated, discharged, and treated (which refer to the quantity of wastes generated, the status of recycled wastes, the performance of treatment, etc., in cases of persons referred to in subparagraph 1-2 or 3; the record, etc. of production, sales volume, and quality inspection of exclusive containers, in cases of persons referred to in subparagraph 4-2; or refer to the quantity of products, containers, etc. generated, imported, and sold and the quantity retrieved and treated in cases of persons referred to in subparagraph 7), and shall retain the records for three years (two years in cases of subparagraph 1) from the date of the last entry: Provided, That this may not apply where the electronic information processing program is used under Article 45 (2): *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010; Act No. 11914, Jul. 16, 2013; Act No. 13038, Jan. 20, 2015>*

1. A person obligated to report his/her plan to restrain the generation of food wastes and properly treat such wastes under Article 15-2 (2);

1-2. A person obligated to file a report under Article 17 (2);

1-3. A person obligated to obtain verification under Article 17 (3);

2. The representative of a joint operating organization responsible for jointly collecting, transporting, recycling or treating industrial wastes under Article 18 (5);

3. A person who has filed an import report under Article 24-2 (1);

4. A waste treatment business operator;

4-2. An exclusive container manufacturer;

5. A person who has installed and operates a waste treatment facility;

6. A person who has filed a report on waste treatment;

7. A manufacturer or an importer referred to in Article 47 (2).

(2) Deleted. *<by Act No. 8613, Aug. 3, 2007>*

Article 37 (Reporting on Shutdown or Closure of Business, etc.)

(1) When a waste treatment business operator, a person who has filed a report on waste treatment, a professional waste analysis agency, or an exclusive container manufacturer temporarily shuts down, permanently closes down, or resumes his/her business, he/she shall file a report thereon with the competent administrative agency for the related licensing, reporting, designating or registering as prescribed by Ordinance of the Ministry of Environment. The same shall also apply to an agency for environmental assessment of recycling. *<Amended by Act No. 10389, Jul. 23, 2010; Act No. 13038, Jan. 20, 2015; Act No. 13411, Jul. 20, 2015>*

(2) A person who intends to file a report on temporary shutdown or permanent closedown of his/her business under paragraph (1) (limited to a waste treatment business operator and a person who has filed a report on waste treatment) shall treat all the wastes stored by him/her, as prescribed by Ordinance of the Ministry of Environment. *<Newly Inserted by Act No. 10389, Jul. 23, 2010; Act No. 13038, Jan. 20, 2015>*

Article 38 (Submission of Reports)

(1) The following persons shall submit an annual report on the wastes generated and treated, to the head of the competent administrative agency for the related licensing, approval, reporting, or verification by no later than the end of February of the following year, as prescribed by Ordinance of the Ministry of Environment: *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010; Act No. 11914, Jul. 16, 2013>*

1. A person who has installed and operates a waste treatment facility under Article 4 or 5;

1-2. A person who has reported his/her plan to restrain the generation of food wastes and properly treat such wastes under Article 15-2 (2);

2. A person who has filed a report as an industrial waste discharger under Article 17 (2);

3. A person who has obtained verification under Article 17 (3);

3-2. A person who has filed an import or export report under Article 24-2 (1);

4. A waste treatment business operator;

5. A person who has filed a report on waste treatment.

(2) A person registered for an exclusive container manufacturing business under Article 25-2 (1) shall submit a report on the production, delivery from warehouses, and quality inspection of exclusive containers to the head of the registration agency by no later than the end of February, the following year, as prescribed by Ordinance of the Ministry of Environment. *<Newly Inserted by Act No. 13038, Jan. 20, 2015>*

(3) If a person obligated to submit a report under paragraph (1) or (2) fails to submit it within the prescribed period, the Minister of Environment, a Mayor/Do Governor, or the head of a Si/Gun/Gu may order the person to submit it within the prescribed period. *<Amended by Act No. 11914, Jul. 16, 2013; Act No. 13038, Jan. 20, 2015>*

(4) A person obligated to submit a report under paragraph (1) or (2) may request in writing, by no later than January 15 of each year, the person to whom he/she has entrusted to treat industrial wastes to provide him/her with data and information necessary for preparing the report under paragraph (1), and the person so entrusted shall, upon receiving such request, provide him/her with such data and information in writing by no later than January 31 of the year. *<Amended by Act No. 10389, Jul. 23, 2010; Act No. 11914, Jul. 16, 2013; Act No. 13038, Jan. 20, 2015>*

(5) A professional waste analysis agency shall submit an annual report on the testing and analysis of wastes by the end of February, the following year to the Minister of Environment, as prescribed by Ordinance of the Ministry of Environment. *<Newly Inserted by Act No. 13038, Jan. 20, 2015>*

Article 39 (Reporting, Inspection, etc.)

(1) The Minister of Environment, a Mayor/Do Governor, or the head of a Si/Gun/Gu may require relevant persons to submit such report or data as prescribed by Ordinance of the Ministry of Environment within the extent necessary for the enforcement of this Act, and may also assign public officials in charge to enter an office or a place of business of such persons or a bonded area under Article 154 of the Customs Act to inspect the documents, facilities, equipment, etc. therein. *<Amended by Act No. 10389, Jul. 23, 2010>*

(2) Public officials who enter an office or a place of business for the purpose of an inspection under paragraph (1) shall carry with them identification verifying their authority and show it to interested persons.

(3) In cases of an inspection under paragraph (1), an inspection plan including the date and time, purpose, objects, etc. of the inspection shall be notified to the business entity subject to such inspection by no later than seven days prior to the inspection: Provided, That this shall not apply where the inspection is urgently required or it is deemed that a prior notice may make it impracticable to attain the objective of the inspection. *<Newly Inserted by Act No. 10389, Jul. 23, 2010>*

Article 39-2 (Issuance of Order for Treatment of Wastes to Waste Dischargers)

(1) Where an industrial waste discharger keeps wastes in excess of the period of storage set out in the standards and methods of waste treatment under Article 13, the Minister of Environment or the Mayor/Do Governor may order such industrial waste discharger to treat such wastes within a specified period of time.

(2) Where some wastes still remain not properly treated even after an order for treatment has been issued under paragraph (1) to the industrial waste discharger, the Minister of Environment or the Mayor/Do Governor may order a person who succeeds to the rights and obligations pursuant to Article 17 (6) or (7) to treat such wastes within a specified period of time.

Article 39-3 (Issuance of Order for Treatment of Wastes to Waste Treatment Business Entities, etc.)

The Minister of Environment or a Mayor/Do Governor who seeks to issue an order for the revocation of permission or suspension of business under Article 27 to a waste treatment business entity or to issue an order for the closedown of facilities or prohibition of waste treatment under Article 46 (7) to a person who has filed a report on waste treatment shall order the waste treatment business entity or the person who has filed a report on waste treatment to treat the wastes kept by him/her within a specified period.

Article 40 (Treatment of Abandoned Wastes by Waste Treatment Business Entities, etc.)

(1) Upon obtaining permission under Article 25 (3) or completing a report under Article 46 (1), waste treatment business entities specializing in industrial wastes and persons who have filed a report on waste treatment shall take any of the following actions before the commencement of business to prevent wastes from remaining abandoned: Provided, That the foregoing shall not apply to persons specified by Ordinance of the Ministry of Environment, among persons who have filed a report on waste treatment, in consideration of the possibility of abandonment of wastes, etc.: *<Amended by Act No. 10389, Jul. 23, 2010; Act No. 11914, Jul. 16, 2013>*

1. To pay a certain amount of contribution to the mutual aid association for waste treatment business under Article 43;
2. To purchase an insurance policy covering the cost of waste treatment;
3. Deleted. *<by Act No. 8613, Aug. 3, 2007>*

(2) If a waste treatment business entity or a person who has filed a report on waste treatment under paragraph (1) suspends his/her business or discontinues operation of his/her business due to the closure of business, etc. (excluding the discontinuance of operation following an order for the revocation of

permission or suspension of business under Article 27 or for the closure of facilities or prohibition of waste treatment under Article 46 (7)) in excess of the period prescribed by Presidential Decree, the Minister of Environment or the Mayor/Do Governor may order the waste treatment business entity or the person who has filed a report on waste treatment to treat the wastes in his/her possession within a given period. *<Amended by Act No. 10389, Jul. 23, 2010>*

(3) If some wastes remain untreated even after an order for treatment has been issued under paragraph (2) or Article 39-3 to a waste treatment business entity or a person who has filed a report on waste treatment, the Minister of Environment or the competent Mayor/Do Governor may order a person who has succeeded to the rights and obligations pursuant to Article 33 (1) or (2) to treat those wastes within a given period. *<Newly Inserted by Act No. 10389, Jul. 23, 2010; Act No. 11914, Jul. 16, 2013>*

(4) If a person in receipt of an order issued under paragraph (2) or (3) fails to comply with the order, the Minister of Environment or the Mayor/Do Governor may take any of the following measures for the treatment of the wastes in his/her possession (hereinafter referred to as "abandoned wastes"): Provided, That the foregoing shall not apply where a person who falls under the proviso to paragraph (1) fails to comply with such order: *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010; Act No. 11914, Jul. 16, 2013>*

1. If he/she has paid a certain amount of contribution under paragraph (1) 1: To issue an order to treat the abandoned waste to the mutual aid association for waste treatment business under Article 41;
2. If he/she has purchased an insurance policy under paragraph (1) 2: To treat the abandoned wastes and request the insurer to pay the insurance proceeds;
3. Deleted. *<Amended by Act No. 8613, Aug. 3, 2007>*

(5) The effective term of the insurance policy, the timing for purchasing such insurance policy, the guidelines for computation of insured amounts under paragraph (1) 2, and other necessary matters shall be prescribed by Presidential Decree. *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010>*

(6) Deleted. *<by Act No. 8613, Aug. 3, 2007>*

(7) If any of the following applies to a person who has taken action under paragraph (1) 2, he/she shall renew the insurance policy under subparagraph 2 of the said paragraph (hereinafter referred to as "performance guarantee insurance"), as prescribed by Presidential Decree: *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010>*

1. When the effective term of the performance guarantee insurance expires;
2. When it is necessary to change the insured amount of coverage of the performance guarantee insurance because the type or permissible quantity of possession of wastes subject to waste treatment as permitted under Article 25 (3) or the unit price for such waste treatment is changed or the quantity of wastes in his/her possession exceeds that under paragraph (9) of the said Article.

(8) If any person obligated to renew the performance guarantee insurance policy under paragraph (7) fails to do so, the Minister of Environment or the Mayor/Do Governor may order the person to renew the performance guarantee insurance policy. *<Amended by Act No. 8613, Aug. 3, 2007>*

(9) Any person who has purchased a performance guarantee insurance policy or has renewed it in accordance with paragraph (7) or (8) shall submit the original copy of insurance policy proving the renewal to the Minister of Environment or the Mayor/Do Governor, as prescribed by Presidential Decree.

(10) Any person who intends to substitute any of the actions under subparagraphs of paragraph (1) for any other action under any of the said subparagraphs shall notify the Minister of Environment or the Mayor/Do Governor of his/her substituting action immediately after he/she takes such action.

(11) When the Minister of Environment or the Mayor/Do Governor orders the mutual aid association for waste treatment business to treat abandoned wastes pursuant to paragraph (4) 1, he/she shall issue such order to the extent prescribed by Presidential Decree in regard to their quantity and the period of time for such treatment. *<Amended by Act No. 10389, Jul. 23, 2010>*

(12) If the mutual aid association for waste treatment business under Article 41 has treated wastes in excess of the contribution paid by any waste treatment business entity or any person who has filed a report on waste treatment pursuant to paragraph (1) 1, it may exercise the right to demand a reimbursement as regards the amount in excess against the waste treatment business entity, the person who has filed a report on waste treatment, or the person who has succeeded to the rights and obligations pursuant to Article 33 (1) or (2). *<Newly Inserted by Act No. 10389, Jul. 23, 2010>*

Article 41 (Establishment of Mutual Aid Associations for Waste Treatment Business)

(1) Waste treatment business entities specializing in treatment of industrial wastes and persons who have filed a report on waste treatment may establish a mutual aid association for the waste treatment business (hereinafter referred to as the "Association") in order to underwrite various guarantees to waste treatment businesses and to guarantee the treatment of abandoned wastes. *<Amended by Act No. 10389, Jul. 23, 2010; Act No. 11914, Jul. 16, 2013>*

(2) The Association shall be a corporation.

(3) The Association shall be duly formed upon the completion of registration for its establishment with the registry office having jurisdiction over its principal place of business.

Article 42 (Affairs of Association)

The Association may perform the following affairs:

1. Mutual aid business to treat wastes abandoned by its members;
2. Affairs to provide bid bonds, performance bonds, and advance payment bonds necessary for its members to operate waste treatment business.

Article 43 (Contributions)

(1) Each member of the Association shall pay such contribution required for the mutual aid business under Article 42 to the Association.

(2) The guidelines for computing a contribution under paragraph (1), the procedure for the payment of such contribution, and other necessary matters shall be stipulated by the Association's articles of association.

(3) No member of the Association may get a refund of his/her contribution paid under Article 40 (1) 1 if he/she has any abandoned wastes, in violation of an order issued under Article 40 (2): Provided, That this shall not apply where he/she treats such abandoned wastes before the Minister of Environment or the competent Mayor/Do Governor issues an order for the treatment thereof pursuant to Article 40 (4) 1. *<Newly Inserted by Act No. 10389, Jul. 23, 2010; Act No. 11465, Jun. 1, 2012>*

Article 44 (Application Mutatis Mutandis of Civil Act)

Except as otherwise provided for in this Act, the provisions governing incorporated associations under the Civil Act shall apply mutatis mutandis to the Association.

Article 45 (Electronic Processing of Waste Delivery and Receipt)

(1) The Minister of Environment shall establish and operate an electronic information processing organization (hereinafter referred to as "electronic information processing organization") to manage the following information and records (hereinafter referred to as "electronic information"): *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 11914, Jul. 16, 2013>*

1. Information entered under Article 14 (6) and required for the calculation of charges for food wastes;
2. Information entered under 18 (3) and 24-3 (2) about the transfer and receipt of wastes;
3. Records entered under paragraph (3).

(2) The Minister of Environment shall establish and operate an electronic information processing program (hereinafter referred to as "electronic information processing program") to efficiently process electronic information. In such cases, the costs necessary for electronic information processing may be wholly or partially collected from users of such program. *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010>*

(3) When an industrial waste discharger has recorded the details of affairs prescribed by Presidential Decree, such as reports, on the electronic information processing program, as prescribed by Ordinance of the Ministry of Environment, such duties are deemed performed. *<Amended by Act No. 8613, Aug. 3, 2007>*

(4) The Minister of Environment shall retain electronic information for three years from the date it is recorded. *<Newly Inserted by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010>*

(5) The Minister of Environment, the Mayor/Do Governor, or the person who has transmitted an electronically processed record relating to affairs under paragraph (3) may request the head of the electronic information processing organization in writing to provide him/her with the data relevant to the electronically processed records concerned, and the head of the electronic information processing organization shall, upon receipt of such request, then provide such data within the period prescribed by Ordinance of the Ministry of Environment. *<Amended by Act No. 8613, Aug. 3, 2007>*

Article 46 (Reporting on Waste Treatment)

(1) Any of the following persons shall have facilities and equipment meeting the standards prescribed by Ordinance of the Ministry of Environment and file a report thereon with the competent Mayor/Do Governor: *<Amended by Act No. 10389, Jul. 23, 2010>*

1. A person who recycles wastes, such as animal or vegetable remnants in a manner that they are used as compost for his/her own farmland, as prescribed by Ordinance of the Ministry of Environment;

2. A person who collects or transports waste papers, steel scrap, or other wastes prescribed by Ordinance of the Ministry of Environment or recycles them in the manner prescribed by Ordinance of the Ministry of Environment, with a place of business of such size as prescribed by Ordinance of the Ministry of Environment;

3. A person who collects or transports waste tires, waste home appliances, or other wastes prescribed by Ordinance of the Ministry of Environment.

(2) Deleted. *<by Act No. 10389, Jul. 23, 2010>*

(3) If a person who has filed a report on waste treatment intends to modify any of the matters specified by Ordnance of the Ministry of Environment, he/she shall file a report on such modification with the competent Mayor/Do Governor. *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010>*

(4) Deleted. *<by Act No. 10389, Jul. 23, 2010>*

(5) A person who has filed a report on waste treatment under paragraph (1) 1 or 2 may collect and transport wastes for recycling without obtaining permission for waste collection and transportation business under Article 25 (3) or filing a report under paragraph (1) 2. *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010; Act No. 11914, Jul. 16, 2013>*

(6) A person who has filed a report on waste treatment shall comply with the rules prescribed by Ordinance of the Ministry of Environment, such as the treatment of wastes in the manner reported. *<Newly Inserted by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010>*

(7) A Mayor/Do Governor may issue an order to close related facilities or to prohibit carrying-in or treating wastes (hereinafter referred to as "prohibition of treatment") for a period not exceeding six months, if a person who has filed a report on waste treatment falls under any of the following circumstances: *<Newly Inserted by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010; Act No. 11914, Jul. 16, 2013; Act No. 13411, Jul. 20, 2015>*

1. Where he/she fails to comply with the rules under paragraph (6);

2. Where he/she fails to comply with the standards and methods of waste treatment under Article 13 or the principles of recycling wastes and matters to be observed under Article 13-2;

3. Where he/she fails to take any of the measures required under the main sentence of Article 40 (1).

(8) No person on whom a disposition for closure of facilities has been taken pursuant to paragraph (7) shall file a report on waste treatment under paragraph (1) again within one year from the date such disposition has been issued. *<Newly Inserted by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010>*

Article 46-2 (Imposition of Penalty Surcharges on Persons who Have Reported on Waste Treatment)

(1) Where a person who has filed a report on waste treatment falls under any subparagraph of Article 46 (7) so the competent Mayor/Do Governor shall order him/her to prohibit waste treatment, and the Mayor/Do Governor deems that the prohibition of waste treatment falls under any of the following subparagraphs, the Mayor/Do Governor may impose a penalty surcharge not exceeding 20 million won, in

lieu of the prohibition of waste treatment, as prescribed by Presidential Decree: <*Amended by Act No. 10389, Jul. 23, 2010*>

1. Where the prohibition of waste treatment concerned prevents a customer of the relevant treatment from commissioning waste treatment to a waste treatment business entity, resulting in wastes accumulated in the customer's place of business, so the customer's business is likely to suffer enormous impediment;

2. Where a health hazard occurs, or is likely to occur, to the neighboring residents due to environmental pollution caused by wastes stored by the person who has filed a report on waste treatment, or wastes left stored by a customer of the relevant treatment;

3. Where it is deemed necessary to allow the waste treatment business entity to continue his/her business due to a natural disaster or any other unavoidable cause.

(2) The amount of a penalty surcharge, depending on the type and degree of violations, subject to the imposition of a penalty surcharge under paragraph (1), and other necessary matters shall be prescribed by Presidential Decree.

(3) If a penalty surcharge imposed under paragraph (1) is not paid, the penalty surcharge shall be collected in accordance with the Act on the Collection, etc. of Local Non-Tax Revenue. <*Amended by Act No. 11998, Aug. 6, 2013*>

(4) Penalty surcharges collected under paragraph (1) and (3) shall become the revenue of the relevant City/Do, and shall be used only for any of the purposes of use prescribed by Presidential Decree, such as the expansion of multi-regional waste treatment facilities.

Article 47 (Measures for Retrieving Wastes)

(1) In manufacturing, processing, importing, or selling products, the materials, containers, and products which have been used in such manufacturing, processing, importation, or sale become wastes, every business entity shall ensure that such wastes are easily retrieved and treated.

(2) Where any material, container, or product referred to in paragraph (1) contains any substance specified by Ordinance of the Ministry of Environment among the air pollutants, water contaminants, and toxic substances as defined in Article 2 of the Clean Air Conservation Act, Article 2 of the Water Quality and Aquatic Ecosystem Conservation Act, and Article 2 of the Chemicals Control Act, or where wastes are generated from any material, container, or product manufactured, processed, or sold in large quantities, the relevant business entity shall retrieve and treat such material, container, or product in accordance with methods publicly notified by Ordinance of the Ministry of Environment for retrieving and treating such wastes. In this regard, when the Minister of Environment intends to publicly notify such methods, he/she shall consult in advance with the heads of relevant central administrative agencies. <*Amended by Act No. 8466, May 17, 2007; Act No. 11862, Jun. 4, 2013*>

(3) If a business entity fails to retrieve and treat wastes in accordance with methods publicly notified under paragraph (2), the Minister of Environment may recommend him/her to take measures necessary for retrieving and treating them within a given period.

(4) If a person in receipt of such recommendation under paragraph (3) fails to do as recommended, the Minister of Environment may order him/her to take measures required for retrieving and treating such wastes properly.

Article 48 (Orders to Take Measures for Treatment of Wastes)

If it is discovered that wastes have been treated in a manner inconsistent with the standards for and methods of waste treatment under Article 13 or the principles of recycling wastes and matters to be observed under Article 13-2, or have been treated or buried, in violation of Article 8 (1) or (2), the Minister of Environment, the competent Mayor/Do Governor or the head of the competent Si/Gun/Gu may order any of the following persons to change the method of treating such wastes, to suspend the treatment or carrying-in of wastes, or to take any other necessary measures, specifying a period: *<Amended by Act No. 13411, Jul. 20, 2015>*

1. The person who has treated such wastes;
2. The person who has commissioned another person to treat such wastes without ascertainment required under Article 17 (1) 3;
3. The owner of the land in which such wastes have been treated or buried, if the landowner him/herself has treated such wastes in the land or has allowed another person to use the land for treatment of such wastes.

Article 48-2 (Presentation of Opinions)

When the Minister of Environment, a Mayor/Do Governor or the head of a Si/Gun/Gu intends to issue an order under Article 39-2, 39-3, 40 (2) or (3), or 48, he/she shall notify the relevant person in advance of the grounds for the order to give him/her an opportunity to present his/her opinion about it: Provided, That the foregoing shall not apply where such order is urgently required for the protection of water supply sources or the conservation of environment.

Article 49 (Vicarious Execution)

Where a person to whom an order has been issued to take a measure under Article 39-2, 39-3, 40 (2) or (3), or 48 fails to comply with such order, the Minister of Environment, the competent Mayor/Do Governor, or the head of the competent Si/Gun/Gu may take such measures vicariously in accordance with the Administrative Vicarious Execution Act and recover the expenses incurred in taking such measures. *<Amended by Act No. 10389, Jul. 23, 2010>*

Article 50 (Follow-Up Management of Waste Treatment Facilities)

(1) If a person who has installed a waste treatment facility upon obtaining approval for installation or filing a report on installation under Article 29 (2) (including persons who have obtained permission for waste management business under Articles 25) intends to discontinue the operation of the facility installed thereby or close such facility, he/she shall file a report thereon with the Minister of Environment, as prescribed by Ordinance of the Ministry of Environment. In such cases, where a person intends to discontinue the operation of a landfill facility for wastes or close such facility, he/she shall successfully pass an inspection conducted by an inspection agency under Article 30 (1), as prescribed by Ordinance of

the Ministry of Environment. *<Amended by Act No. 11465, Jun. 1, 2012; Act No. 11914, Jul. 16, 2013>*

(2) Where the result of an inspection conducted under paragraph (1) turns out to be a failure, the Minister of Environment may order the person who has installed and operates the relevant facility to improve the facility within a fixed period, as prescribed by Ordinance of the Ministry of Environment. *<Newly Inserted by Act No. 13038, Jan. 20, 2015>*

(3) Any of the following persons shall implement follow-up management, such as installation and operation of facilities for the treatment of seeping water, as prescribed by Ordinance of the Ministry of Environment, in order to prevent such facility from causing hazards to the health or property of residents or its surrounding environment: *<Amended by Act No. 13038, Jan. 20, 2015; Act No. 13411, Jul. 20, 2015>*

1. A person who filed a report under paragraph (1) and has discontinued the operation of any of the landfill facilities for wastes prescribed by Presidential Decree or closed down such facility permanently;
2. A person who has received an order to close down the facility permanently pursuant to Article 31 (5) while using landfill facilities for wastes prescribed by Presidential Decree.

(4) A person obligated to implement follow-up management under paragraph (3) shall undergo a periodic inspection conducted by an inspection agency under Article 30 (1) on whether follow-up management has been properly implemented, as prescribed by Ordinance of the Ministry of Environment. In such cases, a waste treatment facility shall be deemed to have passed a periodic inspection if it has undergone a technical diagnosis under Article 13 of the Environmental Technology and Industry Support Act (excluding where a person fails to comply with a request made under Article 13 (3) of the Environmental Technology and Industry Support Act). *<Newly Inserted by Act No. 11465, Jun. 1, 2012; Act No. 13038, Jan. 20, 2015>*

(5) If a person obligated to implement follow-up management under paragraph (3) fails to perform his/her obligations properly or fails to pass a periodic inspection conducted under paragraph (4), the Minister of Environment may order the person to take corrective measures within a given period, as prescribed by Ordinance of the Ministry of Environment. *<Amended by Act No. 11465, Jun. 1, 2012; Act No. 13038, Jan. 20, 2015>*

(6) If the person to whom an order has been issued under paragraph (5) fails to take any corrective measure within the given period, the Minister of Environment may assign a person designated by Presidential Decree to take the corrective measures on behalf of the person, and may spend the performance bond for follow-up management, the performance guarantee insurance money, or the advance reserve for the follow-up management guarantee bond paid under Article 51 or 52 (hereinafter referred to as "performance bond for follow-up management or similar") for expenses incurred in taking such measures. In such cases, if such expenses exceed the amount of the performance bond for follow-up management or similar, the Minister of Environment may collect the excess from the person to whom such order has been issued. *<Amended by Act No. 11465, Jun. 1, 2012; Act No. 13038, Jan. 20, 2015>*

Article 51 (Performance Guarantee Bond for Follow-up Management of Waste Treatment Facilities)

(1) If it is found that a landfill facility for wastes subject to follow-up management under Article 50 (3) may cause serious hazards to the health or property of residents or its surrounding environment due to seepage of water, etc. after the discontinuance of its operation or closedown of the facility, the Minister of Environment may, in order to secure the guarantee for discontinuance of its operation (including closedown) and the performance of the follow-up management (hereinafter referred to as "follow-up management, etc."), require the person who installed such facility to deposit all the necessary expenses incurred in relation to follow-up management, etc. in the special account for environmental improvement under the Framework Act on Environmental Policy, as prescribed by Presidential Decree: Provided, That in any of the following cases, the person may be exempted from the obligation to deposit necessary follow-up management expenses or may be allowed to substitute such deposit of all or some of the follow-up management expenses, as prescribed by Presidential Decree: *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010; Act No. 13038, Jan. 20, 2015>*

1. If the person carries an insurance policy that guarantees the performance of follow-up management;
2. If the person has accumulated a reserve for expenses necessary for follow-up management under Article 52;
3. If any other cases specified by Presidential Decree exist.

(2) The expenses that a person who installed a waste landfill facility under paragraph (1) shall deposit (hereinafter referred to as "performance guarantee bond for follow-up management") shall be calculated in accordance with the guidelines prescribed by Presidential Decree, and the time and procedures for the payment of such expenses and other necessary matters shall be prescribed by Presidential Decree.

(3) The performance guarantee bond for follow-up management under paragraph (2) shall be collected in the same manner as delinquent national taxes are collected if it has not been paid on or before the deadline for payment.

(4) If a person who installed a waste landfill facility has completely or partially performed his/her obligations for follow-up management, which he/she is obligated to perform each year, the Minister of Environment shall refund a portion of the performance guarantee bond for follow-up management, equivalent to the amount calculated according to the guidelines prescribed by Presidential Decree in proportion to the amount of his/her performance. *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010>*

Article 52 (Advance Reserve for Performance Guarantee Bond for Follow-Up Management)

(1) The Minister of Environment may require, as prescribed by Presidential Decree, a person who has installed a landfill facility for wastes as prescribed by Presidential Decree to deposit, in advance, all the necessary expenses for the follow-up management, etc. in the special account for environmental improvement under the Framework Act on Environmental Policy, as prescribed by Presidential Decree, before the volume of buried wastes exceeds 50 percent of the permitted treatment capacity or the modification thereto granted under Article 25 (3) and (11) or in the approval or the modification thereto granted under Article 29 (2) and (3): Provided, That the advance deposit of performance guarantee bond

for follow-up management may be substituted by any of the following measures: *<Amended by Act No. 13038, Jan. 20, 2015>*

1. Where an insurance for guarantee of follow-up measures, etc. is purchased;

2. Where any collateral (excluding landfill facilities for wastes) corresponding to all or part of expenses required for follow-up measures, etc. is provided.

(2) If the amount of an advance reserve deposited by a person who has installed a facility under paragraph (1) exceeds the performance guarantee bond for follow-up management under Article 51 (1), the Minister of Environment shall refund the difference, as prescribed by Presidential Decree. *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010>*

Article 53 (Purposes of Use of Performance Guarantee Bond for Follow-up Management)

The performance guarantee bond for follow-up management and an advance reserve under Articles 51 and 52 shall be used for the following purposes: *<Amended by Act No. 13038, Jan. 20, 2015>*

1. Refunding the performance guarantee bond for follow-up management and the advance reserve for follow-up management of a landfill facility;

2. Vicariously executing the follow-up management of a landfill facility;

3. Vicariously executing the final soil covering referred to in Article 31 (6);

4. Other purposes of use prescribed by Presidential Decree.

Article 54 (Restrictions, etc. on Use of Land Subsequent to Discontinuance of Operation or Closure)

If it is found that a landfill facility for wastes subject to follow-up management under Article 50 (3) is likely to cause a serious hazard to the health or property of residents or its surrounding environment because seeping water leaks therefrom, embankments are washed away, or any other event occurs after the operation of the facility is discontinued or it is closed, the Minister of Environment may place a restriction on the use of the land on which the facility is situated, as prescribed by Presidential Decree, by requiring the person who holds the ownership in, or any right, other than the ownership in, the land to use the land only for growing trees, developing grasslands, or installing park facilities under subparagraph 4 of Article 2 of the Act on Urban Parks, Greenbelts, Etc., sports facilities under subparagraph 1 of Article 2 of the Installation and Utilization of Sports Facilities Act, cultural facilities under Article 2 (1) 3 of the Culture and Arts Promotion Act, or new and renewable energy facilities under subparagraph 3 of Article 2 of the Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy during the period set by Presidential Decree. *<Amended by Act No. 10389, Jul. 23, 2010; Act No. 11965, Jul. 30, 2013; Act No. 13038, Jan. 20, 2015>*

Article 55 (Coordination in Waste Treatment Services)

(1) Whenever the Minister of Environment or the Mayor/Do Governor coordinates waste management services with local governments pursuant to Article 4 (2) or (4), he/she may request them to jointly use a certain waste treatment facility, including a waste landfill facility, if necessary to do so, and may also request them to prepare support measures necessary for conserving and improving the living environment of the area in which such facility is installed. In such cases, the relevant local government shall comply

with such requests, except in extenuating circumstances. *<Amended by Act No. 11914, Jul. 16, 2013>*

(2) In order to efficiently coordinate waste treatment services with local governments pursuant to paragraph (1), the Minister of Environment may inspect and evaluate the actual status of waste treatment services and the installation and operation of waste treatment facilities. *<Newly Inserted by Act No. 11914, Jul. 16, 2013>*

(3) Further details about the methods and procedures for evaluations conducted under paragraph (2) shall be prescribed by Ordinance of the Ministry of Environment. *<Newly Inserted by Act No. 11914, Jul. 16, 2013>*

Article 56 (State Subsidies, etc.)

(1) The State may fully or partially subsidize local governments, within budgetary limits, for expenses incurred in installing waste treatment facilities. *<Amended by Act No. 11914, Jul. 16, 2013>*

(2) The Minister of Environment may consider the results of the evaluation conducted under Article 55 (2) when he/she intends to subsidize expenses pursuant to paragraph (1). *<Newly Inserted by Act No. 11914, Jul. 16, 2013>*

Article 57 (Assistance for Expenses to be Incurred for Installation of Waste Treatment Facilities)

The State or the heads of local governments may, if deemed necessary, grant financial aid to a person who intends to install a waste treatment facility.

Article 58 (Reporting on Performance of Waste Management)

(1) The Mayors/Do Governors shall report the performance of waste management conducted within their jurisdiction during the preceding year to the Minister of Environment by no later than March 31 as prescribed by Ordinance of the Ministry of Environment.

(2) The Minister of Environment may require the Mayors/Do Governors or the heads of Sis/Guns/Gus to report the performance of guidance and control conducted in relation to the affairs of waste management within the extent required for the enforcement of this Act.

Article 58-2 (Korea Waste Association)

(1) Persons specified by Presidential Decree, including persons who have installed and operate waste treatment facilities, waste treatment businesses, and waste-related organizations, may establish the Korea Waste Association (hereafter referred to as the "Association") with approval from the Minister of Environment in order to facilitate the development of the waste-related industry, including surveys and research on wastes, the development of technologies, and the dissemination of information. *<Amended by Act No. 11914, Jul. 16, 2013>*

(2) The Association shall be incorporated as a corporation.

(3) The Association shall perform the following affairs: *<Newly Inserted by Act No. 11914, Jul. 16, 2013>*

1. Guidance, surveys, and research for the development of the waste industry;
2. Public relations activities, education, and training regarding wastes;
3. Any other affairs specified by Presidential Decree.

(4) The organization and management of the Association and other necessary matters shall be prescribed by Presidential Decree to the extent necessary for achieving the objectives of its establishment. *<Amended*

by Act No. 11914, Jul. 16, 2013>

(5) Except as otherwise expressly provided for in this Act, the provisions concerning incorporated associations in the Civil Act shall apply mutatis mutandis to the Association. *<Amended by Act No. 11914, Jul. 16, 2013>*

Article 59 (Fees)

(1) Any of the following persons shall pay a fee, as prescribed by Ordinance of the Ministry of Environment: *<Amended by Act No. 13411, Jul. 20, 2015>*

1. A person who intends to undergo an environmental assessment of recycling under Article 13-3 (1);
2. A person who intends to obtain permission under Article 25 (3);
3. A person who intends to have his/her exclusive container manufacturing business registered under Article 25-2 (1);
4. A person who intends to undergo an inspection under Article 30 (1) or (2).

(2) Any of the following institutions may collect a fee, as determined and publicly notified by the Minister of Environment, from persons prescribed in the relevant subparagraph: *<Newly Inserted by Act No. 10389, Jul. 23, 2010; Act No. 13038, Jan. 20, 2015>*

1. An inspection institution under Article 25-2 (4): Persons who intends to undergo an inspection of exclusive containers;
2. A professional waste analysis agency: Persons who intend to entrust the testing and analysis of wastes.

Article 60 (Criteria for Administrative Dispositions)

The criteria for administrative dispositions made against violations of this Act and the orders issued under this Act shall be prescribed by Ordinance of the Ministry of Environment.

Article 61 (Hearing)

The Minister of Environment or the Mayor/Do governor shall, whenever he/she intends to make any of the following dispositions, hold a hearing: *<Amended by Act No. 13038, Jan. 20, 2015; Act No. 13411, Jul. 20, 2015>*

1. To revoke approval under Article 13-3 (6);
2. To revoke designation of an agency for environmental assessment of recycling under Article 13-4 (6);
3. To revoke designation of a professional waste analysis agency under Article 17-5;
4. To revoke permission under Article 27;
5. To revoke registration under Article 27-2;
6. To issue an order to close down a waste treatment facility under Article 31 (5);
7. To order to close down waste treatment facilities under Article 46 (7).

Article 62 (Delegation and Entrustment of Authority or Affairs)

(1) Part of the authority vested by the Minister of Environment under this Act may be delegated to each Mayor/Do Governor or the head of an affiliated agency, as prescribed by Presidential Decree. *<Amended by*

Act No. 11465, Jun. 1, 2012>

(2) Duties of the Minister of Environment or the head of a local government under this Act may be partially entrusted to the Korea Environment Corporation, associations, or other relevant specialized institutions, as prescribed by Presidential Decree. *<Newly Inserted by Act No. 10389, Jul. 23, 2010; Act No. 13038, Jan. 20, 2015>*

(3) The Minister of Environment or the head of a local government may, if deemed necessary for the efficient management and operation of a waste treatment facility or similar installed under this Act, entrust a person capable of managing and operating it to implement such management and operation, as prescribed by Ordinance of the Ministry of Environment (ordinance of the relevant local government where the head of the local government entrusts such management and operation). *<Amended by Act No. 10389, Jul. 23, 2010>*

Article 62-2 (Legal Fiction as Public Officials for Purposes of Penalty Provisions)

Any person, other than a public official from among those who perform the duties entrusted pursuant to Article 62 (2) or (3) shall be deemed a public official for the purposes of the penalty provisions of Articles 129 through 132 of the Criminal Act.

Article 62-3 (Reexamination of Regulations)

The Minister of Environment shall examine the appropriateness of the following matters every three years counting from the following base dates (referring to a date before the same date as the base date of the year that comes every three years), and shall take measures for improvement, etc.:

1. Matters concerning the approval for recycling of wastes under Article 13-3 (3): July 1, 2016;
2. Matters concerning the revocation of approval for recycling of wastes under Article 13-3 (6): July 1, 2016.

Article 63 (Penalty Provisions)

Any of the following persons shall be punished by imprisonment with labor for not more than seven years, or by a fine not exceeding 70 million won. In such cases, imprisonment with labor and a fine may be imposed concurrently: *<Amended by Act No. 11914, Jul. 16, 2013; Act No. 12321, Jan. 21, 2014; Act No. 13411, Jul. 20, 2015>*

1. A person who treats industrial wastes in violation of Article 8 (1);
2. A person who buries or incinerates industrial wastes, in violation of Article 8 (2);
3. A person who recycles any wastes without obtaining approval for recycling of wastes, in violation of Article 13-3 (3).

Article 64 (Penal Provisions)

Any of the following persons shall be punished by imprisonment for not more than five years, or by a fine not exceeding 50 million won: *<Amended by Act No. 10389, Jul. 23, 2010; Act No. 11914, Jul. 16, 2013; Act No. 12321, Jan. 21, 2014; Act No. 13038, Jan. 20, 2015; Act No. 13411, Jul. 20, 2015>*

1. A person who continuously recycles wastes in spite of the revocation of approval under Article 13-3 (6);

2. A person who obtains designation or designation for modification by deceit or other illegal means;

3. A person who conducts any environmental assessment of recycling without obtaining designation under Article 13-4 (1);

4. A person who manufactures or distributes standard waste bags and marks without a contract executed for vicarious implementation under Article 14 (7);

5. A person who operates a waste treatment business without permission under Article 25 (3);

6. A person who has obtained permission for a waste treatment business under Article 25 (3) by fraudulent or other illegal means;

7. A person who manufactures exclusive containers without being registered under Article 25-2 (1);

8. A person who are registered for exclusive container manufacturing business under Article 25-2 (1) by fraudulent or other illegal means;

9. A person who fails to comply with an order of closure under Article 31 (5).

Article 65 (Penal Provisions)

Any of the following persons shall be punished by imprisonment with labor for not more than three years, or by a fine not exceeding 30 million won: Provided, That imprisonment with labor and a fine may be imposed concurrently in cases falling under subparagraph 1, 6 or 11: *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010; Act No. 11465, Jun. 1, 2012; Act No. 11914, Jul. 16, 2013; Act No. 12321, Jan. 21, 2014; Act No. 13038, Jan. 20, 2015; Act No. 13411, Jul. 20, 2015>*

1. A person who buries wastes, in violation of Article 13 or Article 24-3 (4);

2. A person who prepares a report on environmental assessment of recycling by deceit or other illegal means and submits it to the Minister of Environment, in violation of Article 13-3 (3);

3. A person who modifies any important matters without obtaining designation for modification, in violation of Article 13-4 (2);

4. A person who allows another person to conduct an environmental assessment of recycling by using his/her name or trade name or lends a certificate of designation as an agency for environmental assessment, in violation of Article 13-4 (4);

5. A person who conducts an environmental assessment of recycling by using another person's name or trade name or borrows a certificate of designation as an agency for environmental assessment;

6. A person who collects, transports, or recycles food wastes among industrial wastes, in violation of Article 15-2 (3);

7. A person who obtains designation or designation for modification as a professional waste analysis agency by deceit or other illegal means;

8. A person who performs business of a professional waste analysis agency without obtaining designation or designation for modification under Article 17-2 (1) or (3);

9. A professional waste analysis agency that conducts testing and analysis of wastes during the business suspension period fixed under Article 17-5 (2);

10. A professional waste analysis agency that intentionally issues a report on the results of analysis of wastes differently from the fact;

11. A person who treats industrial wastes or imported wastes, in violation of Article 18 (1) or 24-3 (1);

12. A person who fails to comply with an order to take necessary measures under Article 24-2 (3);

13. A person who exports imported wastes as the same state or condition as they were imported, in violation of Article 24-3 (5);

14. A person who amends permitted matters of waste treatment business without obtaining modified permission under Article 25 (11);

15. A person who fails to undergo an inspection, in violation of Article 25-2 (4);

16. A person who performs business during the business suspension period fixed under Article 27;

17. A person who performs business during the business suspension period fixed under Article 27-2 (2);

18. A person who installs a waste treatment facility without approval, in violation of Article 29 (2);

19. A person who operates a waste treatment facility without an inspection or verification on conformity, in violation of Article 30 (1) through (3);

20. A person who fails to comply with an order for improvement or for suspension of operation issued under Article 31 (4);

21. A person who fails to comply with an order issued under Article 39-2, 39-3, or 40 (2), (3) or (4) 1;

22. A person who fails to comply with an order to take measures under Article 47 (4);

23. A person who fails to comply with an order to take measures under Article 48;

24. A person who discontinues the operation of a landfill facility for wastes or closes down such facility without passing an inspection, in violation of the latter part of Article 50 (1);

25. A person who fails to comply with an order for improvement issued under Article 50 (2);

26. A person who fails to undergo a periodic inspection, in violation of Article 50 (4);

27. A person who fails to comply with an order to take corrective measures issued under Article 50 (5).

Article 66 (Penal Provisions)

Any of the following persons shall be punished by imprisonment with labor for not more than two years, or by a fine not exceeding 20 million won: *<Amended by Act No. 8613, Aug 3, 2007; Act No. 10389, Jul. 23, 2010; Act No. 12321, Jan. 21, 2014; Act No. 13038, Jan. 20, 2015; Act No. 13411, Jul. 20, 2015>*

1. A person who contaminates a surrounding environment in the course of waste treatment, in violation of Article 13, 13-2 or 24-3 (4) (excluding a violation of subparagraph 1 of Article 65);

1-2. A person who recycles any wastes, in violation of the conditions for approval imposed under Article 13-3 (5);

1-3. A person who fails to comply with an order to take measures under Article 13-5 (5);

2. A person who fails to file a report or who files a false report, in violation of Article 24-2 (1) or 46 (1); 24-2 (1) or 46 (1);

3. Deleted; *<by Act No. 8613, Aug 3, 2007>*

4. A person who fails to obtain verification under Article 17 (3) or verification on changes under Article 17 (4) (excluding change of trade name under subparagraph 1), or who discharges, transports, or treats controlled waste in a manner different from the details verified or the changes thereof;

4-2. A waste analysis agency which lets another person perform any affairs relating to the testing and analysis of wastes by using its name or trade name or lends its certificate of designation to another person, in violation of Article 17-3 (1);

4-3. A professional waste analysis agency which issues, by gross negligence, a waste analysis report, the details of which are different from the fact;

5. Deleted; <*by Act No. 13038, Jan. 20, 2015*>

6. A person who conducts his/her business in deviation from the type and scope of business under Article 25 (5);

7. A person who breaches a condition under Article 25 (7);

8. A person who allows another person to use his/her name or trade name in waste treatment or who lends his/her permit to another person, in violation of Article 25 (8);

9. A person who stores wastes, in violation of Article 25 (9) 1 or 2;

9-2. A person who changes any registered matter, without completing the modification of registration under Article 25-2 or after completing the modification thereof in falsehood;

9-3. A person who lets another person manufacture exclusive containers by using his/her name or trade name or lends his/her certificate of registration to another person, in violation of Article 25-2 (5);

9-4. A person who distributes exclusive containers which fail to meet the standards referred to in Article 25-2 (3), in violation of Article 25-2 (6);

10. A person who installs or operates a waste incineration facility, although the installation of which is prohibited, in violation of Article 29 (1);

11. A person who installs a waste treatment facility without filing a report in violation of Article 29 (2);

12. A person who amends any item approved without approval for such modification in violation of Article 29 (3);

13. A person who maintains and manages a waste treatment facility not in compliance with the guidelines for management under Article 31 (1) and consequently contaminates the surrounding environment;

14. A person who fails to comply with an order to take a measurement or make an assessment under Article 31 (7);

15. and 16. Deleted; <*by Act No. 10389, Jul. 23, 2010*>

Article 67 (Joint Penalty Provisions)

If a representative of a corporation, or an agent, employee, or any other servant of the corporation or an individual commits an offense under Articles 63 through 66 in connection with the duties of such corporation or individual, not only shall the offender be punished accordingly, but such corporation or individual also shall be punished by the fine provided in the relevant Article: Provided, That this shall not

apply where the corporation or individual has not been negligent in giving due attention and supervision concerning the relevant duties to prevent such offense.

Article 68 (Administrative Fines)

(1) Any of the following persons shall be punished by an administrative fine not exceeding ten million won: *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010; Act No. 11914, Jul. 16, 2013; Act No. 13038, Jan. 20, 2015; Act No. 13411, Jul. 20, 2015>*

1. A person who treats wastes, in violation of Article 13, 13-2, or 24-3 (4) (excluding any person who falls under subparagraph 1 of Article 65 or subparagraph 1 of Article 66);

1-2. A person who collects, transports, or recycles food wastes, among household wastes, in violation of Article 15-2 (3);

1-3. A person who fails to file a report, or files a false report, in violation of Article 17 (2);

1-4. A person who fails to comply with the matters to be observed under Article 17-3 (2) and (3);

1-5. A person who fails to record matters concerning the delivery and receipt of wastes or to record in accordance with the methods prescribed by Ordinance of the Ministry of Environment, or who falsely records them, in violation of Article 18 (3) or 24-3 (2);

2. Deleted; *<by Act No. 13038, Jan. 20, 2015>*

3. A person who fails to comply with the rules under Article 25 (9) 3 or 4;

3-2. A person who fails to file a report on modification under Article 25-2 (1) or changes any registered matter after filing a false report;

3-3. A person who fails to comply with the matters to be observed under Article 25-2 (6) (excluding cases falling under subparagraph 9-4 of Article 66);

4. A person who maintains or manages a waste treatment facility in a manner not in compliance with the standards for such management, in violation of any provision of Article 31 (1) through (3) or who fails to take a measure of the pollutants or administer an examination of impacts on the neighboring area (excluding any person who falls under subparagraph 14 of Article 66);

5. A person who fails to appoint a technical manager or fails to enter into a contract for technical management services, in violation of Article 34 (1);

6. A person who fails to comply with an order to submit a report under Article 38 (3) (applicable only to persons specified in Article 38 (1) 3 and 4);

6-2. A person who fails to take a measure required under each subparagraph of Article 40 (1);

7. Deleted; *<by Act No. 10389, Jul. 23, 2010>*

8. A person who fails to comply with an order of renewal under Article 40 (8);

9. A person who manufactures or distributes any recycled products or materials, using wastes that fail to meet the Hazard Criteria, in violation of Article 13-5 (2);

10. A person who continues to treat wastes during a period for which waste treatment is prohibited under Article 46 (7).

(2) Any of the following persons shall be punished by an administrative fine not exceeding three million won: *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010; Act No. 11914, Jul. 16, 2013; Act No. 13038, Jan. 20, 2015>*

1. A person who fails to verify under Article 17 (1) 1;

1-2. A person who entrusts someone to provide him/her with a service without verification under Article 17 (1) 3;

1-3. A person who fails to obtain verification on modification of a trade name under Article 17 (4) 1;

2. A person who fails to perform his/her obligations to comply with the guidelines publicly notified pursuant to Article 17 (5);

3. Deleted; *<by Act No. 13411, Jul. 20, 2015>*

4. Deleted; *<by Act No. 10389, Jul. 23, 2010>*

5. A person who modifies any reported matter without filing a report on such modification required under Article 17 (2), 24-2 (2), 25 (11), 29 (3), or 46 (3);

6. A person who fails to notify a delivery number to the competent administrative agency or public officials despite their request, in violation of Article 19 (1) or 24-3 (3);

7. A person who fails to give notice, in violation of Article 19 (2);

8. Deleted; *<by Act No. 8613, Aug. 3, 2007>*

9. A person who fails to file a report, in violation of Article 37 (1) or to treat all the wastes stored by him/her, in violation of paragraph (2) of the same Article;

9-2. A person who fails to submit a report by the deadline required under Article 38 (1) or prepares and submits a false report (limited to persons under Article 38 (1) 3;

9-3. A person who fails to comply with an order to submit a report under Article 38 (3) (excluding cases of paragraph (1) 6);

9-4. A person who fails to submit a report referred to in Article 38 (5) until the deadline or submits a false report;

10. A person who fails to renew the performance guarantee insurance policy under Article 40 (7);

11. A person who fails to comply with the rules under Article 46 (6);

12. A person who sells standard waste bags and marks without a contract executed for vicarious implementation under Article 14 (7).

(3) Any of the following persons shall be punished by an administrative fine not exceeding one million won: *<Amended by Act No. 8613, Aug. 3, 2007; Act No. 10389, Jul. 23, 2010; Act No. 11914, Jul. 16, 2013; Act No. 13038, Jan. 20, 2015>*

1. A person who disposes of, buries or incinerates household wastes, in violation of Article 8 (1) or (2);

2. A person who fails to comply with an order to take a measure, in violation of Article 8 (3);

3. A person who violates Article 15 (1) or (2);

4. A person who fails to comply with the rules prescribed by Municipal Ordinance, in violation of Article 15-2 (1);

4-2. A person who fails to report his/her plan to restrain the generation of food wastes and properly treat such wastes, in violation of Article 15-2 (2);

4-3. A person who fails to enter information about the delivery and receipt of wastes in the electronic information processing program within a prescribed period or enters inadequate information in the program, in violation of Article 18 (3) or 24-3 (2);

5. A person who commences the operation of a facility without filing a report under Article 29 (4);

6. A person who fails to take a training course or fails to provide an opportunity to take training courses in violation of Article 35 (1) or (2);

7. A person who fails to keep or preserve books under Article 36 (1) or who makes a false entry therein;

8. A person who fails to submit a report under Article 38 (1) or (2) within a prescribed period or who prepares and submits a false report (excluding persons under paragraph (2) 9-2);

9. A person who fails to submit materials necessary for preparing a report under Article 38 (4) within a prescribed period or who prepares and submits a false report;

10. A person who fails to file a report under Article 39 (1) or who files a false report;

11. A person who rejects, interferes with, or evades an access or inspection under Article 39 (1);

12. A person who fails to submit an original of insurance policy under Article 40 (9);

13. A person who fails to notify any change under Article 40 (10);

14. A person who fails to file a report under Article 50 (1).

(4) Administrative fines referred to in paragraphs (1) through (3) shall be imposed and collected by the Minister of Environment, a Mayor/Do Governor, or the head of a Si/Gun/Gu, as competent in each cases, as prescribed by Presidential Decree. *<Amended by Act No. 11465, Jun. 1, 2012; Act No. 11914, Jul. 16, 2013>*

(5) through (7) Deleted. *<by Act No. 10389, Jul. 23, 2010>*

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ADDENDA

Article 1 (Enforcement Date)

This Act shall enter into force on the date of its promulgation: Provided, That the amended provisions of Article 3 (1) 4 above and Article 9 (40) of Addenda shall enter into force on September 28, 2007; the amended provisions of subparagraphs 4 and 5 of Article 2 and Article 25 (9) above on January 4, 2008; the amended provisions of Articles 3 (2) and 18 (1) above and Article 9 (42) of Addenda on January 20, 2008; and the amended provision of Article 9 (29) of Addenda on January 27, 2008, respectively.

Article 2 (Transitional Measure concerning Enforcement Date)

The former provisions of subparagraphs 4 and 5 of Article 2 and Articles 3 (1) 4 and (2), 25 (1), and 26 (9) shall remain in effect until the amended provisions of subparagraph 4 and 5 of Article 2 and Articles 3 (1) 4 and (2), 18 (1), and 25 (9) enter into force pursuant to the proviso to Article 1 of Addenda.

Article 3 (Effective Period)

The amended provisions of Article 12 shall remain in effect until October 4, 2007.

Article 4 (Transitional Measure concerning Reporting on Recycling of Industrial Wastes)

Any person who has filed a report on recycling of industrial wastes in accordance with the former provisions in force as of September 9, 1991,

which corresponds to the date of the modification (Act No. 4363) to the Wastes Control Act, shall be deemed to have filed a report on recycling under this Act.

Article 5 (Transitional Measure concerning Reporting by Waste dischargers who discharge Ordinary Wastes in Large Quantities or Specific Wastes)

Any persons who has filed a report as a waste discharger who discharges ordinary wastes in large quantities or specific wastes in accordance with the former provisions in force as of February 5, 1996, which corresponds to the enforcement date of the modification (Act No. 4970) to the Wastes Control Act, shall be deemed to have filed a report as an industrial waste discharger under this Act.

Article 6 (Transitional Measures concerning Permission for Waste Management Business)

(1) Any person who holds a licence for waste recycling business under the former provisions in force as of August 9, 1999, which corresponds to the enforcement date of the modification (Act No. 5865) to the Wastes Control Act, shall be deemed to have obtained permission for the interim waste treatment business under the amended provisions of Article 25 (3) herein.

(2) Any person who files a report on recycling of wastes under the former provisions in force as of August 9, 1999, which corresponds to the enforcement date of the modification (Act No. 5865) to the Wastes Control Act, shall be deemed to have filed a report on recycling of wastes under the amended provision of Article 46 herein.

Article 7 (General Transitional Measure concerning Dispositions)

Acts done by or in relation to an administrative agency under the former provisions in force as at the time this Act enters into force shall be deemed as those performed by or against the administrative agency under this Act.

Article 8 (Transitional Measure concerning Penalty Provisions and Administrative Fines)

Acts done before this Act enters into force shall be governed by the former provisions for the purpose of penalty provisions or provisions concerning administrative fines.

Article 9 Omitted.

Article 10 (Relation with Other Acts)

A citation to the previous Wastes Control Act or any provision thereof by any other statute in force as at the time when this Act enters into force shall be deemed a citation to this Act or a corresponding provision hereof in lieu of the previous provision, if such a corresponding provision exists herein.

ADDENDA <*Act No. 8466, May 17, 2007*>

Article 1 (Enforcement Date)

This Act shall enter into force six month after the date of its promulgation.

Articles 2 through 5 Omitted.

ADDENDA *<Act No. 8486, May 25, 2007>*

Article 1 (Enforcement Date)

This Act shall enter into force one year after the date of its promulgation.

Articles 2 through 10 Omitted.

ADDENDA *<Act No. 8613, Aug. 3, 2007>*

(1) (Enforcement Date) This Act shall enter into force one year after the date of its promulgation.

(2) (Transitional Measures concerning Transmission of Information on Delivery and Receipt of Wastes to Electronic Information Processing Program) Where a waste delivery note or a simplified waste delivery note is issued under the previous provisions and the delivery and receipt thereof is pending as at the time when this Act enters into force, the transmission of information to the electronic information processing program is deemed made under the amended provisions of Article 18 (3).

(3) (Transitional Measures concerning Penalty Provisions) The previous provisions shall apply for the purposes of penalty provisions to violations committed before this Act enters into force.

ADDENDA *<Act No. 8789, Dec 21, 2007>*

Article 1 (Enforcement Date)

This Act shall enter into force one year after the date of its promulgation.

Articles 2 through 5 Omitted.

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ADDENDA *<Act No. 9770, Jun. 9, 2009>*

Article 1 (Enforcement Date)

This Act shall enter into force on July 1, 2010. (Proviso Omitted.)

Articles 2 through 7 Omitted.

ADDENDA *<Act No. 9931, Jan. 13, 2010>*

Article 1 (Enforcement Date)

This Act shall enter into force three months after the date of its promulgation. (Proviso Omitted.)

Articles 2 through 4 Omitted.

ADDENDA *<Act No. 10219, Mar. 31, 2010>*

Article 1 (Enforcement Date)

This Act shall enter into force on January 1, 2011.

Articles 2 through 12 Omitted.

ADDENDA <*Act No. 10389, Jul. 23, 2010*>

Article 1 (Enforcement Date)

This Act shall enter into force one year after the date of its promulgation: Provided, That the amended provisions of subparagraphs 2 and 15 of Article 66 and Articles 67, 68 (1) 1-2 and 6, 68 (2) 9-2, 68 (3) 8 and 9 and 68 (5) through (7) shall enter into force on the date of its promulgation.

Article 2 (Transitional Measures concerning Permission for Waste Treatment Business)

(1) Any person who has obtained permission for waste treatment business listed in the left column of the following table pursuant to the previous provisions as at the time this Act enters into force shall be deemed to have obtained permission for waste treatment business listed in the right column of the same table:

(2) Any person who has obtained permission for any interim waste treatment business or general waste treatment business for recycling as prescribed by Ordinance of the Ministry of Environment pursuant to the previous provisions as at the time this Act enters into force shall be deemed to have obtained permission for waste recycling business listed in any of the amended provisions of Article 25 (5) 5 through 7.

(3) Any person who has filed a report on recycling of wastes pursuant to any previous provision of Article 46 (1) 1 through 6 and 8 as at the time this Act enters into force shall be deemed to have obtained permission for waste recycling business listed in any amended provision of Article 25 (5) 5 through 7: Provided, That he/she shall secure the facilities, equipment and technical human resources under Article 25 (3) and obtain permission to make modifications required under Article 25 (11) within two years after this Act enters into force.

Article 3 (Transitional Measures concerning Administrative Dispositions)

Any administrative disposition (including any disposition taken to impose a penalty surcharge) against any offense committed before this Act enters into force shall be governed by the previous provisions.

Article 4 (Transitional Measures concerning Reporting on Waste Treatment)

(1) Any person who has filed a report on recycling of wastes pursuant to the previous provisions of Article 46 (1) 6 or 7 in force as at the time this Act enters into force shall be deemed to have filed a report on waste treatment pursuant to the amended provisions of Article 46 (1) 1 or 3.

(2) Any person who is deemed to have filed a report pursuant to the previous provisions of Article 46 (4) as at the time this Act enters into force shall be deemed to have filed a report on waste treatment pursuant to the amended provisions of Article 46 (1) 2: Provided, That he/she shall have the facilities, equipment, etc. under the amended provisions of Article 46 (1) and file a report thereon within two years after this Act enters into force.

Article 5 (Transitional Measures concerning Vicarious Execution)

Any vicarious execution performed in relation to any violation of the previous provisions of Article 13 committed before this Act enters into force shall be governed by the previous provisions.

Article 6 (Transitional Measures concerning Penalty Provisions and Administrative Fines)

With respect to the application of penalty provisions and administrative fines to any offenses committed before this Act enters into force, the previous provisions shall prevail.

Article 7 Omitted.

ADDENDA *<Act No. 10615, Apr. 28, 2011>*

Article 1 (Enforcement Date)

This Act shall enter into force six months after the date of its promulgation.

Articles 2 through 9 Omitted.

ADDENDA *<Act No. 10888, Jul. 21, 2011>*

Article 1 (Enforcement Date)

This Act shall enter into force one year after the date of its promulgation.

Articles 2 through 17 Omitted.

ADDENDA *<Act No. 10911, Jul. 25, 2011>*

Article 1 (Enforcement Date)

This Act shall enter into force three months after the date of its promulgation.

Articles 2 through 5 Omitted.

ADDENDA *<Act No. 11465, Jun. 1, 2012>*

Article 1 (Enforcement Date)

This Act shall enter into force one year after the date of its promulgation.

Article 2 (Applicability to Periodic Inspections of Landfill Facilities for Wastes under Follow-Up Management)

The amended provisions of Article 50 (3) shall apply also to landfill facilities for wastes under follow-up management as at the time this Act enters into force, however the start date of each periodic inspection shall be counted from the date this Act enters into force.

ADDENDA *<Act No. 11862, Jun. 4, 2013>*

Article 1 (Enforcement Date)

This Act shall enter into force on January 1, 2015.

Articles 2 through 12 Omitted.

ADDENDA *<Act No. 11914, Jul. 16, 2013>*

Article 1 (Enforcement Date)

This Act shall enter into force six months after the date of its promulgation: Provided, That the amended provisions of Articles 4, 7, 8, 15 (1) and (2), 17, 25, 50, 63, and 68 (4) shall enter into force on the date of its promulgation.

Article 2 (Applicability to Plans to Restrain Generation of Food Wastes)

The initial plan to restrain the generation of food wastes under the amended provisions of Article 14-3 shall be formulated within one year after this Act enters into force.

Article 3 (Transitional Measures concerning Plans to Retrain Generation of Food Wastes and Treat such Wastes)

Any person who has submitted a plan for reducing the generation of food wastes under the former provisions as at the time this Act enters into force shall be deemed to have reported a plan to restrain the generation of food wastes and treat such wastes under the amended provisions of Article 15-2 (2).

Article 4 (Transitional Measures concerning Administrative Fines)

The former provisions shall apply to the imposition of administrative fines for violations committed before this Act enters into force, notwithstanding the amended provisions of Article 68 (1) 6 and 68 (2) 9-3.

ADDENDA <*Act No. 11965, Jul. 30, 2013*>

Article 1 (Enforcement Date)

This Act shall enter into force three months after the date of its promulgation. (Proviso Omitted.)

Articles 2 through 4 Omitted.

ADDENDA <*Act No. 11980, Jul. 30, 2013*>

Article 1 (Enforcement Date)

This Act shall enter into force on the date of its promulgation. (Proviso Omitted.)

Articles 2 and 3 Omitted.

ADDENDA <*Act No. 11998, Aug. 6, 2013*>

Article 1 (Enforcement Date)

This Act shall enter into force one year after the date of its promulgation.

Articles 2 and 3 Omitted.

ADDENDUM <*Act No. 12321, Jan. 21, 2014*>

This Act shall enter into force on the date of its promulgation: Provided, That the amended provisions of Article 14 (9) shall apply six months after the date of its promulgation.

ADDENDA <*Act No. 13038, Jan. 20, 2015*>

Article 1 (Enforcement Date)

This Act shall enter into force one year after the date of its promulgation: Provided, That the amended provisions of Article 50 (3) shall enter into force on the date of its promulgation.

Article 2 (Applicability to Disqualifications for Permission for Waste Treatment Business)

The amended provisions of subparagraph 5 of Article 26 shall also apply to a person who has filed an application for permission for a waste treatment business before this Act enters into force.

Article 3 (Applicability to Follow-up Management of Waste Treatment Facilities)

The amended provisions of Article 50 (3) shall also apply to a person who has received an order to close down his/her waste treatment facilities under Article 31 (5) before this Act enters into force.

Article 4 (Applicability to Advance Reserve for Performance Guarantee Bond for Follow-Up Management)

The amended provisions of Article 52 (1) shall also apply to a person who has been depositing in advance a performance guarantee bond for follow-up management as at the time this Act enters into force.

Article 5 (Special Provisions concerning Revocation of Permission for Heir who has Succeeded to Rights and Obligations Pertaining to Permission for Waste Treatment Business)

Notwithstanding the amended provisions of Article 27 (1) 2 (b), if an heir who has succeeded to the any of the rights and obligations pertaining to permission for waste treatment business under Article 33 (1) before this Act enters into force transfers the relevant rights and obligations to another person within six months from the date this Act enters into force, the relevant permission for waste treatment business shall not be revoked.

Article 6 (Transitional Measures concerning Designation of Professional Waste Analysis Agency)

A professional waste analysis agency referred to in the former Article 17 (3) 2 as at the time this Act enters into force shall be deemed designated as a professional waste analysis agency under the amended provisions of Article 17-2 (1): Provided, That institutions, other than those prescribed in Article 17-2 (1) 1 through 3, shall obtain designation for modification after being equipped with facilities, equipment, and technical capability as prescribed in Article 17-2 (2) within six months after this Act enters into force.

Article 7 (Transitional Measures concerning Registration of Exclusive Container Manufacturers)

A person who engages in the business of manufacturing exclusive containers as at the time this Act enters into force shall be registered as an exclusive container manufacturer under the amended provisions of Article 25-2 within six months from the date this Act enters into force.

Article 8 (Transitional Measures concerning Incompetent Persons, etc.)

Persons under adult guardianship or limited guardianship referred to in the amended provisions of subparagraph 1 of Article 26 shall be deemed to include persons on whom a declaration of incompetency or quasi-incompetency remains in effect under Article 2 of the Addenda to the amended Civil Act (Act No. 10429).

Article 9 (Transitional Measures concerning Administrative Dispositions)

Notwithstanding the amended provisions of the main sentence of Article 27 (1) 2, excluding its items, a person who falls under any of the disqualifications prescribed in subparagraph 5 of Article 26 as at the time this Act enters into force shall be governed by the former provisions in force.

Article 10 (Transitional Measures concerning Penalty Provisions)

The application of penalty provisions against violations committed before this Act enters into force shall be governed by the former provisions.

Article 11 Omitted.

ADDENDA <*Act No. 13411, Jul. 20, 2015*>

Article 1 (Enforcement Date)

This Act shall enter into force one year after the date of its promulgation.

Article 2 (Transitional Measures concerning Administrative Fines)

The application of administrative fines against any violation committed before this Act enters into force shall be governed by the former provisions.

KLRI KOREA LEGISLATION RESEARCH INSTITUTE

Annex 584

Environmental Protection and Management, No. 32/ 2009, 3 October 2009

ENVIROMENTAL PROTECTION AND MANAGEMENT

(Law No. 32/ 2009, dated October 3, 2009)

BY GRACE OF GOD THE ALMIGHTY

THE PRESIDENT OF THE REPUBLIC OF INDONESIA,

Considering:

a. that a proper and healthy environment constitutes a human right of every Indonesian citizen as mandated in Article 28 of the Constitution of 1945;

b. that national economic development as mandated by the Constitution of 1945 is executed on the basis of sustainable and environmentally-sound development principles;

c. that the regional economic spirit in the execution of public administration of the Unitary State of the Republic of Indonesia has brought about changes in relations and authority between the government and regional government, including in the field of environmental protection and management;

d. that the decreasing environmental quality has threatened the continuation of life of human and other creatures so that all stakeholders need to protect and manage the environment seriously and consistently;

e. that since the rising global warming has caused climate change thus worsening the environmental quality, environmental protection and management are needed;

f. that in order to better guarantee legal certainty and protect right of everybody to obtain a proper and healthy environment as part of the extensive environmental protection, it's necessary to

renew.....

renew Law No. 23/1997 on Environmental Management;

g. that based on the considerations as referred to letters a, b, c, d, e and f, it's necessary to enact a law on environmental protection and management;

In view of:

Article 20, Article 21, Article 28H paragraph (1), as well as Article 33 paragraph (3) and paragraph (4) of the Constitution of 1945;

By Joint Approval of
THE HOUSE OF REPRESENTATIVES OF
THE REPUBLIC OF INDONESIA
And
THE PRESIDENT OF THE REPUBLIC OF INDONESIA

D E C I D E S :

To stipulate :
THE LAW ON ENVIRONMENTAL PROTECTION AND MANAGEMENT.

CHAPTER I
GENERAL PROVISION
Article 1

Referred to in this law as:

1. Environment shall be a totality of space with all materials, resources, situations and creatures, including human and theirs behavior that influence the nature, continuation of livelihood and human welfare as well as other creatures.
2. Environmental Protection and Management shall be systematic and integrated efforts to preserve the functions of the environment and prevent environmental pollution and/or destruction, which cover planning, utilization, control, perservation, supervision and law enforcement.
3. Sustainable Developmet shall be conscious and integrated efforts integrating environmental, social and economic aspects into a development strategy to assure the totality of environment as well as safety, capability, welfare and living standards of the present and future generations.
4. Environmental Protection and Management Plan hereinafter abbreviated to RPPLH shall be written planning containing environmental potentials, issues as well as protection and management in a specified period.
5. Ecosytem shall be an order of environment components constituting a comprehensive and mutually influencing totality in forming environmental equilibrium, stability and productivity.
6. Conservation of Environmental Functions shall be a series of efforts to preserve the continuation of the support and carrying capabilities of the environment.
7. Support Capacity of the Environment shall be the capability of the environment to support livelihood of human, other creatures and equilibrium between the both.
8. Carrying Capability of the Environment shall be the capability of the environment to absorb substances, energies and/or other components coming or inserted therein.
9. Natural Resources shall be environmental elements consisting of biological and non-biological resources wholly forming a totality of ecosystem.
10. Strategic Environmental Assessment hereinafter abbreviated to KLHS shall be a series of systematic, comprehensive and participatory analyses to ascertan that the principles of sustainable development have become a basis and been integrated into the development of a region and/or policy, plan and/or program.

11. Environmental.....

11. Environmental Impact Analysis hereinafter called Amdal shall be a study on substantial impacts of a planned business and/or activity in the environment, which is needed for making decision on the operation of business and/or activity.
12. Environmental Management and Monitoring Programs hereinafter called UKL-UPL shall be the management and monitoring of businesses and/or activities not having substantial impacts on the environment, which are needed for making decision on the operation of businesses and/or activities.
13. Quality Standard of the Environment shall be indicator of limit or content of creature, substances, energies or components which exist or must exist and/or pollutants having existence thereof tolerable in a specified resource as environmental substance.
14. Environmental Pollution shall be the incoming or inclusion of creature, substances, energies and/or other components into the environment by human activities so as to exceed the stipulated environmental quality standard.
15. Standard Criteria for Environmental Destruction shall be limits of change in physical, chemical and/or biological characteristics of the environment with are tolarable by the environment so as to be able to preserve its functions.
16. Environmental Destruction shall be human actions changing directly or indirectly physical, chemical and/or biological characteristics of the environment so as to exceed the standard crieria for environmental destruction.
17. Environmental Damage shall be a direct and/or indirect change in physical, chemical and/or biological characteristics of the environment, which exceeds the standard crieria for environmental damage.
18. Natural Resource Conservation shall be the management of natural resources to assure wise utilization and the continuation of their availability by preserving and enhancing the quality of vaue as well as biodiversity thereof.
19. Climate Change shall be climate change attributed directly or indirectly by human activities thus changing composition of atmopshere globally, besides change in variability of natural climate observed in a comparable period.
20. Waste shall be remainders of a business and/or activity.
21. Hazarduous and Toxic Materials hereinafter abbreviated to B3 shall be substances, energies and/or other components which may pollute and/or destroy directly or indrectly the environment and/or endanger the environment, health as well as continuation of life of human and other creatures because of their characteristics, concentration and/or quantity.
22. Waste of Hazarduous and Toxic Materials hereinafter called Waste of B3 shall be remainders of a business and/or activity containing B3.
23. B3 Waste Management shall be an activity covering the reduction, storage, collection, transportation, utilization, treatment and/or filling.
24. Dumping shall be an activity to dump, place and/or insert waste and/or materials in a specified quantity, concentration, time and location by certain requirements into a specified environmental media.
25. Environmental Dispute shall be a dispute between two parties, which arises from an activity potential to affect and/or already affecting the environment.
26. Environmental Impact shall be influence on the environment, which is attributable to a business and/or activity.

27. Environmental.....

27. Environmental Organization shall be a group of organized people and established on the basis of their own will, having goal and activity related to the environment.
28. Environmental Audit shall be evaluation executed to judge the compliance of personnel in charge of a business and/or activity to the legal requirements and policies stipulated by the government.
29. Ecoregion shall be geographic areas sharing the same characteristics of climate, land, water, original flora and fauna as well as pattern of human interraction with the nature, which describes integrity of natural and environmental systems.
30. Local Wisdom shall be noble value effective in human life, which are intended to protect and manage the environmental eternally.
31. Traditional Community shall be a group of communities living traditionally in a specific geographic area because of binding in origin of ancestor, strong relations with the environment as well as system of values determining economic, political, social and legal structures.
32. Everybody shall be individual or business entity whether in the form of legal entity or not.
33. Environmental economic instrument shall be a set of economic policies to motivate the government, regional government or everybody to conserve the functions of the environment.
34. Serious Threat shall be a threat having extensive impact on the environment and causing public unrest.
35. Environmental Permit shall be a license granted to everybody undertaking businesses and/or activities obliged to undergo Amdal or UKL-UPL in the framework of environmental protection and management as pre-requsite for securing business and/or activity permit.
36. Business and/or Activity Permit shall be a license issued by a technical institution to undertake a business and/or activity.
37. Central Government hereinafter called the government shall be the President of the Republic of Indonesia holding the executive power of the Republic of Indonesia as referred to in the Constitution of 1945.
38. Regional Governments shall be governors, regents or mayors and regional apparatuses as regional administrators.
39. Minister shall be the Minister in charge of environmental protection and management affairs.

CHAPTER II

PRINCIPLE, GOAL AND SCOPE

Part One

Principle

Article 2

Environmental protection and management shall be executed on the basis of principles:

a. state responsibility;
b. conservation and sustainability;
c. harmony and equilibrium;
d. integration;
e. benefit;
f. prudence;
g. justice;
h. ecoregion;
i. biological diversity;
j. polluter pays;
k. participation;
l. local wisdom;
m. good governance; and
n. regional autonomy.

Part Two.....

Part Two

Goal

Article 3

Environmental Protection and Management shall aim:

a. protecting the territory of the Unitary State of the Republic of Indonesia from environmental pollution and/or damage;
b. assuring human safety, health and life;
c. assuring the continuation of life of creatures and ecosystem conservation;
d. preserving the conservation of environmental functions;
e. achieving environmental harmony, synchronization and balance;
f. assuring the fulfillment of justice for the present and future generations;
g. assuring the fulfillment and protection of right to the environment as part of human rights;
h. controlling the utilization of natural resources wisely;
i. realizing sustainable development; and
j. anticipating global environmental issues.

Part Three

Scope

Article 4

Environmental Protection and Management shall cover:

a. planning;
b. utilization;
c. control;
d. preservation;
e. supervision; and
f. law enforcement.

CHAPTER III

PLANNING

Article 5

Environmental protection and management shall be planned through phases:

a. environmental inventorying;
b. stipulating ecoregion; and
c. formulating RPPLH.

Part One

Environmental Inventorying

Article 6

(1) The environmental inventorying as referred to in Article 5 letter a shall consist of environmental inventorying:
   a. in national level;
   b. in island/archipelago level; and
   c. in ecoregion level.
(2) The environmental inventorying shall be done to obtain data and information abouur natural resources, which cover:
   a. potential and availability;
   b. utilized kinds;
   c. model of control;
   d. knowledge of management;
   e. kind of damage; and
   f. conflict and cause of confict arising from the management.

Part Two

Stipulation of Ecoregion

Article 7

(1) The environmental inventorying as referred to in Article 6 paragraph (1) letter a and letter b shall become a basis in the stipulation of ecoregion and be done by the Minister after coordinating with related institutions.

(2) The.....

(2) The ecoregion as referred to in paragraph (1) shall be stipulated by taking into account similarity of:
a. chactareristic of landscape;
b. river basin area;
c. climate;
d. flora and fauna;
e. socio culture;
f. economy;
g. community institution; and
h. result of environmental inventorying.

Article 8

The environment inventorying in the ecoregion level as referred to in Article 6 paragraph (1) letter c shall aim at determining the support and carrying capabilities as well as reserves of natural resources.

Part Three
Formulation of Environmental Protection and Management
Article 9

(1) RPPLH as referred to in Article 5 letter c shall consist of:
a. National RPPLH;
b. Provincial RPPLH; and
c. Regental/Municipal RPPLH.
(2) The National RPPLH as referred to in paragraph (1) letter a shall be formulated on the basis of national inventorying.
(3) The provincial RPPLH as referred to in paragraph (1) letter b shall be formulated on the basis of:
a. National RPPLH;
b. inventorying at the island/archipelago level; and
c. inventorying at the ecoregion level.
(4) The regental/municipal RPPLH as referred to in paragraph (1) letter c shall be formulated on the basis of:
a. Provincial RPPLH;
b. inventorying at the island/archipelago level; and
c. inventorying at the ecoregion level.

Article 10

(1) RPPLH as referred to in Article 9 shall be formulated by the Minister, governors or regents/mayors by virtue of their authority.
(2) The formulation of RPPLH as referred to in paragraph (1) shall take into account:
a. diversity of ecological characteristics and functions;
b. distribution of population;
c. distribution of natural resource potentials;
d. local wisdom;
e. aspitions of communities; and
f. climate change.
(3) RPPLH shall be governed by:
a. a government regulation in the case of national RPPLH;
b. a provincial regulation in the case of provincial RPPLH; and
c. a regental/municipal regulaton in the case of regental/municipal RPPLH.
(4) RPPLH shall contain information about:
a. utilization and/or reservation of natural resources;
b. preservation and protection of the environmental quality and/or function;
c. control, monitoring as well as exploitation and preservation of natural resources; and
d. adaptation and mitigation of climate change.
(5) RPPLH shall become a basis for the formulation and be written down in a long-term development plan and medium-term development plan.

Article 11.....

Article 11

Further provision on the environmental inventorying as referred to in Article 6, stipulation of ecoregion as referred to in Article 7 and Article 8, as well as RPPLH as referred to in Article 9 and Article 10 shall be governed in a government regulation.

CHAPTER IV

UTILIZATION

Article 12

(1) Natural resources shall be utilized on the basis of RPPLH.

(2) If RPPLH as referred to in paragraph (1) has not been formulated, natural resources shall be utilized on the basis of the support and carrying capabilities of the environment by regarding:
   a. the continuation of environmental process and function;
   b. the continuation of environmental productivity; and
   c. safety, living standard and welfare of communities.

(3) The support and carrying capabilities of the environment as referred to in paragraph (2) shall be stipulated by:
   a. the Minister, in the case of the support and carrying capabilities of national and insular/archipelagic environment;
   b. governors in the case of the support and carrying capabilities of provincial environment and inter-regency/city ecoregion; or
   c. regents/mayors in the case of the support and carrying capabilities of regental/municipal environment and ecoregion in a regency/city.

(4) Further provision on procedures for stipulating the support and carrying capabilities of the environment as referred to in paragraph (3) shall be governed by a government regulation.

CHAPTER V

CONTROL

Part One

General

Article 13

(1) Environmental pollution and/or damage shall be controlled in the framework of preserving the environmental functions.

(2) The control over the environmental pollution and/or damage as referred to in paragraph (1) shall cover:
   a. prevention;
   b. mitigation; and
   c. restoration.

(3) The control over environmental pollution and/or damage as referred to in paragraph (1) shall be done by the government, regional governments and personnel in charge of businesses and/or activities on the basis of their respective scopes of authority, role, and responsibility.

Part Two

Prevention

Article 14

Preventing instruments of environmental pollution and/or damage shall consist of:
a. KLHS;
b. layout;
c. quality standard of the environment;
d. standard criteria for environmental damage;
e. Amdal;
f. UKL-UPL;
g. licensing;
h. economic instrument of the environment;
i. environment-based legislation;

j. environment.....

j. environment-based budget;
k. environmental risk analysis;
l. environmental audit; and
m. other instruments in accordance with the need and/or developments of science.

Paragraph 1
Strategic Environmental Assessment
Article 15

(1) The government and regional governments shall be obliged to make KLHS to ascertain that the principles of sustainable development have become a basis of and been integrated into the development of a region and/or policy, plan and/or program.
(2) The government and regional government shall be obliged to implement KLHS as referred to in paragraph (1) in the formulation or evaluation of:
   a. spatial plan (RTRW) along with detailed plan thereof, national, provincial and regental/municipal long-term development plan (RPJP), and medium term development plan; and
   b. policies, plans and/or programs potential to cause environmenta impacts and/or risks.
(3) KLHS shall be executed by mechanism of:
   a. assessment of influence of policies, plans and/or programs against the environmental condition in a region;
   b. formulation of alternatives for the improvement of policies, plans and/or programs; and
   c. recommendation about improvement for making decision on policies, plans and/or programs integrating the principles of sustainable development.

Article 16

KLHS shall contain assessment of, among others:

a. the capability of the environment to support and carry development;
b. estimated environmental impacts and risks;
c. performance of service/ecosystem service;
d. efficiency in the utilization of natural resources;
e. vulnerability and capacity of adaptation to climate change; and
f. security and potential of biological diversity.

Article 17

(1) Results of KLHS as referred to in Article 15 paragraph (3) shall become a basis for development policies, plans and/or programs in a region.
(2) In the case of the results of KLHS as referred to in paragraph (1) certifying that the support and carrying capabilities have been excessive,
   a. the development policies, plans, and/or programs shall be improved in accordance with recommendation of KLHS; and
   b. all businesses and/or activities already surpassing the support and carrying capabilities of the environment shall not be permitted anymore.

Article 18

(1) KLHS as referred to in Article 15 paragraph (1) shall be executed by involving communities and stakeholders.
(2) Further provision on procedures for the implementation of KLHS shall be governed in a government regulation.

Paragraph 2
Layout
Article 19

(1) In order to preserve the conservation of environmental functions and public safety, every spatial plan shall be based on KLHS.

(2) The.....

(2) The spatial planning as referred to in paragraph (1) shall be stipulated by observing the support and carrying capabilities of the environment.

Paragraph 3

Quality Standard of Environment

Article 20

(1) Environmental pollution shall be measured through the quality standard of the environment.

(2) The quality standard of the environment shall include:

a. quality standard of water;
b. quality standard of waste water;
c. quality standard of sea water;
d. quality standard of ambient air;
e. quality standard of emission;
f. quality standard of nuisance; and
g. other quality standards in accordance with developments of science and technology.

(3) Everybody shall be permitted to dispose waste into environmental media with the requirements:

a. complying with the quality standard of the environment; and
b. securing license from the Minister, governors or regents/mayors by virtue of their authority.

(4) Further provision on the quality standard of the environment as referred to in paragraph (2) letter a, letter c, letter d, and letter g shall be regulated in a government regulation.

(5) Further provision on the quality standard of the environment as referred to in paragraph (2) letter b, letter e, and letter f shall be governed in a regulation of the Minister.

Paragraph 4

Standard Criteria for Environmental Damage

Article 21

(1) Criteria for environmental damage shall be stipulated to determine the occurrence of environmental damage.

(2) Standard criteria for environment damage shall include standard criteria for ecosystem damage and standard criteria for damage attributed to climate change.

(3) Kriteria baku kerusakan ekosistem meliputi:

a. standard criteria for soil damage for biomass production;
b. standard criteria for damage of coral reef;
c. standard criteria for environmental damage related to forest and/or land fire;
d. standard criteria for manggrove damage;
e. standard criteria for lawn;
f. standard criteria for peat damage;
g. standard criteria for karst area; and/or
h. standard criteria for other ecosystem damage in accordance with developments of science and technology.

(4) Standard criteria for damamage attributed to climate change shall be based on parameters, among others:

a. increase in temperature;
b. increase in sea water surface;
c. typhoon; and/or
d. drought.

(5) Further provision on the standard criteria for the environmental damage as referred to in paragraph (3) and paragraph (4) shall be regulated by on the basis of a government regulation.

Paragraph 5

A m d a l

Article 22

(1) Every business and/or activity having substantial impact on the environment shall be obliged to have Amdal.

(2) The substantial impact shall be stipulated on the basis of criteria:

a. the.....

a. the quantity of population to be affected by the business and/or activity plan;
b. the size of distribution area of impact;
c. intensity and duration of impact;
d. environmental components to be affected;
e. cumulative characteristic of impact;
f. whether impacts reverts or not; and/or
g. other criteria in accordance with developments of science and technology.

Article 23

(1) Criteria for business and/or activity having substantial impact shall be furnished with amdal consisting of:
a. change in formation of land and landscape;
b. exploitation of natural resources, either renewable or non-renewable;
c. process and activity potential to cause environmental pllution and/or damage as well as squandering and degradation of natural resources in the utilization;
d. process and activity having results potential to influence the natural environment, artifician environment as well as socio and cultural environment;
e. process and activity having result influencing the conservation of conservation area of natural resources and/or protection of cultural reserves;
f. introduction of plants, animals and micro-organism;
g. production and utilization of biological and non-biological substances;
h. activity which is highly risky and/or influence state defense; and/or
i. application of technology predicted to have great potential to influence the environment.

(2) Further provision on businesses and/or activities obliged to have amdal as referred to in paragraph (1) shall be governed by a regulation of the Minister.

Article 24

The document of as referred to in Article 22 shall constitute a basis for stipulating decision on environmental feasibility.

Article 25

Amdal document shall contain:
a. study on impact of business and/or activity plan;
b. evaluation of activities around the location of business and/or activity plan;
c. public recommendation, input as well as response to business and/or activity plan;
d. estimate of the coverage and important characteristic of the occuring impact if the business and/or activity plan is/are executed;
e. holistic evaluation of the occurring impact to determine environmental feasibility or unfeasibility; and
f. environmenta management and monitoring plan.

Article 26

(1) The amdal document as referred to in Article 22 shall be formulated by initiators by involving communities.
(2) The involvement of communities shall be based on principle of provision of information transparently and completely as well as shall be notified prior to the execution of the activity.
(3) The communities as referred to in paragraph (1) shall include:
a. the affected communities;
b. environmental activists; and/or
c. parties affected by all kinds of decision in amdal process.
(4) The communities as referred to in paragraph (1) may raise objection to the amdal document.

Article 27

In formulating amdal document, the initiators as referred to in Article 26 paragraph (1) may seek assistance from other parties.

Article 28

(1) Formulators of amdal as referred to in Article 26 paragraph (1) and Article 27 shall have certificate of competence of amdal formulator.
(2) Criteria for securing the certificate of competence of amdal formulator as referred to in paragraph (1) shall include:
   a. mastery of amdal formulation methodology;
   b. capability of scoping, predicting and evaluating impact as well as making decision; and
   c. capability of formulating environmental management and monitoring plan.
(3) The certificate of competence of Amdal formulator as referred to in paragraph (1) shall be issued by amdal formulator certification institute stipulated by the Minister in accordance with the provision of legislation.
(4) Further provision on certification and criteria for competence of amdal formulators shall be regulated by a regulation of the Minister.

Article 29

(1) Amdal document shall be judged by amdal appraisal commission established by the Minister, governors or regents/mayors by virtue of their authority.
(2) The amdal appraisal commission shall secure license from the Minister, governors or regents/mayors by virtue of their authority.
(3) Requirements and procedures for the licensing as referred to in paragraph (2) shall be regulated by a regulation of the Minister.

Article 30

(1) Members of the Amdal apparaisal commission as referred to in Article 29 shall consist of representatives of:
   a. environmental institution;
   b. related technical institutions;
   c. experts in the field of knowledge related to kinds of the assessed business and/or activity;
   d. experts in the field of knowledge related to impacts, which arise from the assesses business and/or activity;
   e. communities potential to affect; and
   f. environmental organization.
(2) In executing the task, the Amdal appraisal commission shall be assisted by a technical team consisting of independent experts undertaking technical assessment and secretariat established for the purpose.
(3) The independent experts and secretariat as referred to in paragraph (3) shall be stipulated by the Minister, governors or regents/mayors by virtue of their authority.

Article 31

Based on result of judgment by the amdal apparaisal commission, the Minister, governors or regents/mayors shall stipulate decision on environmental feaisbility or unfeasibility by virtue of their authority.

Article 32

(1) The government and regional governments shall help the formulation of amdal for businesses and/or activities of economically weak groups having substantial impact on the environment.
(2) The assistance provided for the formulation of amdal as referred to in paragraph (1) shall be in the form of facilitation, costs and/or formulation of amdal.

(3) Criteria.....

(3) Criteria for businesses and/or activities of economically weak groups shall be regulated by legislation.

Article 33

Further provision on amdal as referred to in Article 22 up to Article 32 shall be regulated in a government regulation.

Paragraph 6

UKL-UPL

Article 34

(1) Every business and/or activity excluding from the criteria for undertaking amdal compulsorily as referred to in Article 23 paragraph (1) shall be obliged to have UKL-UPL.

(2) Governors or regents/mayors shall stipulate kinds of businesses and/or activities obliged to have UKL-UPL.

Article 35

(1) Businesses and/or activities not obliged to have UKL-UPL as referred to in Article 34 paragraph (2) shall be obliged to prepare statement of readiness to manage and monitor the environment.

(2) The kinds of businesses and/or activities as referred to in paragraph (1) shall be stipulated on the basis of criteria:

a. excluding from the category having substantial impact as referred to in Article 23 paragraph (1); and

b. micro- and small-scale business activities.

(3) Further provision on UKL-UPL and statement of readiness to manage and monitor environment shall be regulated by a regulation of the Minister.

Paragraph 7

Licensing

Article 36

(1) Every business and/or activity obliged to have amdal or UKL-UPL shall be obliged to have environmental permit.

(2) The environmental permit as referred to in paragraph (1) shall be issued on the basis of decision on environmental feasibility as referred to in Article 31, or recommendation of UKL-UPL.

(3) The environmental permit as referred to in paragraph (1) shall be obliged to mention requirements contained in decision on environmental feasibility or recommendation of UKL-UPL.

(4) The environmental permit shall be issued by the Minister, governors or regents/mayors by virtue of their authority.

Article 37

(1) The Minister, governors or regents/mayors by virtue of their authority shall be obliged to reject application for environmental permit in the case of the application being not accompanied by amdal or UKL-UPL.

(2) The environmental permit as referred to in Article 36 paragraph (4) may be nullified in the event that:

a. the requirements submitted in the application for environmental permit contain legal invalidity, mistake, misuse, as well as untruth and/or falsified data, documents and/or information;

b. the issuance thereof fails to abide by the requirements mentioned in the decision of the commision on environmental feasibility or recommendation of UKL-UPL; or

c. the obligations stipulated on document of amdal or UKL-UPL are not executed by the personnel in charge of businesses and/or activities.

Article 38

Besides the provision as referred to in Article 37 paragraph (2), the environmental permit may be nullified through a decision of the state administration court.

Article 39

(1) The Minister, governors or regents/mayors by virtue of their authority shall be obliged to announce every application and decision on environmental permit.
(2) The announcement as referred to in paragraph (1) shall be done by a method that the public could understand easily.

Article 40

(1) The environmental permit shall constitute a requirement for securing business and/or activity permit.
(2) In the case of environmental permit being revoked, the business and/or activity permit shall be nullified.
(3) In the case of any change in business and/or activity, personnel in charge of the business and/or activity shall be obliged to renew environmental permit.

Article 41

Further provision on the permit as referred to in Article 36 up to Article 40 shall be regulated in a government regulation.

Paragraph 8

Economic Instrument of Environment

Article 42

(1) In the framework of preserving the environmental function, the government and reginal governments shall be obliged to develop economic instruments of the environment.
(2) The economic instruments of the environment as referred to in paragraph (1) shall include:
a. planning of economic development and activities;
b. environmental funding; and
c. incentives and/or disincentives.

Article 43

(1) The instrument of planning of economic development and activities as referred to in Article 42 paragraph (2) letter a shall include:
a. balance of natural resources and environment;
b. formulation of gross domestic product and regional gross domestic product covering the depreciation of natural resources and environmental damage;
c. mechanism of environmental compensation/exchange between regions; and
d. internalization of environmental costs.
(2) The instrument of the environmental funding as referred to in Article 42 paragraph (2) letter b shall include:
a. guarantee funds of environmental restoration;
b. funds of pollution and/or damage mitigation and environmental restoration; and
c. conservation trust funds/aids.
(3) The incentives and/or disincentives as referred to in Article 42 paragraph (2) letter c shall be among other applied in the form of:

a. procurement.....

a. procurement of environmentally sound goods and services;
b. application of environmental tax, levy and subsidy;
c. development of environmentally sound financial institution and capital market;
d. development of trading system of waste and/or emission disposal permit;
e. development of environmental service payment system;
f. development of environmental insurance;
g. development of envionmentally sound labeling system; and
h. system of performance appreciation in the field of environmental protection and management.

(4) Further provision on the economic instruments of the environment as referred to in Article 42 and Article 43 paragraph (1) up to paragraph (3) shall be regulated in a government regulation.

Paragraph 9
Environment-based Legislation
Article 44

The formulation of every regulation in the national and regional levels shall be obliged to observe the protection of environmental functions and principles of environmental protection and management in accordance with the provisions governed in this law.

Paragraph 10
Environment-based Budget
Article 45

(1) The government and the House of Representatives of the Republic of Indonesia as well as regional governments and Regional Legislative Councils shall be obliged to allocate adequate budget to finance:
a. activities of environmental protection and management; and
b. environmentally-sound development programs.

(2) The government shall be obliged to allocate a budget of special environment allocation adequately to regions showing good environmental-protection and management performance.

Article 46

Besides the provision as referred to in Article 45, in the framework of restoring the quality of environment already polluted and/or damaging when this law is stipulated, the government and regional government shall be obliged to allocate a budget to environmental restoration.

Paragraph 11
Environmental Risk Analysis
Article 47

(1) Every business and/or activity potential to bring about substantial impact into the environment, threat against ecosystem and life and/or human health and safety shall be obliged to undergo environmental risk analysis.

(2) The environmental risk analysis as referred to in paragraph (1) shall include:
a. risk assessment;
b. risk management; and/or
c. risk communications.

(3) Further provision on the environmental risk analysis shall be regulated in a government regulation.

Paragraph 12.....

Paragraph 12

Environmental Audit

Article 48

The government shall encourage personnel in charge of busineses and/or activities to undertake environmental audit in the frameowork of enhancing environmental performance.

Article 49

(1) The Minister shall require environmental audit for:
   a. certain businesses and/or activities highly risky to the environment; and/or
   b. personnel in charge of businesses and/or activities showing disobedience to legislation.
(2) Personnel in charge of businesses and/or activities shall be obliged to implement environmental audit.
(3) The environmental audit of the certain highly risky activities shall be executed periodically.

Article 50

(1) In the case of personnel in charge of businesses and/or activities not executing the obligations as referred to in Article 49 paragraph (1), the Minister may implement or assign the independent third party to undertake environmental audit at expense of the said personnel in charge of businesses and/or activities.
(2) The Minister shall announce result of environmental audit.

Article 51

(1) The environmental audit as referred to in Article 48 and Article 49 shall be executed by environmental auditor.
(2) The environmental auditor as referred to in paragraph (1) shall be obliged to have certificate of environmental auditor competence.
(3) Criteria for securing the environmental auditor competence certificate as referred to in paragraph (2) shall include capability of:
   a. understanding principles, methodology and mechanism of environmental audit;
   b. executing environmental audit, which covers planning, implementation, concluding and reporting; and
   c. formulating recommendation about improvement measures as follow to the environmental audit.
(4) The environmental auditor competence certificate as referred to in paragraph (2) shall be issued by the environment auditor certification institute in accordance with the provisions of legislation.

Article 52

Further provision on the environmental audit as referred to in Article 48 up to Article 51 shall be governed by a regulation of the Minister.

Part Three

Mitigation

Article 53

(1) Everybody polluting and/or damaging the environment shall be obliged to mitigate the environmental pollution and/or damage.
(2) The environmental pollution and/or damage as referred to in paragraph (1) shall be mitigated by:
   a. providing information about the warning of environmental pollution and/or damage for communities;
   b. isolating environmental pollution and/or damage;
   c. discontinuing source of environmental pollution and/or damage; and/or

d. other.....

d. other methods in accordance with developments of science and technology.

(3) Further provision on procedures for mitigating the environmental pollution and/or damage as referred to in paragraph (1) shall be regulated in a government regulation.

Part Four

Restoration

Article 54

(1) Everybody polluting and/or damaging the environment shall be obliged to restore the environmental function.

(2) The environmental function as referred to in paragraph (1) shall be restored by phases:
   a. discontinuation of source of pollution and cleaning of pollutant;
   b. remedy;
   c. rehabilitation;
   d. restoration; and/or
   e. other methods in accordance with developments of science and technologi.

(3) Further provision on procedures for the restoration of the environmental function as referred to in paragraph (2) shall be regulated in a government regulation.

Article 55

(1) Holders of the environmental permit as referred to in Article 36 paragraph (1) shall be obliged to provide gaurantee funds for the restoration of the environmental function.

(2) The guarantee funds shall be saved at state banks appointed by the Minister, governors or regents/mayors by virtue of their authority.

(3) The Minister, governors or regents/mayors by virtue of their authority may stipulate the third party to restore the environmental function by using guarantee funds.

(4) Further provision on the guarantee funds as referred to in paragraph (1) up to paragraph (3) shall be regulated in a government regulation.

Article 56

Further provision on control over the environmental pollution and/or damage as referred to in Article 13 up to Article 55 shall be regulated in a government regulation.

CHAPTER VI

PRESERVATION

Article 57

(1) Environmental preservation shall be done through efforts:
   a. conservation of natural resources;
   b. reservation of natural resources; and/or
   c. conservation of atmosphere function.

(2) The conservation of natural resources as referred to in paragraph (1) letter a shall include activities:
   a. protection of natural resources;
   b. preservation of natural resources; and
   c. eternal utilization of natural resources.

(3) The reserved natural resources as referred to in paragraph (1) letter b shall constitute natural resources not manageable in a specified period.

(4) The conservation of atmosphere function as referred to in paragraph (1) letter c shall include:
   a. mitigation and adaptation to climate change;
   b. protection of ozone layer; and
   c. protection against acid rain.

(5) Further provision on conservation and reservation of natural resources as well as conservation of the atmosphere as referred to in paragraph (1) shall be regulated by a government regulation.

CHAPTER VII.....

CHAPTER VII
MANAGEMENT OF HAZARDUOUS AND TOXIC MATERIALS AS WELL AS WASTE OF HAZARDUOUS AND TOXIC MATERIALS

Part One
Management of Hazarduous and Toxic Materials
Article 58

(1) Everybody importing into the territory of the Unitary State of the Republic of Indonesia, producing, carrying, distributing, storing, utilizing, disposing, processing and/or piling B3 shall be obliged to manage the said B3.

(2) Further provision on the management of B3 as referred to in paragraph (1) shall be regulated in a government regulation.

Part Two
Management of Waste of Hazarduous and Toxic Materials
Article 59

(1) Everybody producing waste of B3 shall be obliged to manage the produced waste of B3.

(2) In the case of B3 as referred to in Article 58 paragraph (1) already expiring, the management thereof shall bide by the provision on the management of waste of B3.

(3) In the case of the party being unable to manage directly waste of B3, the management thereof may be entrusted to the other party.

(4) Management of B3 waste shall be obliged to secure license from the Minister, governors or regents/mayors by virtue of their authority.

(5) The Minister, governors or regents/mayors by virtue of their authority shall mention environmental requirements that shall be fulfilled and obligations that shall be obeyed by managers of B3 waste in their license.

(6) The licensing decision shall be announced.

(7) Further provision on the management of B3 waste shall be regulated in a government regulation.

Part Three
Dumping
Article 60

Everybody shall be prohibited from dumping waste and/or materials into environmental media without permit.

Article 61

(1) The dumping as referred to in Article 60 may only be executed by license from the Minister, governors or regents/mayors by virtue of their authority.

(2) The dumping as referred to in paragraph (1) may only be done in the stipulated locations.

(3) Further provision on procedures and requirements for the dumping of waste or materials shall be regulated in a government regulation.

CHAPTER VIII
INFORMATION SYSTEM
Article 62

(1) The government and regional governments shall develop environmental information system to suport the implementation and development of environmental protection and management policies.

(2) The environmental information system shall be prepared in an integrated and coordinative manner and shall be published to communities.

(3) The environmental information system shal contain information about the environmental status, map of environmental vulnerability and other environmental information.

(4) Further provision on the environmental information system shall be regulated by a regulation of the Minister.

CHAPTER IX.....
(To be continued)

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ENVIROMENTAL PROTECTION AND MANAGEMENT

(Law No. 32/ 2009, dated October 3,2009)

[Continued from Business News No. 7933-7934 pages 11A-27A]

CHAPTER IX

TASK AND AUTHORITY OF THE GOVERNMENT AND REGIONAL GOVERNMENTS

Article 63

(1) In protecting and managing the environment, the government shall be assigned and authorized to:

a. stipulate national policies;

b. stipulate norms, standards, procedures and criteria;

c. stipulate and implement national RPPLH policies;

d. stipulate and implement KLHS policies;

e. stipulate and implement amdal and UKL-UPL policies;

f. inventory national natural resources and green house gas;

g. develop cooperation standards;

h. coordinate and implement control over environmental pollution and/or damage;

i. stipulate and implement policies on biological and non-biological natural resources, biological diversity, genetic resources and biological safety of genetically engineered products;

j. stipulate.....

j. stipulate and implement policies on control over impacts of climate change and protection of ozone layer;

k. stipulate and implement policies on B3, waste as well as B3 waste;

l. stipulate and implement policies on maritime environment protection policies;

m. stipulate and implement policies protection and/or damage of inter-state border environment;

n. foster and supervise the implementation of national policies, regional regulations and regulations of heads of regions;

o. foster and supervise compliance of personnel in charge of businesses and/or activities to the provisions of environmental licensing and legislation;

p. develop and stipulate environmental instruments;

q. coordinate and facilitate cooperation and settlement of inter-regional disputes as well as settlement of disputes;

r. develop and implement policies on the management of public complaints;

s. stipulate minimum service standards;

t. stipulate policies on procedures for recognizing the existence of traditional communities, local wisdom, and rights of traditional communities with respects to environmental protection and management;

u. manage national environmental information;

v. coordinate, develop and socialize the utilization of environmentally sound technology;

w. provide education, training, fostering and apperciation;

x. develop facilities and standards of environmental laboratory;

y. issue environmental license;

z. stipulae ecoregion area; and

aa. enforce environmental law.

(2) In protecting and managing the environment, provincial governments shall be assigned and authorized to:

a. stipulate provincial policies;

b. stipulate and implement provincial KLHS;

c. stipulate and implement provincial RPPLH policies;

d. stipulate and implement amdal and UKL-UPL policies;

e. inventory natural resources and green house gas emission in the provincial level;

f. develop and implement cooperation and partnership;

g. coordinate and implement control over inter-regency/city environmental pollution and/or damage;

h. foster and supervise the implementation of regional policies, regulations and regulations of heads of regency/municipal governments;

i. foster.....

i. foster and supervise compliance of personnel in charge of businesses and/or activities to the provisions of environmental licensing and legislation;

j. develop and stipulate environmental instruments;

k. coordinate and facilitate cooperation and settlement of inter-regency/city disputes as well as settlement of disputes;

l. foster, provide technical assistance and supervise regencies/cities in the field of programs and activities;

m. implement minimum service standards;

n. stipulate policies on procedures for recognizing the existence of traditional communities, local wisdom, and rights of traditional communities with respects to environmental protection and management in the provincial level;

o. manage environmental information in the provincial level;

p. develop and socialize the utilization of environmentally sound technology;

q. provide education, training, fostering and appreciation;

r. issue environmental license in the provincial level; and

s. enforce environmental law in the provincial level.

(3) In protecting and managing the environment, regency/municipal governments shall be assigned and authorized to:

a. stipulate regency/municipal policies;

b. stipulate and implement regency/municipal KLHS;

c. stipulate and implement regency/municipal RPPLH policies;

d. stipulate and implement amdal and UKL-UPL policies;

e. inventory natural resources and green house gas emission in the regency/municipal level;

f. develop and implement cooperation and partnership;

g. develop and apply environmental instruments;

h. facilitate the settlement of disputes;

i. foster and supervise compliance of personnel in charge of businesses and/or activities to the provisions of environmental licensing and legislation;

j. implement minimum service standards;

k. implement policies on procedures for recognizing the existence of traditional communities, local wisdom, and rights of traditional communities with respects to environmental protection and management in the regency/municipal level;

l. manage environmental information in the regency/municipal level;

m. develop and socialize the utilization of environmentally sound technology;

n. provide education, training, fostering and appreciation;

o. issue environmental license in the regency/ municipal level; and

p. enforce environmental law in the regency/ municipal level.

Article 64

The Minister shall implement and/or coordinate the tasks and authority of the government as referred to in Article 63 paragraph (1).

CHAPTER X

RIGHT, OBLIGATION AND PROHIBITION

Part One

Right

Article 65

(1) Everybody shall be entitled to proper and healthy environment as part of human rights.

(2) Everybody shall be entitled to environmental education, information access, participation access and justice access in fulfilling the right to proper and healthy environment.

(3) Everybody shall reserve a right to submit recommendation and/or objection against businesses and/or activities predicted to affect the environment.

(4) Everybody shall reserve a right to participate in the environmental protection and management in accordance with legislation.

(5) Everybody shall reserve a right to report the alleged consequences of environmental polution and/or damage.

(6) Further provision on procedures for the reporting as referred to in paragraph (5) shall be governed bya regulation of the Minister.

Article 66

Everybody struggling for a right to proper and healthy environment may not be charged with criminal or civil offense.

Part Two

Obligation

Article 67

Everybody shall be obliged to preserve the environmental functions as well as control environmental pollution and/or damage.

Article 68

Everybody undertaking business and/or activity shall be obliged to:

a. provide information related to environmental protection and management truthfully, transparently and punctually;

b. preserve the sustainability of environmental functions; and

c. abide.....

c. abide by the provision on the quality standard of environment and/or standard criteria for environmental damage.

Part Three

Prohibition

Article 69

(1) Everybody shall be prohibited from:

a. committing action causing environmental pollution and/or damage;

b. importing B3 which is forbidden according to legislation into the territory of the Unitary State of the Republic of Indonesia;

c. importing waste from outside the territory of the Unitary State of the Republic of Indonesia into environmental media of the Unitary State of the Republic of Indonesia;

d. importing B3 waste into the territory of the Unitary State of the Republic of Indonesia;

e. dumping wate into environmental media;

f. dumping B3 and B3 waste into environmental media;

g. releasing genetically engineered products into environmental media that contravene environmental legislation or license;

h. opening land by means of burning;

i. formulate amdal without having competence certificate of amdal formulator; and/or

j. provide fake, misleading information, disappear information, destroy information or provide untrue information.

(2) The provision as referred to in paragraph (1) letter h shall take into account seriously local wisdom in the respective countries.

CHAPTER XI

PUBLIC PARTICIPATION

Article 70

(1) Communities shall have the equal and broad right and opportunity to participate actively in environmental protection and management.

(2) Public participation may be in the form of:

a. social control;

b. suggestion, opinion, recommendation, objection, complaint; and/or

c. information and/or report.

(3) Public participation shall aim at:

a. generating awareness in environmental protection and management

b. enhancing independene, capability of communities and partnership;

c. develop capability and pioneer of communities;

d. develop emergency response of communities to social control ; and

e. develop and preserve local culture and wisdom in the conservation of environmental functions.

CHAPTER XII

SUPERVISION AND ADMINISTRATIVE SANCTION

Part One

Supervision

Article 71

(1) The Minister, governors or regents/mayors by virtue of their authority shall supervise the compliance of personnel in charge of businesses and/or activities to the provisions stipulated in environmental protection and management legislation.

(2) The Minister, governors or regents/mayors may delegate the authority to conduct the supervision to technical functionaries/institutions in charge of environmental protection and management affairs.

(3) In executing the supervision, the Minister, governors or regents/mayors shall stipulate environmental supervisors constituting functional officials.

Article 72

The Minister, governors or regents/mayors by virtue of their authority shall be obliged to supervise the compliance of personnel in charge of businesses and/or activities to environmental permit.

Article 73

The Minister may supervise the compliance of personnel in charge of businesses and/or activities having environmental permit issued by regional governments if the government deems a serious violation in the field of environmental protection and management.

Article 74

(1) The environmental supervisors as referred to in Article 71 paragraph (3) shall be authorized to:

a. conduct monitoring;
b. ask information;
c. make copies of documents and/or necessary notes;
d. enter certain places;
e. take photograph;
f. make audio-visual records;
g. take samples;
h. check equipment;
i. inspect installations and/or transporation facilities; and/or
j. discontinue certain violations.

(2) In executing their tasks, the environmental supervisors may coordinate with civil servant investigators.

(3) Personnel in charge of businesses and/or activities shall be prohibited from preventing the execution of tasks of the environmental supervisors.

Article 75

Further provision on procedures for appointing

the environmental supervisors as well as technical directives for the supervision as referred to in Article 71 paragraph (3), Article 73, and Article 74 shall be governed in a government regulation.

Part Two

Administrative Sanction

Article 76

(1) The Minister, governors or regents/mayor shall impose administrative sanctions on personnel in charge of businesses and/or activities in the case of environmental permit being violated.

(2) The administrative sanctions shall consist of:

a. written warning;

b. government coerciveness;

c. freezing of environmental permit; or

d. revocation of environmental permit.

Article 77

The Minister may apply administrative sanctions on personnel in charge of businesses and/or activities if the government deems that regional governments does not apply intentionally administrative sanctions on serious violation in the field of environmental protection and management.

Article 78

The administrative sanctions as referred to in Article 76 shall not discharge personnel in charge of businesses and/or activities from restoration and penal responsibility.

Article 79

The administrative sanction in the form of the freezing or revocation of environmental permit as referred to in Article 76 paragraph (2) letter c and letter d shall be imposed unless personnel in charge of businesses and/or activities implement the government's coerciveness.

Article 80

(1) The government's coerciveness as referred to in Article 76 paragraph (2) letter b shall be in the form of:

a. suspension of production activities;

b. removal of production facilities;

c. closure of waste-water or emission disposal tunnel;

d. breaking off;

e. confiscation of goods or equipment potential to cause violation;

f. suspension of the whole activities; or

g. other actions intended to discontinue violations and restoration of environmental functions.

(2) The government's coerciveness may be imposed without prior warning in the case of the committed violation causing:

a. extremely serious threat to humans and the environment;

b. greater and broader impact unless the pollution and/or destruction is terminated; and/or

c. greater.....

c. greater loss on the environment unless the pollution and/or destruction is terminated promptly.

Article 81

Every personnel in charge of businesses and/or activities not implementing the government's coerciveness shall be liable to fine against the lateness in implementing coercive sanction imposed by the government.

Article 82

(1) The Minister, governors or regents/mayors shall be authorized to force personnel in charge of businesses and/or activities to restore the environment attributed to environmental pollution and/or destruction committed by the relevant.

(2) The Minister, governors or regents/mayors shall be authorized to appoint or may appoint the third party to restore the environment attributed to environmental pollution and/or destruction committed by personnel in charge of businesses and/or activities at the expense of the said personnel in charge of businesses and/or activities.

Article 83

Further provision on administrative sanctions shall be regulated in a government regulation.

CHAPTER XIII

SETTLEMENT OF ENVIRONMENTAL DISPUTE

Part One

General

Article 84

(1) Every environmental dispute may be settled through the court or outside the court.

(2) The mechanism of settlement of evironmental dispute shall be chosen voluntarily by the parties in dispute.

(3) Lawsuit through the court may only be done if the out-of-court settlement of dispute is declared unsuccessful by any of or the parties in dispute.

Part Two

Out-of-Court Settlement of

Environmental Dispute

Article 85

(1) Out-of-court settlement of environmental dispute shall be executed to achieve an agreement on:

a. model and amount of compensation;

b. restoration of consequences of pollution and/or destruction;

c. certain measures to assure that the pollution and/or destruction won't repeat; and/or

d. preventive measures of negative impact on the environment.

(2) Out-of-court.....

(2) Out-of-court settlement shall not apply to the environmental crime as governed in this law.

(3) Mediators and/or arbitrators may be hired to settle environmental dispute in out-of-court settelement of environmental dispute.

Article 86

(1) Commmunities may establish independent and impartial institutes providing service for the setlement of environmental dispute.

(2) The government and regional governments may facilitate the establishment of the independent and impartial institutes providng service for the settlement of environment dispute.

(3) Further provision the institute providing service for the settlement of environmental dispute shall be governed by a government regulation.

Part Three

Settlement of Environmental Dispute through Court

Paragraph 1

Compensation for Loss and Environmental Restoration

Article 87

(1) Every personnel in charge of businesses and/or activities committing legal violation in the form of environmental pollution and/or destruction incurring losses on other people or the environment shall be obliged to pay compensation for the losses and/or take certain measures.

(2) Everybody transferring, changing the nature and model of business, and/or activity of a business entity violating the law shall not discharge legal responsibility and/or obligation of the busines entity.

(3) The court may stipulate the payment of coercive money for every day of lateness in the execution of the court decision.

(4) The amount of coercive money shal be decided on the basis of legisation.

Paragraph 2

Strict Liability

Article 88

Everybody having action, business and/or activiy using B3, producing and/or managing B3 waste and/or causing serious threat to the environment shall be responsible absolutely for the incurred losses without necessary to prove substance of mistake.

Paragraph 3

Expiration of Lawsuit Submission

Article 89

(1) The expiration of lawsuit submission to the court shall follow the deadline as governed in the provisions of Civil Code and be counted as from the moment when the environmental pollution and/or damage is/are ascertained.

(2) The.....

(2) The provision on the expiration shall not apply to environmental pollution and/or damage attributed to businesses and/or activities using and/or managing B3 as well as producing B3 waste.

Paragraph 4

Litigating Right Government and Regional Government

Article 90

(1) Institutions of the government and regional governments in charge of environmental affairs shall be authorized to file litigation for compenstaion and certain measures against businesses and/or activities causing environmental pollution and/or damage inflicting environmental loss.

(2) Further provision on the environmental loss as referred to in paragraph (1) shall be regulated by a regulation of the Minister.

Paragraph 5

Litigating Right of Communities

Article 91

(1) Communities shall reserve a right to file class action for their own interest and/or public interest in the event that they suffer from losses attributable to environmental pollution and/or damage.

(2) Class action may be submitted in the case of representatives of groups and members of their groups sharing the same fact or incident, legal basis as well as kind of demand.

(3) Further provision on class action shall be implemented in accordance with legislation.

Paragraph 6

Litigating Right of Environmental Organization

Article 92

(1) In the framework of executing responsibility for environmental protection and management, environmental organizations shall reserve a right to file lawsuit in the interest of environmental function conservation.

(2) The right to file lawsuit shall be limited to the implementation of certain measures without demand for compensation, except the real cost or expenditure.

(3) Environmental organizations may file lawsuit if the following requirements are fulfilled:

a. in the form of legal entity;

b. affirming in their memorandum of association that the organizations are established in the interest of environmental function conservation; and

c. already executing concrete activities in accordance with their memorandum of association for 2 (two) years at the minimum.

Paragraph 7.....,

Paragraph 7

Administrative Lawsuit

Article 93

(1) Everybody may file lawsuit against state-administration decision in the event that:

a. state administration agencies or officials issue environmental permit to businesses and/or activities obliged to undergo amdal but not accompanied by amdal documents;

b. state administration agencies or officials issue environmental permit to activities obliged to undergo UKL-UPL but not accompanied by UKL-UPL documents; and/or

c. state administration agencies or officials issue business and/or activity permit not accompanied by environmental permit.

(2) Procedures for filing lawsuit against the state administration decision shall refer to the State Administration Code.

CHAPTER XIV

INVESTIGATION AND VERIFICATION

Part One

Investigation

Article 94

(1) Besides investigators of the Police of the Republic of Indonesia, certain civil servant investigators within the government institution in charge of environmental protection and management affairs shall be authorized to act as the investigators as referred to in the Criminal Code to investigative environmental crime.

(2) Civil servant investigators shall be authorized to:

a. examine the truth of reports or information related to crime in the field of environmental protection and management;

b. interroragate everybody allegedly committing crime in the field of environmental protection and management;

c. ask information and evidence from everybody with respects to incident of crime in the field of environmental protection and management;

d. audit bookkeeping, records and other documents related to crime in the field of environmental protection and management;

e. conduct inspection in certain places allegedly containing evidences, bookkeeping, records and other documents;

f. seize materials and goods resulting from the violation, which may be used as evidence in criminal case in the field of environmental protection and management;

g. seek assistance from specialists in the framework of executing task of investigation into crime in the field of environmental protection and management;

h. discontinue investigation;

i. enter .....

i. enter certain places, take photograph and/or make audio visual records;

j. raid body, clothing, room and/or other places where crime is allegedly committed; and/or

k. catch and detain criminals.

(3) In executing the catching and detention as referred to in paragraph (2) letter k, civil servant investigators shall cooperate with investigators of the Police of the Republic of Indonesia.

(4) In the case of civil servant investigators investigating, the civil servant investigators shall inform investigators of the Police of the Republic of iNdonesia and the investigators of the Police of the Republic of Indonesia shall provide assistance for facilitating the investigation.

(5) Civil servant investigators shall notify the commencement of investigation to public prosecutors with a copy made available to investigators of the Police of the Republic of Indonesia.

(6) Results of investigation already completed by civil servant investigators shall be submitted to public prosecutors.

Article 95

(1) In the framework of law enforcement against environmental criminals, integrated law enforcement may be executed by civil servant investigators, police and prosecutors under coordination of the Minister.

(2) Further provision on the integrated law enforcement shall be regulated by legislation.

Part Two

Verification

Article 96

Legitimate evidences in lawsuit against environmental crime shall consist of:

a. testimonies from witnesses;

b. testimonies from specialists;

c. letters;

d. directives;

e. information from defendant; and/or

f. other evidences, including evidences regulated in legislation.

CHAPTER XV

PENAL PROVISION

Article 97

Criminal act in this law shall constitute crime.

Article 98

(1) Anybody intentionally committing action causing standard quality of ambient air, water, sea water or standard criteria for environmental damage to be surpassed shall be subject to imprisonment for 3 (three) years the minumum and 10 (ten) years at the maximum and a fine amounting to Rp 3,000,000,000 (three billion rupiah) at the minimum and Rp10,000,000,000 (ten billion rupiah) at the maximum.

(2) In.....

(2) In the case of the action as referred to in paragraph (1) wounding people and/or endangering human health, the said person shall be subject to imprisonment for 4 (four) years at the minimum and 12 (twelve) years at the maximum and a fine amounting to Rp4,000,000,000 (four billion rupiah) at the minimum and Rp12,000,000,000 (twelve billion rupiah) at the maximum.

(3) In the case of the action as referred to in paragraph (1) causing serious injury or death to people, the said person shall be subject to imprisonment for 5 (five) years at the minimum and 15 (fifteen) years at the maximum and a fine amounting to Rp5,000,000,000 (five billion rupiah) at the minimum and Rp15,000,000,000 (fifteen billion rupiah) at the maximum.

Article 99

(1) Anybody causing standard quality of ambient air, water, sea water or standard criteria for environmental damage to be surpassed because of his/her negligence shall be subject to imprisonment for one year the minumum and 3 (three) years at the maximum and a fine amounting to Rp 1,000,000,000 (one billion rupiah) at the minimum and Rp 3,000,000,000 (three billion rupiah) at the maximum.

(2) In the case of the action as referred to in paragraph (1) wounding people and/or endangering human health, the said person shall be subject to imprisonment for 2 (two) years at the minimum and 6 (six) years at the maximum and a fine amounting to Rp2,000,000,000 (two billion rupiah) at the minimum and Rp6,000,000,000 (six billion rupiah) at the maximum.

(3) In the case of the action as referred to in paragraph (1) causing serious injury or death to people, the said person shall be subject to imprisonment for 3 (three) years at the minimum and 9 (nine) years at the maximum and a fine amounting to Rp 3,000,000,000 (three billion rupiah) at the minimum and Rp 9,000,000,000 (nine billion rupiah) at the maximum.

Article 100

(1) Anybody violating the quality standard of waste water, emission or nuisance shall be subject to imprisonment for 3 (three) years at the maximum and a fine amounting to Rp Rp3,000,000,000 (three billion rupiah) at the maximum.

(2) The penalty as referred to in paragraph (1) may only be imposed if the imposed administrative sanction is not obeyed or violation is committed more than once.

Article 101

Anybody releasing and/or distributing genetically engineered products to environmental

media that contravenes legislation or environmental permit as referred to in Article 69 paragraph (1) letter g, shall be subject to imprisonment for one year at the minimum and 3 (three) years at the maximum and a fine amounting to Rp1,000,000,000 (one billion rupiah) at the minimum and Rp3,000,000,000 (three billion) at the maximum.

Article 102

Anybody treating B3 waste without the permit as referred to in Article 59 paragraph (4), shall be subject to imprisonment for one year at the minimum and 3 (three) years at the maximum and a fine amounting to Rp1,000,000,000 (one billion rupiah) at the minimum and Rp3,000,000,000 (three billion) at the maximum.

Article 103

Anybody producing B3 waste and not conducting the treatment as referred to in Article 59, shall be subject to imprisonment for one year at the minimum and 3 (three) years at the maximum and a fine amounting to Rp1,000,000,000 (one billion rupiah) at the minimum and Rp3,000,000,000 (three billion) at the maximum.

Article 104

Anybody dumping wate and/or materials into environmental media with the permit as referred to in Article 60, shall be subject to imprisonment for 3 (three) years at the maximum and a fine amounting to Rp3,000,000,000 (three billion) at the maximum.

Article 105

Anybody importing waste into the territory of the Republic of Indonesia as referred to in Article 69 paragraph (1) letter c shall be subject to imprisonment for 4 (four) years at the minimum and 12 (twelve) years at the maximum and a fine amounting to Rp4,000,000,000 (four billion rupiah) at the minimum and Rp12,000,000,000 (twelve billion rupiah) at the maximum.

Article 106

Anybody importing B3 waste into the territory of the Republic of Indonesia as referred to in Article 69 paragraph (1) letter d, shall be subject to imprisonment for 5 (five) years at the minimum and 15 (fifteen) years at the maximum and a fine amounting to Rp5,000,000,000 (five billion rupiah) at the minimum and Rp15,000,000,000 (fifteen billion rupiah) at the maximum.

Article 107

Anybody importing B3 which are forbidden by legislation into the territory of the Republic of Indonesia as referred to in Article 69 paragraph (1) letter b, shall be subject to imprisonment for 5 (five)

years.....

years at the minimum and 15 (fifteen) years at the maximum and a fine amounting to Rp5,000,000,000 (five billion rupiah) at the minimum and Rp15,000,000,000 (fifteen billion rupiah) at the maximum.

Article 108

Anybody commiting the land burning as referred to in Article 69 paragraph (1) letter h, shall be subject to imprisonment for 3 (three) years at the minimum and 10 (ten) years at the maximum and a fine amounting to Rp 3,000,000,000 (three billion rupiah) at the minimum and Rp10,000,000,000 (ten billion rupiah) at the maximum.

Article 109

Anybody running business and/or activity without the environmental permit as referred to in Article 36 paragraph (1), shall be subject to imprisonment for one year at the minimum and 3 (three) years at the maximum and a fine amounting to Rp1,000,000,000 (one billion rupiah) at the minimum and Rp3,000,000,000 (three billion) at the maximum.

Article 110

Anybody formulating amdal without having certificate of competence of amdal formulator as referred to in Article 69 paragraph (1) letter i, shall be subject to imprisonment for 3 (three) years at the maximum and a fine amounting to Rp3,000,000,000 (three billion) at the maximum.

Article 111

(1) Officials issuing environmental permit that issue enviromental permit without amdal or UKL-UPL as referred to in Article 37 paragraph (1) shall be subject to imprisonment for 3 (three) years at the maximum and a fine amounting to Rp3,000,000,000 (three billion) at the maximum.

(2) Officials issuing business and/or activity permit that issue business and/or activity permit without the environmental permit as referred to in Article 40 paragraph (1) shall be subject to imprisonment for 3 (three) years at the maximum and a fine amounting to Rp3,000,000,000 (three billion) at the maximum.

Article 112

Every authorized officially not supervising intentionally the compliance of personnel in charge of businesses and/or activities to legislation and the environmental permit as referred to in Article 71 and Article 72, thus causing environmental pollution and/or damage that costs lives, shall be subject to imprisonment for one year at the maximum or a fine amounting to Rp500,000,000 (five hundred million rupiah) at the maximum.

Article 113.....

Article 113

Anybody providing fake information, misleading information, disappearing information, damaging information or providing untrue information which is needed for the need of supervision and law enforcement with respects to environmental protection and management as referred to in Article 69 paragraph (1) letter j shall be subject to imprisonment for one year at the minimum and a fine amounting to Rp1,000,000,000 (one billion rupiah).

Article 114

Personnel in charge of businesses and/or activities not implementing the government's coerciveness shall be subject to imprisonment for one year at the maximum and a fine amounting to Rp1,000,000,000 (one billion rupiah) at the maximum.

Article 115

Anybody intentionally preventing, impeding or aborting the execution of theasks of environmental supervisors and/or civil servant investigators shall be subject to imprisonment for one year at the maximum and a fine amounting to Rp 500,000,000 (five hundred million rupiah) at the maximum.

Article 116

(1) In the case of environmental crime being committed by, for and on behalf of a business entity, the criminal offense and penalty shall be imposed on:

a. the said business entity; and/or

b. person ordering the crime or person acting as activity manager in the crime.

(2) In the case of the environmental crime as referred to in paragraph (1) being committed by a person acting the working scope of business entity on the basis of working relations or other relations, the penalty shall be imposed on the ordering party or leader in the crime without regarding whether the crime is committed individually or collectively.

Article 117

If criminal offense is filed to the ordering party or leader in the crime as referred to in Article 116 paragraph (1) letter b, the imposed penalty shall be in the form of imprisonment and fine weightened by one thirds.

Article 118

With regards to the crime as referred to in Article 116 paragraph (1) letter a, penalty shall be imposed on business entities represented by executives aithorized to represent the business entities inside and outside the court in accordance with legislation as functional executives.

Article 119.....

Article 119

Besides the penalty as referred to in this law, the business entities shall be liable to additional penalty ot disciplinary measures in the form of:

a. seizure of profits earned from the crime;
b. closure of business and/or activity place wholly or partly;
c. improvement of impacts of the crime;
d. requirement for working what is neglected without right; and/or
e. placement of companies under custody for 3 (three) years at the maximum.

Article 120

(1) In executing the provision as referred to in Article 119 letter a, letter b, letter c, and letter d, prosecutors shall coordinate with institution in charge of environmental protection and management affairs to implement execution.
(2) In executing the provision as referred to in Article 119 letter e, the government shall be authorized to manage business entities subject to sanction of placement under custody to implement the legally fixed court verdict.

CHAPTER XVI

TRANSITIONAL PROVISION

Article 121

(1) In no later than 2 (two) years following the enforcement of this law, every business and/or activity already having business and/or activity permit but not yet having amdal document shall be obliged to complete environmental audit.
(2) In no later than 2 (two) years following the enforcement of this law, every business and/or activity already having business and/or activity permit but not yet having UKL-UPL shall be obliged to make environmental management document.

Article 122

(1) In no later than one year following the enforcement of this law, every amdal formulator shall be obliged to have certificate of competence of amdal formulator.
(2) In no later than one year following the enforcement of this law, every environmental auditor shall be obliged to have certificate of competence of envirormental auditor.

Article 123

All permits in the field of environmental management already issued by the Minister, governors or regents/mayors by virtue of their authority shall be integrated into environmental permit in no later than one year following the stipulation of this law.

CHAPTER XVII.....

CHAPTER XVII

CONCLUSION

Article 124

Following the enforcement of this law, all legislation that constitutes th implementing regulations of Law Number 23 Year 1997 on Environmental Management (Statute Book of the Republic of Indonesia Year 1997 Number 68, Supplement to Statute Book of the Republic of Indonesia Number 3699) shall be declared to remain effective in so far as they do not contravene or have not been replaced by the new ones on the basis of this law.

Article 125

With the enforcement of this law, Law Number 23 Year 1997 on Environmental Management (Statute Book of the Republic of Indonesia Year 1997 Number 68, Supplement to Statute Book of the Republic of Indonesia Number 3699) shall be shall be revoked and declared null and void.

Article 126

The implementing regulations mandated in this law shall be stipulated in no later than one year as from the date of enforcement of this law.

Article 127

This law shall come into force as from the date of promulgation.

For public cognizance, the law shall be published by placing it in Statute Book of the Republic of Indonesia.

Ratified in Jakarta

On October 3, 2009

THE PRESIDENT OF THE REPUBLIC OF INDONESIA,

sgd.

DR. H. SUSILO BAMBANG YUDHOYONO

Promulgated in Jakarta

On October 3, 2009

THE MINISTER OF LAW AND HUMAN RIGHTS OF THE REPUBLIC OF INDONESIA,

sgd

ANDI MATTALATTA

STATUTE BOOK OF THE REPUBLIC OF INDONESIA

YEAR 2009 NUMBER 140

ELUCIDATION
ON
LAW OF THE REPUBLIC OF INDONESIA
NUMBER 32 YEAR 2009
ABOUT
ENVIROMENTAL PROTECTION
AND MANAGEMENT

I. GENERAL

1. The Constitution of 1945 states that proper and healthy environment constitutes a human

right.....

right and constitutional right of every Indonesian citizen. In relations thereto, the state, government and all stakeholders are obliged to protect and manage the environment in the implementation of sustainable development so that Indonesia's environment can continue to become a source and support of life for Indonesian people as well as other creatures.

2. The Unitary State of the Republic of Indonesia is situated on a diagonal position between two continents and oceans with tropical climate and weather as well as season resulting a highly valuable natural condition. In addition, Indonesia also has the second longest coastal line in the world with a huge population. Indonesia has wealth of biological diversity and abundant natural resources. The wealth needs to be protected and managed in an environmental protection and management system which is integral and integrated between sea, land and air environment on the basis of the Acrhipelago Concept.

   Indonesia is also situation on a position extremely vulnerable to impacts of climate change. The impacts include the decreasing food production, affected supply of water, outbreak of pests and plant diseases as well as human diseases, rising sea surface, drowning isles, and extiction of biological diversity.

   The availability of natural resources is not equitable quantitatively and qualitatively while development activities need the rising natural resources. Development activities also contain risk of environmental pollution and damage. The condition may lower the carrying capability, support capability and productivity of the environment so as to become social burden I.

   In relations thereto, Indonesia's environment must be protected and managed properly on the basis of the principles of state responsibility, sustainability, and justice. In addition, environmental manegement must be able to contribute economic, social and cultural benefits, which is executed on the basis of the principles of prudence, environmental democracy, decentralization, as well as recognition and appreciation of local and environmental wisdom.

   Environmental protection and management demands the development of an integrated system in form of a national environmental protection and management policy which must be executed in accordance with the principles and consequently as from the central to region.

3. The use of natural resources must be in line, harmonious and balanced with the environmental functions. As a consequence, development plans and/or programs must

be inspired by the obligation to preserve the environment and realize goals of sustainable development.

This law requires the government and regional governments to make strategic environment assessment (KLHS) to ascertain that the principles of sustainable development have become a basis and been integrated into the development of a region and/or policies, plans and/or programs. In the other word, results of KLHS must be used as a basis for development policies, plans and/or programs of a region. In the case of results of KLHS certifying that the carrying capability and support capability have been surpassed, the development policies, plans and/or programs must be improved in accordance with recommendation of KLHS and all businesses and/or activities already surpassing the carrying capability and support capability are not permitted anymore.

4. Science and technology have enhanced the quality of life and change human lifestyle. The use of chemical-based products has increased the production of waste of hazarduous and toxic materials. It demands the development of a safe disposal system with minimum risk on the environment, health, and sustainability of humans and other creatures.

Besides producing products beneficial to communities, industrialization also causes impacts, such as the production of hazarduous and toxic waste potential to threaten the environment, health and sustainability of humans and other creatures if they are dumped into the environmental media. Realizing it, hazarduous and toxic materials along with the waste thereof need to be protected and managed properly. The territory of the Unitary State of the Republic of Indonesia must be free from the disposal of waste of hazarduous and toxic materials from outside Indonesia.

Realizing the potential of negative impacts as consequences of development, early measures to control the impacts continues to be developed. Environmental impact analysis (amdal) is any of the preemptive instruments of environmental management, which must be strengthened continuously through the enhancement of accountability in the formulation of amdal by requring the licensing for amdal appraisers and applying certification to formulators of amdal documents as well as clarifying legal saction against violators in the field of amdal.

Amdal also becomes one of the main requirements for securing environmental permit, which must be owned before the business license is obtained.

5. Preemptive.....

5. Preemptive measures in the framework of controlling environmental impacts need to be executed by utilizing maximally supervisory and licensing instruments. In the case of environmental pollution and damage already occurring, it's necessary to take repressive measures in the form of enforcing law effectively, consequently and consistently for the occurring environmental pollution and damage.

   In relations thereto, it's necessary to develop a clear, firm and comprehensive environmental protection and management law system to assure legal certainty as a foundation for the protection and management of natural resources as well as other development activities.

   This law also empower provisions of law, either administration law, civil law and criminal law. The provisions of civil law cover the settlement of environmental disputes outside and inside the court. The settlement of environmental disputes inside the court covers class actions, litigating right of environmental organizations or litigating right of the government. The method is expected to not only bring about curative effects but also generate awareness of all stakeholders with regards to the urgency of environmental protection and management for the life of the present and future generations.

6. The enforcement of criminal law in this law introduces minimum penalty, besides the maximum one, expansion of evidences, offense against violation of quality standard, integration of criminal law enforcement and regulation of corporate crime. The enforcement of environmental criminal law continues to observe the principle of ultimum remedium requiring the application of crime law as the last lender resort after the application of administration law is deemed unsuccessful. The application of the ultimum remedium principle only applies to certain formal crime, namely offense against violation of the quality standard of waste water, emission and nuisance.
7. The fundamental difference between Law Number 23 Year 1997 on Environmental Management and this law resides on the fortification contained in this law with regards to the principles of enmvironmental protection and management based on good goverance because the formulation and application of every instrument to prevent environmental pollution and/or damage and as well as mitigation and law enforcement require the integration of aspects of transparency, participation, accountability and justice.
8. In addition, this law also governs:
   a. totality of environmental management substances;

b. clarity.....

b. clarity of central and regional authority;
c. fortification of environmental controlling measures;
d. fortification of instruments preventing environmental pollutions and/or damage, covering instruments of strategic environmental assessment, quality standard of the environment, standard criteria for environmental damage, amdal, environmental management and monitoring programs, licensing, economic instruments of the environment, environment-based legislation, environmental risk analysis, and other instruments in accordance with advancement of science and technology;
e. empowerment of licensing as a controlling instrument;
f. empowerment of ecosystem approach;
g. certainty in responding and anticipating developments of global environment;
h. fortification of environmental democracy through information access, participation access and justice access as well as fortification of rights of communities in the protection and management of environment;
i. enforcement of civil law, administration law and criminal law more clearly;
j. more effective and responsive fortification of environmental protection and management institutions; and
k. fortification of authority of environmental supervisors and civil servant environmental investigators.

9. This law authorizes extensively the Minister to exercise the whole administration authority in the field of environmental protection and management as well as coordinate with other institutions. Through this law, the government also authorizes extensively regional governments to implement environmental protection and management in their respective regions, which is not regulated in Law No. 23/ 1997 on Environmental Management.

In relation thereto, the institution having work load on the basis of this law is not only sufficient one organization stipulating and coordinating the implementation of policies but an organization with portfolio stipulating, implementing, and supervising environmental protection and management policies is also needed. Apart from that, the institution is also expected to have a scope of authority to supervise natural resources in the interests of conservation. In order to assure that the basic tasks and functions of the institution can be executed, it needs adequate funding support from the state budget of revenue and expenditure for the government and adequate regional budget of revenue and expenditure for regional governments.

II. Article.....
(To be continued)

—===(R)===—

Business News Business News

ENVIROMENTAL PROTECTION AND MANAGEMENT

(Law No. 32/ 2009, dated October 3,2009)

[Continued from Business News No. 7936 pages 15A-36A]

II. ARTICLE BY ARTICLE

Article 1

Sufficiently clear

Article 2

Letter a

The principle of state responsibility means:

a. the state assures that the utilization of natural resources would contribute optimal benefits to the people's welfare and the living standard of the people, either the present generation or future generation.
b. the state assures the right of citizens to a proper and healthy environment.
c. the state prevents the utilization of natural resources that causes environmental pollution and/or damage.

Letter b

The principle of conservation and sustainability means everbody bears obligation and responsibility for the future generation and their fellow generation by taking efforts to preserve the support capability of the ecosystem and improving the quality of the environment.

Letter c

The principle of harmony and equilibrium means environmental utilization must regard aspects, such as economic, social, cultural interests and protection as well as conservation of the ecosystem.

Letter d

The principle of integration means environmental protection and management are executed by integrating elements or synergitizing related components.

Letter e

The principle of benefit means the whole executed development programs and/or activities are adjusted to potentials of natural resources and the environment for enhancing the people's welfare and human dignity in harmony with the environment thereof.

Letter f

The principle of prudence means uncertainty about impact of a business and/or activity due to limited mastery of science and technology is not a reason for delaying measures to minimize or avoid threat against environmental pollution and/or damage.

Letter g

The principle of justice means environmental

management.....

management must reflect justice proportionally for every citizen, either inter-region, inter-generation *or inter-gender.*

Letter h

The principle of ecoregion means environmental protection and management must regard characteristics of local natural resources, ecosystem, socio culture and wisdom.

Letter i

The principle of biological diversity means environmental protection and management must observe integrated efforts to preserve the existence, diversity and sustainability of animal natural *resources along with surrounding biological natural* resources forming ecosystem totally.

Letter j

The principle polluter pays means every personnel in charge of business and/or activities polluting and/or damaging the environment is obliged to bear the cost of environmental restoration.

Letter k

The participatory principle means every community member is motivated to participate actively in decision making and implementing environmental *protection and management directly and indirectly.*

Letter l

The principle of local wisdom means noble values effective in social life of communities must be observed in environmental protection and management.

Letter m

The principle of good goverance means environmental protection and management are *inspired by the principles of participation,* transparency, accountability, efficiency anmd justice.

Letter n

The principle of regional autonomy means the government and regional governments rule and manage directly public administration affairs in the field of environmental protection and management by observing regional specialty and diversity in the context of the Unitary State of the Republic of Indonesia.

Article 3 up to Article 9

Sufficiently clear

Article 10

Paragraph (1)

Sufficiently clear

Paragraph (2)

Letter a up to Letter c

Sufficiently clear

Letter d

Local wisdom in this paragraph includes communal *rights recognized by DPRD.*

Letter e.....

Letter e and Letter f

Sufficiently clear

Paragraph (3) up to Paragraph (5)

Sufficiently clear

Article 11 and Article 12

Sufficiently clear

Article 13

Paragraph (1)

Control over environmental pollution and/or damage covers, among others, control over:

a. water, air and sea polution; and
b. ecosystem damage and damage attributed to climate change.

Paragraph (2) and Paragraph (3)

Sufficiently clear

Article 14

Sufficiently clear

Article 15

Paragraph (1)

Area means spaxe constituting a geographic totality along with related elements whose borders and system are determined on the basis of administrative and/or functional aspects.

Paragraph (2)

Letter a

Sufficiently clear

Letter b

The environmental impacts and/or risks cover:

a. climate change;
b. damage, degradation and/or extinction of biological diversity;
c. enhancement of intensity and coverage of disaster area of flooding, landslide, drought, and/or forest and land fire;
d. degradation of the quality and abundance of natural resources;
e. the rising trend of change in function of forest area and/or land;
f. the rise in the poor or threat against sustainability of livelihoods of a group of communities; and/or
g. rising risk of human health and safety.

Paragraph (3)

Sufficiently clear

Article 16 and Article 17

Sufficiently clear

Article 18

Paragraph (1)

The communities are involved through dialogue, discussion and public consultation.

Paragraph (2)

Sufficiently clear

Article 19

Sufficiently clear

Article 20.....

Article 20

Paragraph (1)

Sufficiently clear

Paragraph (2)

Letter a

The quality standard of water means the limit or content of creature, substance, energy or component which exist or must exist and/or pollutants having content tolerable in water.

Letter b

The quality standard of waste water is the tolerable limit or content of pollutants which may be inserted into water media.

Letter c

The quality standard of sea water is the limit or content of creature, substance, energy or component which exist or must exist and/or pollutants having content tolerable in sea water.

Letter d

The quality standard of ambient air is the limit or content of creature, substance, energy or component which exist or must exist and/or pollutants having content tolerable in ambient air.

Letter e

The quality standard of emission is the tolerable limit or content of pollutants which may be inserted into air media.

Letter f

The quality standard of nuisance is the tolerable limit of pollutants, such as vibration, noisiness and smelt.

Letter g

Sufficiently clear

Paragraph (3) up to Paragraph (5)

Sufficiently clear

Article 21.....

(To be continued)

—===(R)===—

Business News Business News

ENVIROMENTAL PROTECTION AND MANAGEMENT

(Law No. 32/ 2009, dated October 3,2009)

[Continued from Business News No. 7940 pages 33A-36A]

Article 21

Paragraph (1) dan Paragraph (2)

Sufficiently clear

Paragraph (3)

Letter a

Biomass production means models of utilization of soil resources to produce biomass.

The quality standard of soil damage for biomass production is the tolerable limit of change in basic characteristics of soil in connection with biomass production.

The quality standard of soil damage for biomass production covers agriculture land or cultivation land and forest.

Letter b

The quality standard of coral reef damage is the tolerable limit of physical and/or biological change in coral reef.

Letter c

The environmental damage related to forest and/or land fire means the influence of change in environment, in the form of environmental damage and/or pollution related to forest and/or land fire attributed to a business and/or activity.

Letter d up to Letter h

Sufficiently clear

Paragraph (4) and Paragraph (5)

Sufficiently clear

Article 22

Sufficiently clear

Article 23

Paragraph (1)

Letter a up to Letter e

Sufficiently clear

Letter f

Micro organism means products of genetically engineering.

Letter g up to Letter i

Sufficiently clear

Paragraph (2)

Sufficiently clear

Article 24

Sufficiently clear

Article 25

Letter a up to Letter e

Sufficiently clear

Letter f.....

Letter f

The environmental management and monitoring plans are intended to avoid, minimize, mitigate and/or compensate impacts of a business and/or activity.

Article 26

Paragraph (1)

Communities are involved in the announcement and public consultation in the framework of collecting recommendations and responses.

Paragraph (2) up to Paragraph (4)

Sufficiently clear

Article 27

The other parties are, among others, amdal formulating institutions or consultants.

Article 28 up to Article 35

Sufficiently clear

Article 36

Paragraph (1)

Sufficiently clear

Paragraph (2)

UKL-UPL recommendations are judged by a technical team of the environmental institution.

Paragraph (3) and Paragraph (4)

Sufficiently clear

Article 37 dan Article 38

Sufficiently clear

Article 39

Paragraph (1)

The announcement in this article constitutes the implementation of information transparency. The announcement enables participation of communities, particularly communities not yet using opportunities in raising objection, hearing and others in decision making process.

Paragraph (2)

Sufficiently clear

Article 40

Paragraph (1)

The business license and/or activity license include license called in other names, such as operating license and construction license.

Paragraph (2)

Sufficiently clear

Paragraph (3)

The change in this paragraph is attributable to, among others, the change in ownership, technology, addition or reduction of production capacity and/or change in location of business and/or activity.

Article 41

Sufficiently clear

Article 42.....

Article 42

Paragraph (1)

Sufficiently clear

Paragraph (2)

Letter a

Economic instrument in development planning means efforts to internalize environmental aspects into the planning and implementation of development and economic activities.

Letter b

Environmental funding is a system and mechanism of accumulation and management of funds used for financing environmental protection and management programs. The environmental funding results from sources, such as levies, grants and others.

Letter c

Incentive constitutes an effort to provide monetary and/or non-monetary impetus or attactiveness for everybody or government and regonal government to undertake activities bringing about positive impact to reserves of natural resources and the quality of enviromental function.

Disincentive constitutes the imposition of monetary and/or non-monetary burden or threat on everybody or the government and regional governments to reduce activities bringing about negative impact to reserves of natural resources and the quality of enviromental function.

Article 43

Paragraph (1)

Letter a

Balance of natural resources is a description of reserves of natural resource and change thereof, either in physical unit or monetary value.

Letter b

Gross Domestic Product means the value of the whole goods and services produced by a country in a specified period.

Gross Regional Domestic Product means the value of the whole goods and services produced by a region in a specified period.

Letter c

Mechanism of inter-regional environmental service compensation/exchange means compensation/exchange methods adopted by regional people, communities and/or governments as users of environmental service for providers of environmental services.

Letter d

Internalization of environment cost means the inclusion of costs of environmental pollution and/or damage into the calculation of production cost or cost of a business and/or activity.

Paragraph (2)

Letter a

Guarantee funds of environmental restoration mean a certain amount of funds prepared

by a business and/or activity to restore the quality of damaging environment attributed to the activity.

Letter b

Mitigation funds mean a certain amount of funds used for mitigating environmental pollution and/or damage arising from a business and/or activity.

Letter c

Trustee/assistance funds mean funds resulting from sources of grants and donations in the interest of environmental conservation.

Paragraph (3)

Letter a

Procurement of environmentally sound goods and services means the procurement prioritizing to goods and services having environmentally sound label.

Letter b

Environmental tax means a levy imposed by the government and regional governments on everybody utilizing natural resources, such as underground-water intake tax, fuel tax and swalow nest tax.

Environmental levy means a levy imposed by regional governments on everybody utilizing facilities prepared by the regional governments, such as levy on waste water treatment.

Environmental subsidy means facility or reduction of burden imposed on everybody having impact which has impact on the improvement of environmental function.

Letter c

Environmentally sound financial system means a system of financial institution applying requirements for environmental protection and management in the financing policies and practices of bank and non-bank financial institution system.

Environmentally sound capital market means capital market applying requirements for environmental protection and management to companies listing shares at the capital market or listed companies, such as requirements for environmental audit for companies planning to sell their shares at the capital market.

Letter d

Trade in license to dispose waste and/or emission is the transaction of waste and/or emission quota which may be disposed into environmental media between personnel in charge of businesses and/or activities.

Letter e

Payment of environmental service means the payment/compensation granted by users of environmental service to providers of environmental service.

Letter f.....

Letter f

Environmental insurance means insurance providing protection upon the occurrence of environmental pollution and/or damage.

Letter g

Environmental-sound label system means the granting of mark or label to environmentally sound products.

Letter h

Sufficiently clear

Paragraph (4)

Sufficiently clear

Article 44

Sufficiently clear

Article 45

Paragraph (1)

Sufficiently clear

Paragraph (2)

Criteria for environmental protection and management performance cover, among others performance to preserve conservation area and downgrade environmental pollution and/or damage.

Article 46

Sufficiently clear

Article 47

Paragraph (1)

Environmental risk analysis is a procedure, which is used for, among others, assessing the release and distribution of genetically engineered products and the clean up of B3 waste.

Paragraph (2)

Letter a

In this provision, risk analysis covers the whole processes, starting from identification of danger, estimation of consequence or impact, prediction of the unexpected impacts on both human security and health and environment.

Letter b

In this provision, risk management covers evaluation of risks or selection of risks requiring management, identification of choices of risk management, selection of management measures and implementation of the selected measures.

Letter c

Risk communications mean an interractive process of exchange of information and opinions between individuals, groups, and institutions with respects to risks.

Paragraph (3)

Sufficiently clear

Article 48.....

Article 48

Sufficiently clear

Article 49

Paragraph (1)

Letter a

Certain highly risky businesses and/or activities are businesses and/or activities potential to cause serious impact on human health and environment if accident and/or emergency condition occur, such as petrochemical, oil and natural gas plant as well as nuclear power plant.

Environmental audit document contains:

a. information covering goal and process of audit;
b. audit finding;
c. audit conclusion; and
d. supporting data and information.

Letter b

Sufficiently clear

Paragraph dan Paragraph (3)

Sufficiently clear

Article 50 up to Article 53

Sufficiently clear

Article 54

Paragraph (1)

Sufficiently clear

Paragraph (2)

Letter a

Sufficiently clear

Letter b

Remediation is efforts to restore environmental pollution to improve the quality of enviroment.

Letter c

Rehabilitation is restoration efforts to return the value, function and benefit of the environment, including efforts to prevent land damage, provide protection and improve ecosystem.

Letter d

Restoration means efforts to enable the environment or parts thereof to resume the original function.

Letter e

Sufficiently clear

Paragraph (3)

Sufficiently clear

Article 55 dan Article 56

Sufficiently clear

Article 57

Paragraph (1)

Environmental preservation means efforts taken to preserve the functions of the environment and prevent human actions from downgrading the environment or environmental damage.

Letter a.....

Letter a

Conservation of natural resources covers, among others, conservation of water resources, forest ecosystem, coastal and sea conservation, energy, peat land ecosystem and karst ecosystem.

Letter b

Reservation of natural resources covers natural resources which may be managed in a long term and a specified period in accordance with the need.

In order to execute the reservation of natural resources, the government, provincial governments or regental/municipal governments and individuals may build:

a. biological diversity park outside forest area;
b. green open area (RTH) minimaly accounting for 30% of the total size of island/archipelago; and/or
c. planting and preserving trees outside forest area, particularly rare plants.

Letter c

Sufficiently clear

Paragraph (2)

Letter a

Sufficiently clear

Letter b

Preservation of natural resources means efforts to preserve the totality and genuiness of natural resources along with ecosystem thereof.

Letter c

Sufficiently clear

Paragraph (3)

Sufficiently clear

Paragraph (4)

Letter a

Mitigation of climate change is a series of activities which are taken to lower green house emission as a model of efforts to mitigate impacts of climate change.

Adaptation to climate change is an efforts which are taken to enhance adaptability to climate change, including climate diversity and extreme climate so as to reduce potential of damage attributed to climate change, utilize opportunities arising from climate change and overcome consequences arising from climate change.

Letter b and Letter c

Sufficiently clear

Paragraph (5)

Sufficiently clear

Article 58

Paragraph (1)

The obligation to manage B3 constitutes efforts to reduce the possible risks on the environment, such as environmental pollution and/or damage, given that B3 is very potential to cause negative impacts.

Paragraph (2).....

Paragraph (2)

Sufficiently clear

Article 59

Paragraph (1)

Management of B3 waste constitutes a series of activities covering the reduction, storage, collection, transportation, utilization and/or processing, including the hoarding of B3 waste.

Paragraph (2)

Sufficiently clear

Paragraph (3)

Other parties mean business entities managing B3 waste and already securing license.

Paragraph (4) up to Paragraph (7)

Sufficiently clear

Article 60 dan Article 61

Sufficiently clear

Article 62

Paragraph (1)

The environmental information system contains, among others, diversity of ecologic characters, distribution of population, distribution of natural resources and local wisdom.

Paragraph (2) up to Paragraph (4)

Sufficiently clear

Article 63 and Article 64

Sufficiently clear

Article 65

Paragraph (1)

Sufficiently clear

Paragraph (2)

The right to environmental information constitutes a logic consequence of the right to participate in environment management on the basis of the principle of transparency. The right to environmental information will enhance the value and effectiveness of participation in environmental management, besides opening opportunities for communities to actualize their rights to a proper and healthy environment.

The environmental information as referred to in this paragraph may be in the form of data, information or other information related to environmental protection and management, which is opened for the public according to the characteristic and objectives thereof, such as environmental impact analysis documents, reports and documents of results of evaluation of environmental monitoring, either the monitoring of compliance or monitoring of change in the quality of environment and spatial plan.

Paragraph (3) up to Paragraph (6)

Sufficiently clear

Article 66

The provision is intended to protect victims and/or the reporting parties adopting legal settlement for environmental pollution and/or damage.

The protection is intended to prevent act of revenge from the reported parties through criminal and/or civil offense by observing the independence of legal judicature.

Article 67 and Article 68

Sufficiently clear

Article 69

Paragraph (1)

Letter a

Sufficiently clear

Letter b

The prohibited B3 are, among others, DDT, PCBs, and dieldrin.

Letter c

The prohibition in this provision is in exception for the issues governed in legislation.

Letter d

The prohibited in this letter includes import.

Letter e up to Letter j

Sufficiently clear

Paragraph (2)

The local wisdom as referred to in this provision means the burning of land with the maximum size two hectares per head of family to be planted by plants belonging to local variety and surrounded by burning separator to prevent flame from spreading to surrounding area.

Article 70

Paragraph (1)

Sufficiently clear

Paragraph (2)

Letter a

Sufficiently clear

Letter b

The granting of recommendations and opinions in this provision includes in the formulation of KLHS and amdal.

Letter c

Sufficiently clear

Paragraph (3)

Sufficiently clear

Article 71 dan Article 72

Sufficiently clear

Article 73

Serious violation means legal violation causing serious environmental pollution and/or damage and triggering social unrest.

Article 74 up to Article 79

Sufficiently clear

Article 80

Paragraph (1)

Sufficiently clear

Paragraph (2).....

Paragraph (2)

Letter a

The extremely serious threat means a condition potential to endanger safety and health of many people so that the settlement thereof may not be delayed.

Letter b and Letter c

Sufficiently clear

Article 81 up to Article 83

Sufficiently clear

Article 84

Paragraph (1)

The provision in this paragraph is intended to protect civil rights of parties in dispute.

Paragraph (2)

Sufficiently clear

Paragraph (3)

The provision in this paragraph is intended to prevent the birth of different decisions about one environmental dispute in a bid to guarantee legal certainty.

Article 85 and Article 86

Sufficiently clear

Article 87

Paragraph (1)

The provision in this paragraph constitutes the realization of a priciple in the environmental law, which is called the principle "polluter pays". Besides paying compensation, the environmental polluter and/or detroyer may also be charged by judge to undertake certain legal measures, such as order to:

a. install or improve waste treatment unit so that the waste meets the stipulated quality standard of the environment;
b. restore the environmental functions; and/or
c. eliminate or destroy causes of environmental pollution and/or destruction.

Paragraph (2)

Sufficiently clear

Paragraph (3)

The imposition of coercive money on everyday of lateness in the execution of court order to undertake certain measures is in the interest of environmental functions.

Paragraph (4)

Sufficiently clear

Article 88

Strict liability means plaintiff is not necessary to prove substance ofg mistake as a basis for paying compensation. The provision in this paragraph constitutes lex specialis in lawsuit against legal violation in general. Pursuant to this article, the amount of compensation which may be charged with environmental poluters or destroyers may be stipulated up to certain limit.

Up to certain limit means there is an obligation according to stipulation of legislation to provide insurance for the said business and/or activity or the environmental funds have been available.

Article 89

Sufficiently clear

Article 90

Paragraph (1)

Environmental loss is a loss arising from the pollution and/or damage of the environment which does not belong to private propietary.

Certain measures constitute actions to prevent and mitigate pollution and/or damage as well as restore environmental functions in a bid to ensure that negative impacts on the environment won't occur or repeat.

Paragraph (2)

Sufficiently clear

Article 91 up to Article 93

Sufficiently clear

Article 94

Paragraph (1) dan Paragraph (2)

Sufficiently clear

Paragraph (3)

Coordination is an action of consultation to obtain personnel, facility and infrastructure assistance needed in the investigation.

Paragraph (4)

The notification in this article does not constitute notification about the commencement of investigation, but affirms the shape of coordination between civil servant investigators and investigators of the Indonesian Police.

Paragraph (5) dan Paragraph (6)

Sufficiently clear

Article 95

Sufficiently clear

Article 96

Letter a up to Letter e

Sufficiently clear

Letter f

Other evidences include information disclosed, sent, received or saved electronicaly, magnetically, optically and/or the similar, and/or data, records, or information which is readable, visible and can be heard that can be taken out with and/or without assistance of a facility, written down on paper, non-paper physical materials, or recorded electronically, not limited to writings, voice or picture, map, design, photo or the like, letter, sign, figure, symbol, or meaningful or understandable or readable perforation.

Article 97 up to Article 100

Sufficiently clear

Article 101

Releasing genetically engineered products means statement of recognition to a result of rejuvenation of genetically engineered products to become superior variety and mat be disseminated after complying with the requirements on the basis *of legislation*.

Distributing genetically engineering products means every activity or a series of activities in the framework of the distribution of commodities being genetically engineered products to communities, for trading or not.

Article 102 up to Article 112

Sufficiently clear

Article 113

The fake informatio as meant in this article may be in the form of documents or verbal information not matching the actual facts or untrue information.

Article 114 up to Article 117

Sufficiently clear

Article 118

The functional executor as referred to in this article is businesss entity and legal entity.

Criminal offense charged with executives of *business entities and legal entities for crime committed* by business entities or legal entities is functional crime so that the penalty is imposed and sanction is imposed on those having authority to the physical executor and receiving action of the physical executor.

Receiving action as meant in this article incliudes approving, letting or supervising inadequately actions of physical executors and/or having policies making the crime possible.

Article 119 up to Article 122

Sufficiently clear

Article 123

The license in this provision is, for example, license to manage B3 waste, license to dispose waste water into sea, and license to dispose waste water into water intake.

Article 124 up to Article 127

Sufficiently clear

SUPPLEMENT TO STATUTE BOOK OF

THE REPUBLIC OF INDONESIA NUMBER 5059

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Annex 585

L. Johnson, "Special Message to the Congress on Conservation and Restoration of Natural Beauty", *The American Presidency Project*, 8 February 1965, as cited at paragraph 22 of the Expert Report of Professor Naomi Oreskes on Historical Knowledge and Awareness, in Government Circles, of the Effects of Fossil Fuel Combustion as the Cause of Climate Change, 29 January 2024 at page 91 of the Exhibit Bundle to the Written Statement submitted by the Republic of Vanuatu, 21 March 2024

The American Presidency Project

(https://www.presidency.ucsb.edu/)



LYNDON B. JOHNSON (/PEOPLE/PRESIDENT/LYNDON-B-JOHNSON)

Special Message to the Congress on Conservation and Restoration of Natural Beauty.

February 08, 1965

To the Congress of the United States:

For centuries Americans have drawn strength and inspiration from the beauty of our country. It would be a neglectful generation indeed, indifferent alike to the judgment of history and the command of principle, which failed to preserve and extend such a heritage for its descendants.

Yet the storm of modern change is threatening to blight and diminish in a few decades what has been cherished and protected for generations.

A growing population is swallowing up areas of natural beauty with its demands for living space, and is placing increased demand on our overburdened areas of recreation and pleasure.

The increasing tempo of urbanization and growth is already depriving many Americans of the right to live in decent surroundings. More of our people are crowding into cities and being cut off from nature. Cities themselves reach out into the countryside, destroying streams and trees and meadows as they go. A modern highway may wipe out the

equivalent of a fifty acre park with every mile. And people move out from the city to get closer to nature only to find that nature has moved farther from them.

The modern technology, which has added much to our lives can also have a darker side. Its uncontrolled waste products are menacing the world we live in, our enjoyment and our health. The air we breathe, our water, our soil and wildlife, are being blighted by the poisons and chemicals which are the by-products of technology and industry. The skeletons of discarded cars litter the countryside. The same society which receives the rewards of technology, must, as a cooperating whole, take responsibility for control.

To deal with these new problems will require a new conservation. We must not only protect the countryside and save it from destruction, we must restore what has been destroyed and salvage the beauty and charm of our cities. Our conservation must be not just the classic conservation of protection and development, but a creative conservation of restoration and innovation. Its concern is not with nature alone, but with the total relation between man and the world around him. Its object is not just man's welfare but the dignity of man's spirit.

In this conservation the protection and enhancement of man's opportunity to be in contact with beauty must play a major role.

This means that beauty must not be just a holiday treat, but a part of our daily life. It means not just easy physical access, but equal social access for rich and poor, Negro and white, city dweller and farmer.

Beauty is not an easy thing to measure. It does not show up in the gross national product, in a weekly pay check, or in profit and loss statements. But these things are not ends in themselves. They are a road to satisfaction and pleasure and the good life. Beauty makes its own direct contribution to these final ends. Therefore it is one of the most important components of our true national income, not to be left out simply because statisticians cannot calculate its worth.

And some things we do know. Association with beauty can enlarge man's imagination and revive his spirit. Ugliness can demean the people who live among it. What a citizen sees every day is his America. If it is attractive it. it adds to the quality of his the life. If it is ugly it can degrade his existence.

Beauty has other immediate values. It adds to safety whether removing direct dangers to health or making highways less monotonous and dangerous. We also know that those who live in blighted and squalid conditions are more susceptible to anxieties and mental disease.

Ugliness is costly. It can be expensive to clean a soot smeared building, or to build new areas of recreation when the old landscape could have been preserved far more cheaply.

Certainly no one would hazard a national definition of beauty. But we do know that nature is nearly always beautiful. We do, for the most part, know what is ugly. And we can introduce, into all our planning, our programs, our building and our growth, a conscious and active concern for the values of beauty. If we do this then we can be successful in preserving a beautiful America.

There is much the federal government can do, through a range of specific programs, and as a force for public education. But a beautiful America will require the effort of government at every level, of business, and of private groups. Above all it will require the concern and action of individual citizens, alert to danger, determined to improve the quality of their surroundings, resisting blight, demanding and building beauty for themselves and their children.

I am hopeful that we can summon such a national effort. For we have not chosen to have an ugly America. We have been careless, and often neglectful. But now that the danger is clear and the hour is late this people can place themselves in the path of a tide of blight which is often irreversible and always destructive.

The Congress and the Executive branch have each produced conservation giants in the past. During the 88th Congress it was legislative executive teamwork that brought progress. It is this same kind of partnership that will ensure our continued progress.

In that spirit as a beginning and stimulus I make the following proposals:

THE CITIES Thomas Jefferson wrote that communities "should be planned with an eye to the effect made upon the human spirit by being continually surrounded with a maximum of beauty."

We have often sadly neglected this advice in the modern American city. Yet this is where most of our people live. It is where the character of our young is formed. It is where American civilization will be increasingly concentrated in years to come.

Such a challenge will not be met with a few more parks or playgrounds. It requires attention to the architecture of building, the structure of our roads, preservation of historical buildings and monuments, careful planning of new suburbs. A concern for the enhancement of beauty must infuse every aspect of the growth and development of metropolitan areas. It must be a principal responsibility of local government, supported by active and concerned citizens.

Federal assistance can be a valuable stimulus and help to such local efforts.

I have recommended a community extension program which will bring the resources of the university to focus on problems of the community just as they have long been concerned with our rural areas. Among other things, this program will help provide training and technical assistance to aid in making our communities more attractive and vital. In addition, under the Housing Act of 1964, grants will be made to States for training of local governmental employees needed for community development. I am recommending a 1965 supplemental appropriation to implement this program.

We now have two programs which can be of special help in creating areas of recreation and beauty for our metropolitan area population: the Open Space Land Program, and the Land and Water Conservation Fund.

I have already proposed full funding of the Land and Water Conservation Fund, and directed the Secretary of the Interior to give priority attention to serving the needs of our growing urban population.

The primary purpose of the Open Space Program has been to help acquire and assure open spaces in urban areas. I propose a series of new matching grants for improving the natural beauty of urban open space.

The Open Space Program should be adequately financed, and broadened by permitting grants to be made to help city governments acquire and clear areas to create small parks, squares, pedestrian malls and playgrounds.

In addition I will request authority in this program for a matching program to cities for landscaping, installation of outdoor lights and benches, creating attractive cityscapes along roads and in business areas, and for other beautification purposes.

Our city parks have not, in many cases, realized their full potential as sources of pleasure and play. I recommend on a matching basis a series of federal demonstration projects in city parks to use the best thought and action to show how the appearance of these parks can better serve the people of our towns and metropolitan areas.

All of these programs should be operated on the same matching formula to avoid unnecessary competition among programs and increase the possibility of cooperative effort. I will propose such a standard formula.

In a future message on the cities I will recommend other changes in our housing programs designed to strengthen the sense of community of which natural beauty is an important component.

In almost every part of the country citizens are rallying to save landmarks of beauty and history. The government must also do its share to assist these local efforts which have an important national purpose. We will encourage and support the National Trust for Historic Preservation in the United States, chartered by Congress in 1949- I shall propose legislation to authorize supplementary grants to help local authorities acquire, develop and manage private properties for such purposes.

The Registry of National Historic Landmarks is a fine federal program with virtually no federal cost. I commend its work and the new wave of interest it has evoked in historical preservation.

THE COUNTRYSIDE Our present system of parks, seashores and recreation areas--monuments to the dedication and labor of far-sighted men--do not meet the needs of a growing population.

The full funding of the Land and Water Conservation Fund will be an important step in making this a Parks-for-America decade.

I propose to use this fund to acquire lands needed to establish:

--Assateague Island National Seashore, Maryland-Virginia

Tocks Island National Recreation Area, New Jersey-Pennsylvania

Cape Lookout National Seashore, North Carolina

Sleeping Bear Dunes National Lakeshore, Michigan

Indiana Dunes National Lakeshore, Indiana

Oregon Dunes National Seashore, Oregon

Great Basin National Park, Nevada

Guadalupe Mountains National Park, Texas

Spruce Knob, Seneca Rocks National Recreation Area, West Virginia

Bighorn Canyon National Recreation Area, Montana-Wyoming

Flaming Gorge National Recreation, Utah-Wyoming

Whiskeytown-Shasta-Trinity National Recreation Area, California.

In addition, I have requested the Secretary of Interior, working with interested groups, to conduct a study on the desirability of establishing a Redwood National Park in California.

I will also recommend that we add prime outdoor recreation areas to our National Forest system, particularly in the populous East; and proceed on schedule with studies required to define and enlarge the Wilderness System established by the 88th Congress. We will also continue progress on our refuge system for migratory waterfowl.

Faulty strip and surface mining practices have left ugly scars which mar the beauty of the landscape in many of our States. I urge your strong support of the nationwide strip and surface mining study provided by the Appalachian Regional legislation, which will furnish the factual basis for a fair and reasonable approach to the correction of these past errors.

I am asking the Secretary of Agriculture to work with State and local organizations in developing a cooperative program for improving the beauty of the privately owned rural lands which comprise three-fourths of the Nation's area. Much can be done within existing Department of Agriculture programs without adding to cost.

The 28 million acres of land presently held and used by our Armed Services is an important part of our public estate. Many thousands of these acres will soon become surplus to military needs. Much of this land has great potential for outdoor recreation, wildlife, and conservation uses consistent with military requirements. This potential must be realized through the fullest application of multiple-use principles. To this end I have directed the Secretaries of Defense and Interior to conduct a "conservation inventory" of all surplus lands.

HIGHWAYS More than any country ours is an automobile society. For most Americans the automobile is a principal instrument of transportation, work, daily activity, recreation and pleasure. By making our roads highways to the enjoyment of nature and beauty we can greatly enrich the life of nearly all our people in city and countryside alike.

Our task is two-fold. First, to ensure that roads themselves are not destructive of nature and natural beauty. Second, to make our roads ways to recreation and pleasure.

I have asked the Secretary of Commerce to take a series of steps designed to meet this objective. This includes requiring landscaping on all federal interstate primary and urban highways, encouraging the construction of rest and recreation areas along highways, and the preservation of natural beauty adjacent to highway rights-of-way.

Our present highway law permits the use of up to 3% of all federal-aid funds to be used without matching for the preservation of natural beauty. This authority has not been used for the purpose intended by Congress. I will take steps, including recommended legislation if necessary, to make sure these funds are, in fact, used to enhance beauty along our highway system. This will dedicate substantial resources to this purpose.

I will also recommend that a portion of the funds now used for secondary roads be set aside in order to provide access to areas of rest and recreation and scenic beauty along our nation's roads, and for rerouting or construction of highways for scenic or parkway purposes.

The Recreation Advisory Council is now completing a study of the role which scenic roads and parkways should play in meeting our highway and recreation needs. After receiving the report, I will make appropriate recommendations.

The authority for the existing program of outdoor advertising control expires on June 30, 1965, and its provisions have not been effective in achieving the desired goal. Accordingly, I will recommend legislation to ensure effective control of billboards along our highways.

In addition, we need urgently to work towards the elimination or screening of unsightly, beauty-destroying junkyards and auto graveyards along our highways. To this end, I will also recommend necessary legislation to achieve effective control, including Federal assistance in appropriate cases where necessary.

I hope that, at all levels of government, our planners and builders will remember that highway beautification is more than a matter of planting trees or setting aside scenic areas. The roads themselves must reflect, in location and design, increased respect for the natural and social integrity and unity of the landscape and communities through Which they pass.

RIVERS Those who first settled this continent found much to marvel at. Nothing was a greater source of wonder and amazement than the power and majesty of American rivers. They occupy a central place in myth and legend, folklore and literature.

They were our first highways, and some remain among the most important. We have had to control their ravages, harness their power, and use their water to help make whole regions prosper.

Yet even this seemingly indestructible natural resource is in danger.

Through our pollution control programs we can do much to restore our rivers. We will continue to conserve the water and power for tomorrow's needs with well-planned reservoirs and power dams. But the time has also come to identify and preserve free flowing stretches of our great scenic rivers before growth and development make the beauty of the unspoiled waterway a memory.

To this end I will shortly send to the Congress a Bill to establish a National Wild Rivers System.

THE POTOMAC The river rich in history and memory which flows by our nation's capital should serve as a model of scenic and recreation values for the entire country. To meet this objective I am asking the Secretary of the Interior to review the Potomac River basin development plan now

under review by the Chief of Army Engineers, and to work with the affected States and local governments, the District of Columbia and interested federal agencies to prepare a program for my consideration.

A program must be devised which will:

a. Clean up the river and keep it clean, so it can be used for boating, swimming and fishing.

b. Protect its natural beauties by the acquisition of scenic easements, zoning or other measures.

c. Provide adequate recreational facilities, and

d. Complete the presently authorized George Washington Memorial Parkway on both banks.

I hope action here will stimulate and inspire similar efforts by States and local governments on other urban rivers and waterfronts, such as the Hudson in New York. They are potentially the greatest single source of pleasure for those who live in most of our metropolitan areas.

TRAILS The forgotten outdoorsmen of today are those who like to walk, hike, ride horseback or bicycle. For them we must have trails as well as highways. Nor should motor vehicles be permitted to tyrannize the more leisurely human traffic.

Old and young alike can participate. Our doctors recommend and encourage such activity for fitness and fun.

I am requesting, therefore, that the Secretary of the Interior work with his colleagues in the federal government and with state and local leaders and recommend to me a cooperative program to encourage a national system of trails, building up the more than hundred thousand miles of trails in our National Forests and Parks.

There are many new and exciting trail projects underway across the land. In Arizona, a county has arranged for miles of irrigation canal banks to be used by riders and hikers. In Illinois, an abandoned railroad right of way is being developed as a "Prairie Path." In New Mexico utility rights of way are used as public trails.

As with so much of our quest for beauty and quality, each community has opportunities for action. We can and should have an abundance of trails for walking, cycling and horseback riding, in and close to our cities. In the back country we need to copy the great Appalachian Trail in all parts of America, and to make full use of rights of way and other public paths.

POLLUTION One aspect of the advance of civilization is the evolution of responsibility for disposal of waste. Over many generations society gradually developed techniques for this purpose. State and local governments, landlords and private citizens have been held responsible for ensuring that sewage and garbage did not menace health or contaminate the environment.

In the last few decades entire new categories of waste have come to plague and menace the American scene. These are the technological wastes--the by-products of growth, industry, agriculture, and science. We cannot wait for slow evolution over generations to deal with them.

Pollution is growing at a rapid rate. Some pollutants are known to be harmful to health, while the effect of others is uncertain and unknown. In some cases we can control pollution with a larger effort. For other forms of pollution we still do not have effective means of control.

Pollution destroys beauty and menaces health. It cuts down on efficiency, reduces property values and raises taxes.

The longer we wait to act, the greater the dangers and the larger the problem.

Large-scale pollution of air and waterways is no respecter of political boundaries, and its effects extend far beyond those who cause it.

Air pollution is no longer confined to isolated places. This generation has altered the composition of the atmosphere on a global scale through radioactive materials and a steady increase in carbon dioxide from the burning of fossil fuels. Entire regional airsheds, crop plant environments, and river basins are heavy with noxious materials. Motor vehicles and home heating plants, municipal dumps and factories continually hurl pollutants into the air we breathe. Each day almost 50,000 tons of unpleasant, and sometimes poisonous, sulfur dioxide are added to the atmosphere, and our automobiles produce almost 300,000 tons of other pollutants.

In Donora, Pennsylvania in 1948, and New York City in 1953 serious illness and some deaths were produced by sharp increases in air pollution. In New Orleans, epidemic outbreaks of asthmatic attacks are associated with air pollutants. Three-fourths of the eight million people in the Los Angeles area are annoyed by severe eye irritation much of the year. And our health authorities are increasingly concerned with the damaging effects of the continual breathing of polluted air by all our people in every city in the country.

In addition to its health effects, air pollution creates filth and gloom and depreciates property values of entire neighborhoods. The White House itself is being dirtied with soot from polluted air.

Every major river system is now polluted. Waterways that were once sources of pleasure and beauty and recreation are forbidden to human contact and objectionable to sight and smell. Furthermore, this pollution is costly, requiring expensive treatment for drinking water and inhibiting the operation and growth of industry.

In spite of the efforts and many accomplishments of the past, water pollution is spreading. And new kinds of problems are being added to the old:

--Waterborne viruses, particularly hepatitis, are replacing typhoid fever as a significant health hazard.

--Mass deaths of fish have occurred in rivers over-burdened with wastes.

--Some of our rivers contain chemicals which, in concentrated form, produce abnormalities in animals.

--Last summer 2,600 square miles of Lake Erie--over a quarter of the entire Lake-were almost without oxygen and unable to support life because of algae and plant growths, fed by pollution from cities and farms.

In many older cities storm drains and sanitary sewers are interconnected. As a result, mixtures of storm water and sanitary waste overflow during rains and discharge directly into streams, bypassing treatment works and causing heavy pollution.

In addition to our air and water we must, each and every day, dispose of a half billion pounds of solid waste. These wastes--from discarded cans to discarded automobiles-litter our country, harbor vermin, and menace our health. Inefficient and improper methods of disposal increase pollution of our air and streams.

Almost all these wastes and pollutions are the result of activities carried on for the benefit of man. A prime national goal must be an environment that is pleasing to the senses and healthy to live in.

Our Government is already doing much in this field. We have made significant progress. But more must be done.

Federal Government Activity

I am directing the heads of all agencies to improve measures to abate pollution caused by direct agency operation, contracts and cooperative agreements. Federal procurement practices must make sure that the Government equipment uses the most effective techniques for controlling pollution. The Administrator of General Services has already taken steps to assure that motor vehicles purchased by the Federal Government meet minimum standards of exhaust quality.

Clean Water

Enforcement authority must be strengthened to provide positive controls over the discharge of pollutants into our interstate or navigable waters. I recommend enactment of legislation to:

--Provide, through the setting of effective water quality standards, combined with a swift and effective enforcement procedure, a national program to prevent water pollution at its source rather than attempting to cure pollution after it occurs.

--Increase project grant ceilings and provide additional incentives for multi-municipal projects under the waste treatment facilities construction program.

--Increase the ceilings for grants to State water pollution control programs.

--Provide a new research, and demonstration construction program leading to the solution of problems caused by the mixing of storm water runoff and sanitary wastes.

The Secretary of Health, Education, and Welfare will undertake an intensive program to dean up the Nation's most polluted rivers. With the cooperation of States and cities--using the tools of regulation, grant and incentives--we can bring the most serious problem of river pollution under control. We cannot afford to do less.

We will work with Canada to develop a pollution control program for the Great Lakes and other border waters.

Through an expanded program carried on by the Departments of Health, Education, and Welfare and Interior, we will continue to seek effective and economical methods for controlling pollution from acid mine drainage.

To improve the quality of our waters will require the fullest cooperation of our State and local governments. Working together, we can and will preserve and increase one of our most valuable national resources--clean water.

Clean Air

The enactment of the Clean Air Act in December of 1963 represented a long step forward in our ability to understand and control the difficult problem of air pollution. The 1966 Budget request of 24 million dollars is almost double the amount spent on air pollution programs in the year prior to its enactment.

In addition, the Clean Air Act should be improved to permit the Secretary of Health, Education, and Welfare to investigate potential air pollution problems before pollution happens, rather than having to wait until the damage occurs, as is now the case, and to make recommendations leading to the prevention of such pollution.

One of the principal unchecked sources of air pollution is the automobile. I intend to institute discussions with industry officials and other interested groups leading to an effective elimination or substantial reduction of pollution from liquid fueled motor vehicles.

Solid Wastes

Continuing technological progress and improvement in methods of manufacture, packaging and marketing of consumer products has resulted in an ever mounting increase of discarded material. We need to seek better solutions to the disposal of these wastes. I recommend legislation to:

--Assist the States in developing comprehensive programs for some forms of solid waste disposal.

--Provide for research and demonstration projects leading to more effective methods for disposing of or salvaging solid wastes.

--Launch a concentrated attack on the accumulation of junk cars by increasing research in the Department of the Interior leading to use of metal from scrap cars where promising leads already exist.

Pesticides

Pesticides may affect living organisms wherever they occur.

In order that we may better understand the effects of these compounds, I have included increased funds in the budget for use by the Secretaries of Agriculture, Interior, and Health, Education, and Welfare to increase their research efforts on pesticides so they can give special attention to the flow of pesticides through the environment; study the means by which pesticides break down and disappear in nature; and to keep a constant check on the level of pesticides in our water, air, soil and food supply.

I am recommending additional funds for the Secretary of Agriculture to reduce contamination from toxic chemicals through intensified research, regulatory control, and educational programs.

The Secretary of Agriculture will soon submit legislation to tighten control over the manufacture and use of agricultural chemicals, including licensing and factory inspection of manufacturers, clearly placing the burden of proof of safety on the proponent of the chemical rather than on the Government. Research Resources

Our needs for new knowledge and increasing application of existing knowledge demand a greater supply of trained manpower and research resources.

A National Center for Environmental Health Sciences is being planned as a focal point for health research in this field. In addition, the 1966 budget includes funds for the establishment of university institutes to conduct research and training in environmental pollution problems.

Legislation recommended in my message on health has been introduced to increase Federal support for specialized research facilities of a national or regional character. This proposal, aimed at health research needs generally, would assist in the solution of environmental health problems and I urge its passage.

We need legislation to provide to the Departments of Agriculture and the Interior authority for grants for research in environmental pollution control in their areas of responsibility. I have asked the Secretary of Interior to submit legislation to eliminate the ceiling on pesticide research.

Other Efforts

In addition to these needed actions, other proposals are undergoing active study.

I have directed the Chairman of the Council of Economic Advisers, with the appropriate departments, to study the use of economic incentives as a technique to stimulate pollution prevention and abatement, and to recommend actions or legislation, if needed.

I have instructed the Director of the Bureau of the Budget and the Director of the Office of Science and Technology to explore the adequacy of the present organization of pollution control and research activities.

I have also asked the Director of the Office of Science and Technology and the Director of the Bureau of the Budget to recommend the best way in which the Federal government may direct efforts toward advancing our scientific understanding of natural plant and animal communities and their interaction with man and his activities.

The actions and proposals recommended in this message will take us a long way toward immediate reversal of the increase of pollutants in our environment. They will also give us time until new basic knowledge and trained manpower provide opportunities for more dramatic gains in the future.

WHITE HOUSE CONFERENCE I intend to call a White House Conference on Natural Beauty to meet in mid-May of this year. Its chairman will be Mr. Laurance Rockefeller.

It is my hope that this Conference will produce new ideas and approaches for enhancing the beauty of America. Its scope will not be restricted to federal action. It will look for ways to help and encourage state and local governments, institutions and private citizens, in their own efforts. It can serve as a focal point for the large campaign of public education which is needed to alert Americans to the danger to their natural heritage and to the need for action.

In addition to other subjects which this Conference will consider, I recommend the following subjects for discussion in depth:

--Automobile junkyards. I am convinced that analysis of the technology and economics can help produce a creative solution to this vexing problem. The Bureau of Mines of the Interior Department can contribute technical advice to the conference, as can the scrap industry and the steel industry.

--Underground installation of utility transmission lines. Further research is badly needed to enable us to cope with this problem.

--The greatest single force that shapes the American landscape is private economic development. Our taxation policies should not penalize or discourage conservation and the preservation of beauty.

--Ways in which the Federal Government can, through information and technical assistance, help communities and states in their own programs of natural beauty.

--The possibilities of a national tree planting program carried on by government at every level, and private groups and citizens.

CONCLUSION In my thirty-three years of public life I have seen the American system move to conserve the natural and human resources of our land.

TVA transformed an entire region that was "depressed." The rural electrification cooperatives brought electricity to lighten the burdens of rural America. We have seen the forests replanted by the CCC's, and

watched Gifford Pinchot's sustained yield concept take hold on forestlands.

It is true that we have often been careless with our natural bounty. At times we have paid a heavy price for this neglect. But once our people were aroused to the danger, we have acted to preserve our resources for the enrichment of our country and the enjoyment of future generations.

The beauty of our land is a natural resource. Its preservation is linked to the inner prosperity of the human spirit.

The tradition of our past is equal to today's threat to that beauty. Our land will be attractive tomorrow only if we organize for action and rebuild and reclaim the beauty we inherited. Our stewardship will be judged by the foresight with which we carry out these programs. We must rescue our cities and countryside from blight with the same purpose and vigor with which, in other areas, we moved to save the forests and the soil.

LYNDON B. JOHNSON

The White House

February 8, 1965

Note: Plans for a White House Conference on Natural Beauty to be held May 24-25 in Washington were announced by the President on March 12 following a meeting with Laurance S. Rockefeller, Conference Chairman. In a White House release of that date the President stated that the a-day conference would concentrate on "concrete, immediate means for the preservation of natural beauty, through Federal, State, local, and private action."

"It is my hope and expectation," the President said, "that this Conference will help stimulate and guide a truly national effort--at every level of American life--to ensure that all our people can find their lives enriched by the beauty of the world they live in."

The release noted that Mrs. Johnson would open the Conference and that the President would make the closing address (see Item 277)- More than 800 conferees from private and public life would discuss "a wide range of topics concerning the effort to protect and extend the natural beauty of America." These topics, listed in the release, would be considered by panels composed of citizens, technical experts, representatives of industry and labor, and Government officials. Their recommendations would be presented to the President at the final session of the Conference.

Later, on May 7, the President announced the names of the chairmen of the 15 panels that would make up the Conference, and on May 18, the names of the 116 persons who had been invited to participate as panelists.

For statements or remarks upon signing related legislation, see Items 521, 543, 568, 576.

Lyndon B. Johnson, Special Message to the Congress on Conservation and Restoration of Natural Beauty. Online by Gerhard Peters and John T. Woolley, The American Presidency Project
https://www.presidency.ucsb.edu/node/241332

Annex 586

Declaration of the World Climate Conference, World Meteorological Organization, IOC/SAB-IV/INF.3, February 1979

W O R L D M E T E O R O L O G I C A L O R G A N I Z A T I O N

DECLARATION

OF THE

WORLD CLIMATE CONFERENCE

THE DECLARATION OF THE WORLD CLIMATE CONFERENCE

The World Climate Conference, a conference of experts on climate and mankind, held in Geneva, from 12 to 23 February 1979, was sponsored by the World Meteorological Organization in collaboration with other international bodies.

The specialists from many disciplines assembled for the Conference expressed their views concerning climatic variability and change and the implications for the world community. On the basis of their deliberations, they adopted the following.

An Appeal to Nations

Having regard to the all-pervading influence of climate on human society and on many fields of human activity and endeavour, the Conference finds that it is now urgently necessary for the nations of the world:

(a) to take full advantage of man's present knowledge of climate;

(b) to take steps to improve significantly that knowledge;

(c) to foresee and to prevent potential man-made changes in climate that might be adverse to the well-being of humanity.

The problem

The global climate has varied slowly over past millennia, centuries and decades and will vary in the future. Mankind takes advantage of favourable climate, but is also vulnerable to changes and variations of climate and to the occurrence of extreme events such as droughts and floods. Food, water, energy, shelter, and health are all aspects of human life that depend critically on climate. Recent grain harvest failures and the serious decline in some fisheries emphasize this vulnerability. Even normal variations and modest changes relative to the normal climate have a significant influence upon man's activities.

All countries are vulnerable to climatic variations, and developing countries, especially those in arid, semi-arid, or high rainfall regions, are particularly so. On the other hand, unfavourable impacts may be mitigated and positive benefits may be gained from use of available climate knowledge.

The climates of the countries of the world are interdependent. For this reason, and in view of the increasing demand for resources by the growing world population that strives for improved living conditions, there is an urgent need for the development of a common global strategy for a greater understanding and a rational use of climate.

Man today inadvertently modifies climate on a local scale and to a limited extent on a regional scale. There is serious concern that the continued expansion of man's activities on earth may cause significant extended regional and even global

changes of climate. This possibility adds further urgency to the need for global co-operation to explore the possible future course of global climate and to take this new understanding into account in planning for the future development of human society.

Climate and the future

Climate will continue to vary and to change due to natural causes. The slow cooling trend in parts of the northern hemisphere during the last few decades is similar to others of natural origin in the past, and thus whether it will continue or not is unknown.

Research is revealing many basic features of climatic changes of the past and is providing the basis for projections of future climate. The causes of climate variations are becoming better understood, but uncertainty exists about many of them and their relative importance.

Nevertheless, we can say with some confidence that the burning of fossil fuels, deforestation, and changes of land use have increased the amount of carbon dioxide in the atmosphere by about 15 per cent during the last century and it is at present increasing by about 0.4 per cent per year. It is likely that an increase will continue in the future. Carbon dioxide plays a fundamental role in determining the temperature of the earth's atmosphere, and it appears plausible that an increased amount of carbon dioxide in the atmosphere can contribute to a gradual warming of the lower atmosphere, especially at high latitudes. Patterns of change would be likely to affect the distribution of temperature, rainfall and other meteorological parameters, but the details of the changes are still poorly understood.

It is possible that some effects on a regional and global scale may be detectable before the end of this century and become significant before the middle of the next century. This time scale is similar to that required to redirect, if necessary, the operation of many aspects of the world economy, including agriculture and the production of energy. Since changes in climate may prove to be beneficial in some parts of the world and adverse in others, significant social and technological readjustments may be required.

Increasing energy use and thus release of heat have already caused local climatic changes. In the future such heat sources from densely populated and heavily industrialized regions could possibly have some effects on climate on a larger scale. Other human activities such as agriculture, pastoral practices, deforestation, increased use of nitrogen fertilizers and release of chlorofluoromethanes might have climatic consequences and therefore require careful study. Also, a systematic search for still other possible effects on climate of major human efforts is needed.

Some forms of warfare have local climatic effects. World thermonuclear conflict, besides its catastrophic consequences for mankind, would degrade the natural environment and might cause climatic changes on a large scale.

It is conceivable that in the future man may be able to produce limited changes in climate on a large scale by deliberate intervention. It would be

irresponsible to consider such actions until we have acquired the essential understanding of the mechanisms governing climate that is needed to predict the consequences. Moreover, international agreement must be reached before such projects are implemented.

Conclusions and Recommendations

The World Climate Programme proposed by the World Meteorological Organization deserves the strongest support of all nations

Its main thrusts are:

- Research into the mechanisms of climate in order to clarify the relative roles of natural and anthropogenic influences. This will require the further development of mathematical models which are the tools for simulating, and assessing the predictability of, the climate system. They will also be used to investigate the sensitivity of climate to possible natural and man-made stimuli such as the release of carbon dioxide and to estimate the climatic response.

- Improving the acquisition and availability of climatic data. The success of the climate programme depends on the development of a vast amount of meteorological, hydrological, oceanographic and other pertinent geophysical data. Furthermore, climatic impact studies and practical application of knowledge of climate by nations in addition requires detailed information about their natural resources and socio-economic structures.

- Application of knowledge of climate in planning, development and management. This effort should include programmes to assist national meteorological and hydrological services to increase the awareness of users of the potential benefits to be gained through the use of climate information, to improve capabilities to provide and disseminate this information, and to facilitate training in nationally significant climate applications. It should include programmes to develop new methodologies for the application of climate data in the food, water, energy and health sectors.

- Study of the impacts of climatic variability and change on human activities and the translation of the findings of such studies in terms of greatest use to governments and the people. This will require improvements in our understanding of the relationships between climate and human society including:

  (i) The possible range of societal adjustments to climate variations and change;

  (ii) The characteristics of human societies at different stages of development and in different environments that make them especially vulnerable or resilient in the face of climate variability and change;

  (iii) The means by which human societies can protect against adverse consequences of, and take advantage of the opportunities presented by, climate variations and changes.

The overall purposes of the Programme are thus to provide the means to foresee possible future changes of climate and to aid nations in the application of climatic data and knowledge to the planning and management of all aspects of man's activities. This will require an inter-disciplinary effort of unprecedented scope at the national and international levels.

The conduct of the World Climate Programme involves a broad range of activities and requires leadership and co-ordination among international bodies and close collaboration among nations

It is fully recognized that the international co-operation which is the prerequisite for any world climate programme can only be successfully pursued under conditions of peace.

There is an immediate need for nations to utilize existing knowledge of climate and climatic variations in the planning for social and economic development

In some parts of the world, there is already sufficient information to provide many applied climate services. However, only a start has been made; data and expertise are generally lacking in developing countries. Programmes must be set up to assist them to participate fully in the World Climate Programme through training and the transfer of appropriate methodologies.

* * *

The long-term survival of mankind depends on achieving a harmony between society and nature. The climate is but one characteristic of our natural environment that needs to be wisely utilized. All elements of the environment interact, both locally and remotely. Degradation of the environment in any national or geographical area must be a major concern of society because it may influence climate elsewhere. The nations of the world must work together to preserve the fertility of the soils; to avoid misuse of the world's water resources, forests and rangelands; to arrest desertification; and to lessen pollution of the atmosphere and the oceans. These actions by nations will require great determination and adequate material resources, and they will be meaningful only in a world at peace.

Annex 587

Exchange of letters between Lee DuBridge and Senator Henry Jackson, National Archives and Records Administration-Office of Science and Technology, 1969, as referred to at paragraph 29 in the Expert Report of Professor Naomi Oreskes on Historical Knowledge and Awareness, in Government Circles, of the Effects of Fossil Fuel Combustion as the Cause of Climate Change, 29 January 2024 at page 91 of the Exhibit Bundle to the Written Statement submitted by the Republic of Vanuatu, 21 March 2024

The original records were obtained from the Repository of the National Archives at College Park, Maryland in the Records of the Office of Science and Technology Policy (*see* https://www.archives.gov/college-park (last accessed on 11 July 2024)). The National Archives at College Park can be contacted for assistance by phone (at +1-866-272-6272) or email (at inquire@nara.gov)

March 25, 1969

CONGRESSIONAL Jackson

Dear Senator Jackson:

The effect referred to by Mr. Watson in his letter is the "greenhouse effect" due to concentrations of carbon-dioxide in the atmosphere. It is known that high concentrations of CO_2 in the atmosphere will tend to admit and retain heat radiation from the sun in such a way as to warm the climate. It is also true that beginning with the main part of the industrial revolution we have been steadily increasing the proportion of carbon-dioxide in the atmosphere. During the years since 1900 the amounts have been especially noticeable and future projections indicate a continuing upward trend. Furthermore, there is little doubt that the automobile contributes a very significant fraction of this carbon-dioxide.

What effect this increased carbon-dioxide is having and will have on our atmosphere and our climate is by no means so clear. At the same time we have been experiencing an increase in carbon-dioxide in the atmosphere there has been a considerable growth of dust and particulate matter at our levels of altitude in the world atmosphere. The source of a good deal of this dust is from China and India due to changes of agricultural practice and perhaps connected with some of the droughts of recent years. The effect of the dust in the atmosphere particularly at the higher altitudes, is to increase the reflectivity of that upper portion of the atmosphere so that a fraction of the heat does not even reach the earth's surface much less be retained there. As you can see these two changes in our atmosphere have generally opposite effects. Experts are not in agreement at the moment as to the future expectations of these changes. We have had, however, increased carbon-dioxide for long enough to get an idea of what that effect is. The most recent evidence from study of past climates is that comparison of the 1830 to 1860 period with the period 1920 to 1940 shows that there indeed was a warming trend in this country for that period. The form that this seemed to take was a displacement of weather patterns northward such that the northern portion of our country was significantly warmer in this later time than it was in the mid-nineteenth century. The substantial increase in dust and

particulate matter came somewhat later and it appears that these concentrations became significant only in the 1930s and 1940s and subsequently. Again the study of climate shows that we may be cooling somewhat from the warmest period 1920 to 1940. Current detailed studies in Wisconsin show that the climate patterns 1940 to 1960 are similar to those of the mid-nineteenth century.* The inference has been made that the CO_2 effect was dominant from about 1890 to 1940 at which time the dust in the atmosphere became more influential. Thus we had at first a warming period and then a cooling period. There should be some caution in making cause and effect statements, even on the basis of this data, because longer term studies of climate show that we have had fluctuations back at least to the twelfth century in the climates of Europe for which such convenient explanations are not readily available.

I do not imply by any of this that the problem is not of considerable importance. We are indeed filling the atmosphere with a great many gases and in very large quantities from our automobiles, from industry, and from the burning of fossil fuels. At the same time we could to something about the dust and particulate matter contributed to the atmosphere if it were sufficiently important to do so. We are, in a word, performing a gigantic experiment on ourselves. It seems to me of great importance that we know the meaning of this experiment and its possible outcomes before discovering them too late and perhaps to our sorrow.

Very truly yours,

Lee A. DuBridge

Lee A. DuBridge
Science Adviser

Honorable Henry M. Jackson
United States Senate
Washington, D. C. 20510

cc: DuBridge file and chron
OST file and chron
JSteinhart: file
JSteinhart:ld chron

S&T Control No. 328

Studebaker/White House
Mr. Barlow

* A recent study of the climate problem may be found in a paper by E. W. Wahl entitled "Comparison of the Climate of the Eastern United States during the 1830s with the Current Levels" in Monthly Weather Review, Volume 96, Number II, page 73 to 82.

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United States Senate

COMMITTEE ON
INTERIOR AND INSULAR AFFAIRS
WASHINGTON, D.C. 20510

March 18, 1969

Dr. Lee A. Dubridge
Science Advisor to the President
Executive Office Building
Washington, D. C.

Dear Sir:

The enclosed is respectfully submitted to you for every proper consideration.

Please provide me with a report in duplicate, and return the enclosure to me with your response.

Sincerely yours,

Henry M. Jackson, U.S.S.

HMJ:sg
enc.

328

Dat Comm. No. _____

AIR MAIL

MAR 8 1969

Please return to
SENATOR HENRY M. JACKSON

Devin & Watson, Incorporated | Consultants in Printed Communications

March 6, 1969

Honorable Henry M. Jackson, Senator
Senate Office Building
Washington, D. C.

Dear Senator Jackson,

On a recent edition of the Merv Griffin TV show, one of America's premier kooks, Allen Ginsberg, made an "appearance."

Like most Americans, I hope, I am usually repelled at the currently popular show biz habit of exhibiting deranged people for the amusement of the crowds. It is a sick, sick form of entertainment, not far removed from the earlier days when the public was admitted to asylums on Sundays to tease the inmates.

In this case my inclination to turn him off was delayed by a most remarkable charge he made. What he said, if there is even a modicum of fact attached to it, bears investigation. His accusation went something like this:

> A man who was one of the President's science advisers (whether advisor to Johnson or Nixon he did not say) has recently said that at the current rate of air pollution brought about by the proliferation of automobiles and "their excrement", within twenty years there would be a permanent cloud of polluted atmosphere surrounding the earth. This cloud would be such that the heat of the sun would penetrate it to the earth but it would not allow the heat to escape back to space. The result would be a rapid buildup of heat on the earth which would melt the polar ice caps, causing a flooding of the greater part of the globe and thus exterminate life.

No one on the show challenged this remarkable statement, either as to its practical possibility or its reputed source.

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Corr. Cont. No.

Penthouse, Colman Building, Seattle, Washington 98104 | Telephone MAin 3-2956

I would very much appreciate your efforts to throw light on this and recommend that a public statement by responsible public officials be made in refutation -- if it is refutable. After all, quite a few million people watch this show, people of widely varying degrees of intelligence, and the possibility of this sort of charge -- even from an Allen Ginsberg -- being accepted even in part, is dangerous.

I further suggest that the Griffin show put a responsible person on, as soon as possible, to tell those same millions of listeners the facts. If the truth turns out to be different from Ginsberg's charge, I suggest that the Griffin people owe an abject (yes abject) apology to the public. There is no excuse for irresponsibility on the part of people who have the ear of millions of people -- any more than there is an excuse for irresponsibility on the part of any government official.

Harry M. Watson

Harry M. Watson
2614 N.E.Ballinger Way
Seattle, Washington 98155

HMW/eq

Annex 588

"Railways: Use of Continuous Welded Rail", *House of Lords Debate,* 5 November 1969, as cited at paragraph 23 in the Expert Report of Professor Naomi Oreskes on Historical Knowledge and Awareness, in Government Circles, of the Effects of Fossil Fuel Combustion as the Cause of Climate Change, 29 January 2024 at page 91 of the Exhibit Bundle to the Written Statement submitted by the Republic of Vanuatu, 21 March 2024

RAILWAYS: USE OF CONTINUOUS WELDED RAIL

HL Deb 05 November 1969 vol 305 cc335-9

2.36 p.m.

LORD NUGENT OF GUILDFORD My Lords, I beg leave to ask the Question which stands in my name on the Order Paper.

[The Question was as follows:

To ask Her Majesty's Government whether they will make a statement concerning British Railways policy with regard to laying down long welded rail, and what special safety measures are being taken in that connection.]

THE PARLIAMENTARY UNDER-SECRETARY OF STATE FOR DEFENCE, R.A.F. (LORD WINTERBOTTOM) My Lords, the British Railways Board, whose responsibility this is, have informed my right honourable friend the Minister of Transport that they intend to extend the mileage of continuous welded rail as quickly as possible. There are several reasons for their adoption of this policy. It will lead to an increased life for the track components and reduced maintenance costs: it will lead to a smoother ride for the rail vehicles using the track and for the passengers in them; most importantly, there will be a greatly reduced risk of broken rails, and such breaks as do occur will be likely to be less dangerous.

The Board say that since 1960, when the laying of continuous welded rail was started, the Code of Practice they have been using has been regarded as satisfactory. But the unusual weather conditions and the high occurrence of track distortions in continuous welded rail in the recent summer have shown that the margins already provided must be increased to ensure the stability of continuous welded track. Your Lordships may be interested to learn that the distortions in jointed track in 1969 have also been greatly above average. The special measures the Board have now put in hand to increase the margins of resistance to heat distortion in continuous welded track take the form of increased ballast provision and of the re-adjustment of the continuous rails themselves to a higher stressfree temperature condition than has hitherto been deemed necessary. This work should be completed before the onset of the hot weather of 1970.

LORD NUGENT OF GUILDFORD My Lords, I thank the noble Lord for his full Answer to my Question. May I ask him whether he is aware that, in the light of recent accidents, there is a good deal of anxiety about the safety of the continuous welded rail, despite its obvious advantages? There are two questions that I do not think the noble Lord completely answered in his full reply, which I should like to study. The first is whether the continuous welded rail is out of the experimental stage; and secondly, whether experience in this country and elsewhere has been sufficient to establish all the facts needed for satisfactory laying down and maintenance. If the answer to the second question is "Yes", why are we still having trouble? If the answer is "No", can the noble Lord tell us what action, other than what he has now told us, is being taken to establish maintenance satisfactorily?

LORD WINTERBOTTOM My Lords, first of all, we are in close contact with other nations using continuous welded rail. There is a constant interchange of information between ourselves and other countries using this system. If I may be completely frank with the noble Lord, I think the problem is that it is well beyond the experimental stage. In the beginning of this process from 1960 there were no accidents, but it is considered that it is possible, although by no means certain, that as continuous welded rail becomes a commonplace perhaps the standards to which this track is laid are not as closely rigid as was the case in the early stages of laying continuous welded track. In my Answer your Lordships will have noted that the Code of Practice is being surveyed and tightened up to ensure that the admittedly rising number of accidents in continuous welded rail do not in fact continue. The result of the inquiry into the accident at Somerton may show that the abnormally good weather conditions this summer caused the accident.

LORD NUGENT OF GUILDFORD My Lords, may I ask the noble Lord one further question? Is he aware that his reference to the abnormally good weather conditions of this summer and the higher temperatures, is rather disturbing? Is he further aware that in other countries in Europe and America, where far higher temperatures obtain, a great deal of experience must have been gained, with wider ranges of temperature difference between summer and winter? And is the noble Lord aware that there is a rather uncomfortable feeling that there his not been quite the sufficiency of care given to this innovation that there ought to have been?

LORD WINTERBOTTOM My Lords, the noble Lord may think it worth while to debate the report on the accidents that have taken place which will appear early in the new year.

BARONESS WOOTTON OF ABINGER My Lords, my noble friend has said that welding will increase the life of the rail. Can he give us an assurance that it will not diminish the life of the passengers?

VISCOUNT ST. DAVIDS My Lords, can my noble friend say whether he and British Railways have taken account of the fact that what were abnormal temperatures last summer may not be abnormal if we continue to discharge carbon dioxide into the air by the burning of various fossil carbons, so increasing the greenhouse effect?

THE MARQUESS OF ABERDEEN AND TEMAIR My Lords, is it possible that welded rails can be satisfactorily used for very complicated crossovers, such as exist outside London Bridge?

LORD WINTERBOTTOM My Lords, that is a technical question which I am afraid I am not able to answer. This may come out in the inquiry.

EARL FERRERS My Lords, can the noble Lord clear up one point? In one of his replies to my noble friend he said, I think, that the standards used now are not so accurate as the standards used in 1960. Did the noble Lord mean that the standards used now are different, or that the implementation of the standards is not as precise as it was?

LORD WINTERBOTTOM My Lords, it is just possible that familiarity may be breeding some contempt, if I may put it this way, and it is for this reason that the Railways Board are re-examining the codes of procedure relating to the laying of this track.

BARONESS WOOTTON OF ABINGER My Lords, my noble friend did not answer my question, apparently on the ground that it was thought to be frivolous. It was not frivolous, and I would ask: can he give us an assurance that the welded rail is not shortening the lives of the passengers?

LORD WINTERBOTTOM My Lords, if I may say so, that is a very different question.

LORD BELSTEAD My Lords, the noble Lord has given us a wealth of information but, arising out of the question of the noble Baroness, Lady Wootton, can he tell us where the experiments on which a great many of his statements are based are taking place?

LORD WINTERBOTTOM My Lords, I shall have to write to the noble Lord on that point.

LORD KILMANY My Lords, will the noble Lord take into consideration the anxiety of other Members of this House, and will he not make it possible for the whole House to be aware of this interesting information when he has ascertained it?

LORD WINTERBOTTOM My Lords, may I repeat what I said? The accidents that took place this summer are at present the subject of a study, and a report will be issued early in the new year. Without doubt, it will be a very detailed report. May I suggest to noble Lords that its publication may provide an opportunity to discuss the implications of the accidents that are taking place.

THE LORD BISHOP OF EXETER My Lords, may I ask the noble Lord whether this report will also cover the accident at Somerton in Somerset?

LORD WINTERBOTTOM Yes, my Lords, that is correct; it will.

Annex 589

German Bundestag, Plenary Protocol 8/126 of the 126 Session, 15 December 1978, pages 9873-9874 (German original of pages 9873-9874 and English translation of Annex 12)

Translated Extract of German Bundestag, Plenary Protocol 8/126 of the 126 Session, 15 December 1978, pages 9873-9874

[. . .]

Annex 12

Answer by Parliamentary State Secretary Zander to the oral questions by **Dr Linde** (SPD) (printed matter 8/2365 questions A 61 and 62): What importance does the Federal Government attach to climate research from a medical point of view and from the point of view of the work of climatic health resorts, and what knowledge does the Federal Government have of the effects of climate change on the human organism? Is the Federal Government prepared to advocate that the multi-annual research programme of the European Communities in the field of climatology (printed matter 8/2271) should also include the effects of climate on humans in addition to the interactions between "humans and climate", so that more reliable findings can be made available for the work of medicine in general and climatotherapy in particular?

Regarding question A 61:

The Federal Government attaches great importance to climate research, both from a medical point of view and from the point of view of the work of climatic health resorts. The climate of health resorts is a supportive therapeutic factor for certain ailments.

The German Medical Meteorological Research Centre of the German Meteorological Service in Freiburg is currently investigating the effects of weather and climate on humans. The main areas of investigation here include nervous complaints in amputees, the development of a climate atlas model with the possibility of bioclimatic evaluation of landscape areas, and individual advice on relocation for health or other reasons.

The findings of the German Weather Service are published on an ongoing basis in the reports of the German Weather Service and also in individual specialist journals and books.

Regarding question A 62:

The EC's climate research programme focuses, among other things, on the possible influence of carbon dioxide concentrations in the earth's atmosphere on the heat balance of the earth's surface and the significance of the release of energies into the atmosphere, as well

as the assessment of the possible effects of climate fluctuations on vegetation, for example. Climate-therapeutic topics are not addressed.

Research into the human influence on the climate is also accorded crucial importance outside the EC. At its 8th Congress in May 1979, the World Meteorological Organisation (WMO) will present a World Climate Programme on which numerous international associations are working.

Within the framework of the EC programme, studies on the impact of the climate on mankind would represent a considerable extension, and would also have an objective which differs greatly from the main thrust of the programme.

It therefore does not seem appropriate to extend the EC programme at this stage to the area you mentioned.

[. . .]

Deutscher Bundestag

Stenographischer Bericht

126. Sitzung

Bonn, Freitag, den 15. Dezember 1978

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Erste Beratung des von den Abgeordneten Hasinger, Dr. Hammans, Frau Schleicher, Burger, Dr. Becker (Frankfurt), Frau Dr. Neumeister, Frau Karwatzki, Dr. Meyer zu Bentrup und der Fraktion der CDU/CSU eingebrachten Entwurfs eines **Hebammengesetzes**

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Spitzmüller FDP . . . . . 9866 B

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(A) Die Bundesregierung beabsichtigt, um dieser Entwicklung zu entsprechen, ab 1980 auch die angehenden Studenten der Medizin und der Pharmazie unmittelbar nach dem Abitur wieder zum Grundwehrdienst einzuberufen. Für den Bereich der Zahnmedizin steht der Zeitpunkt noch nicht fest; insoweit muß die — derzeit noch etwas ungünstigere — Entwicklung von Bedarf und Aufkommen abgewartet werden.

Anlage 11

Antwort

des Parl. Staatssekretärs Dr. von Bülow auf die Mündliche Frage des Abgeordneten **Engelsberger** (CDU/CSU) (Drucksache 8/2365 Frage A 56):

Hat der Konteradmiral Hans-Hermann Vohs — wie in der Zeitung „Die Welt" vom 25. November 1978 gemeldet — in der November-Ausgabe der Zeitschrift „Marineforum" vor der „unzureichenden Fähigkeit der Allianz" gewarnt, politisch und militärisch auf die wachsende Macht der Sowjetflotte zu reagieren, da „nach der Herstellung des nuklearen Patts" die „östliche Supermacht" sich anschicke, „den Westen auch maritim herauszufordern", und wenn ja, teilt die Bundesregierung diesen Standpunkt und ist sie entschlossen, gemeinsam mit den Natopartnern verstärkte Anstrengungen zur Aufrechterhaltung einer wirksamen Abschreckung zu unternehmen?

Ich darf zunächst einmal feststellen, daß Konteradmiral Vohs in seinem Artikel in der Zeitschrift „Marineforum" seine persönliche Meinung vertreten hat.

(B) Die maritime Expansion der Sowjetunion ist seit rund 15 Jahren zu beobachten und hält unvermindert an. In einem kurzen Zeitraum hat die Sowjetunion als Führungsmacht des Warschauer Paktes sich von einer fast ausschließlich kontinental orientierten Landmacht zu einer weltweit handlungsfähigen und einflußreichen Seemacht entwickelt.

Diese Entwicklung erstreckt sich nicht nur auf die Marinestreitkräfte, sondern sie schließt auch die Staatshandelsflotte, die Fischerei- und Forschungsflotte ein. Sie kommt allerdings bei den vier Flotten der sowjetischen Kriegsmarine am augenfälligsten zur Geltung. Die sowjetische Kriegsmarine gilt heute als die stärkste nach der Marine der USA.

Die Verteidigungsminister der westlichen Allianz haben im Mai 1977 in Brüssel u. a. festgestellt, daß

> die Sowjetunion heute in der Lage sei, ihre Seemacht weltweit zur Geltung zu bringen ... Als Folge dieser Entwicklung ständen der Sowjetunion im Frieden wie im Krieg neue Möglichkeiten offen.

Die NATO-Staaten haben aus dieser gemeinsamen Lagebeurteilung bereits Konsequenzen gezogen.

Im Mai dieses Jahres haben die Staats- und Regierungschefs der Allianz das „langfristige Verteidigungsprogramm" der NATO verabschiedet. Hinsichtlich der Position der NATO zur See ist folgendes festgestellt worden, ich darf wörtlich zitieren:

Durch die Programme sollen kritische qualitative Mängel bei den vorhandenen und geplanten Einheiten der Seestreitkräfte mit besonderem Schwerpunkt auf Führung, Befehls- und **Fernmeldewesen, Luftverteidigung von Marineeinheiten, verbesserte Fähigkeit zur Bekämpfung von Unterseebooten sowie verbesserte** Überwasser -und Minenkriegsführung behoben werden. Es wurde festgestellt, daß der Fehlbestand an Schiffen, Unterseebooten und Flugzeugen den schwerwiegendsten Mangel darstellt, und daß im Rahmen der NATO-Planungsverfahren Lösungen hierfür gefunden werden sollten. (C)

Anlage 12

Antwort

des Parl. Staatssekretärs Zander auf die Mündlichen Fragen des Abgeordneten **Dr. Linde** (SPD) (Drucksache 8/2365 Fragen A 61 und 62):

Welche Bedeutung mißt die Bundesregierung der Klimaforschung aus medizinischer Sicht und aus der Sicht der Arbeit der heilklimatischen Kurorte zu, und welche Erkenntnisse bestehen im Zuständigkeitsbereich der Bundesregierung über die Wirkungen von Klima auf den menschlichen Organismus?

Ist die Bundesregierung bereit, sich dafür einzusetzen, daß in das mehrjährige Forschungsprogramm der Europäischen Gemeinschaften auf dem Gebiet der Klimatologie (Drucksache 8/2271) über die Interaktionen „Menschen — Klima" hinaus auch die Wirkung des Klimas auf den Menschen einbezogen wird, damit der Medizin allgemein und besonders der Klimatherapie gesichertere Erkenntnisse für die Arbeit zur Verfügung gestellt werden können? (D)

Zu Frage A 61:

Sowohl aus medizinischer Sicht als auch aus der Sicht der Arbeit der heilklimatischen Kurorte mißt die Bundesregierung der Klimaforschung große Bedeutung zu. Das Klima der Heilkurorte ist ein unterstützender therapeutischer Faktor bei bestimmten Leiden.

Die Deutsche medizin-meteorologische Forschungsstelle des Deutschen Wetterdienstes in Freiburg untersucht z. Z. die Einwirkungen von Wetter und Klima auf den Menschen. Untersuchungsschwerpunkte hierbei sind u. a. die nervlichen Beschwerden bei Amputierten, die Modellentwicklung eines Klima-Atlasses mit der Möglichkeit der bioklimatischen Bewertung von Landschaftsräumen, die individuelle Beratung bei Ortswechsel aus gesundheitlichen oder sonstigen Gründen.

Die Erkenntnisse des Deutschen Wetterdienstes werden laufend in den Berichten des Deutschen Wetterdienstes und auch in einzelnen Fachzeitschriften und Fachbüchern veröffentlicht.

Zu Frage A 62:

Schwerpunkte des Klimaforschungsprogramms der EG sind u. a. der mögliche Einfluß von Kohlendioxydkonzentration in der Erdatmosphäre auf den Wärmehaushalt der Erdoberfläche und die Bedeutung der Freisetzung der Energien in die Atmosphäre sowie ferner die Bewertung der möglichen

(A) Auswirkungen der Klimaschwankungen etwa auf die Vegetation. Klimatherapeutische Themen sind nicht angesprochen.

Der Erforschung des menschlichen Einflusses auf das Klima wird auch außerhalb der EG entscheidende Bedeutung zugemessen. Die Weltorganisation für Meteorologie (WMO) wird auf ihrem 8. Kongreß im Mai 1979 ein Weltklima-Programm vorlegen, an dem zahlreiche internationale Vereinigungen arbeiten.

Im Rahmen des EG-Programms würden Untersuchungen über die Einwirkung des Klimas auf den Menschen eine wesentliche Ausweitung bedeuten, auch hätten diese ein Ziel, das von der Hauptrichtung des Programms stark abweicht.

Es erscheint deshalb nicht zweckmäßig, das EG-Programm im jetzigen Stadium auf den von Ihnen erwähnten Bereich auszudehnen.

Anlage 13

Antwort

des Parl. Staatssekretärs Zander auf die Mündliche Frage des Abgeordneten **Wittmann** (Straubing) (SPD) (Drucksache 8/2365 Frage A 63):

Teilt die Bundesregierung die Auffassung des Bundesgesundheitsamts, daß ein potentielles Gesundheitsrisiko auf Grund des Vorkommens von Chloroform im Trinkwasser der gesamten Bundesrepublik Deutschland mit wünschenswerter Sicherheit nicht auszuschließen sei, und welche Folgerungen gedenkt sie aus dieser Feststellung zu ziehen?

(B)

Die Bundesregierung teilt die Auffassung des Bundesgesundheitsamtes, daß ein potentielles Gesundheitsrisiko bei Anwesenheit von Chloroform oder ähnlichen Stoffen im Trinkwasser mit wünschenswerter Sicherheit nicht auszuschließen ist. Chlor selbst dagegen ist in der durch die Trinkwasser-Aufbereitungs-Verordnung zugelassenen Konzentration gesundheitlich unbedenklich. Die Frage des gesundheitlichen Risikos der Reaktionsprodukte des Chlors kann jedoch nur unter Abwägung zwischen Risiko und Nutzen der Behandlung bewertet werden. Die Chlorung des Wassers ist heute noch unbedingt erforderlich, da sie in erster Linie dem Seuchenschutz dient. Die dabei entstehenden Substanzen sind somit letztlich die Folge von Sicherheitsmaßnahmen, die zum Schutze der Bevölkerung unerläßlich sind.

Um ein Risiko zu beseitigen oder wenigstens zu mindern, fördert die Bundesregierung bereits seit Jahren mit erheblichen Mitteln die Entwicklung neuer Verfahren zur Aufbereitung von Rohwasser zu Trinkwasser unter weitgehender Vermeidung des Einsatzes von Chlor. Mit diesen Verfahren soll die Bildung von Chloroform und ähnlichen Stoffen vermieden werden. Versuchsanlagen wie z. B. in Mühlheim/Ruhr sind bereits in Betrieb genommen, andere befinden sich im Bau. Das Bundesgesundheitsamt sucht darüber hinaus ebenfalls Wege zur Vermeidung dieser Reaktionsprodukte und hat auf der letzten Sitzung seiner Trinkwasserkommission beschlossen, hierfür eine besondere Arbeitsgruppe einzusetzen, die die möglichen Desinfektionsalternativen und die technischen Voraussetzungen anderer Wasseraufbereitungsverfahren abklären soll. (C)

Anlage 14

Antwort

des Parl. Staatssekretärs Wrede auf die Mündliche Fragen des Abgeordneten **Tönjes** (SPD) (Drucksache 8/2365 Fragen A 78 und 79):

Werden im Weihnachtsverkehr im Bereich der Bundesbahndirektion Frankfurt Bundeswehrsoldaten und im Bereich der Bundesbahndirektion Nürnberg Strafgefangene als Aushilfskräfte beschäftigt?

Wenn ja, wie verträgt sich diese Tatsache mit der Behauptung des Vorstandes der Deutschen Bundesbahn, daß z. Z. ein Personalüberhang von 20 000 Eisenbahnern besteht?

Im Bereich der Bundesbahndirektion Stuttgart (nicht Frankfurt) werden im Weihnachtsverkehr zur Bewältigung von Verkehrsspitzen als Aushilfskräfte bis zu 20 Berufssoldaten der Bundeswehr im Ladedienst beschäftigt, die sich dafür in ihrer Freizeit zur Verfügung gestellt haben. Die Bundesbahndirektion Nürnberg beschäftigt selbst keine Strafgefangenen. Im Bereich der Bundesbahndirektion Nürnberg werden aber seit 1970 im Gleisbauhof von Fall zu Fall im Rahmen von Unternehmerarbeiten auch einige (etwa 6—8) sogenannte Freigänger eingesetzt, d. h. Strafgefangene, die im Interesse der Resozialisierung tagsüber außerhalb der Strafanstalt arbeiten und nach Feierabend dorthin zurückkehren. (D)

In beiden Fällen handelt es sich um regional sehr begrenzten und jeweils nur kurzfristigen Arbeitskräftebedarf — im Weihnachtsverkehr sogar nur stundenweise —, für den ein Einsatz von an anderen Orten überzähligen Mitarbeitern nicht in Betracht kommen kann.

Im übrigen beträgt der durch den Rückgang des Personalbedarfs bei gleichzeitigem Verzicht auf Entlassungen bedingte Personalüberhang zur Zeit nur noch etwa 10 000 Dienstkräfte mit weiterhin rückläufiger Tendenz.

Anlage 15

Antwort

des Parl. Staatssekretärs Wrede auf die Mündliche Frage des Abgeordneten **Daweke** (CDU/CSU) (Drucksache 8/2365 Frage A 85):

Beabsichtigt die Deutsche Bundespost, in allen kleineren ländlichen Orten Poststellen zu schließen, und falls ja, wie will die Bundesregierung sicherstellen, daß auch im dünnbesiedelten ländlichen Raum künftig eine reibungslose Bedienung der Postkunden möglich ist?

Die Deutsche Bundespost beabsichtigt nicht, in allen kleineren ländlichen Orten die Poststellen zu schließen.

Von einer Arbeitsgruppe des Bundespostministeriums angestellte Überlegungen zur Landversor-

Annex 590

German Bundestag, Plenary Protocol 8/162 of the 162 Session, 22 June 1979, page 12964 (German original of page 12964 and English translation of Annex 65)

Translated Extract of German Bundestag, Plenary Protocol 8/162 of the 162 Session, 22 June 1979, page 12964, Annex 65

[. . .]

Annex 65

Answer by Parliamentary State Secretary Stahl to the written question by **Mr Biechele** (CDU/CSU) (printed paper 8/2969 Question B 79) : Is the Federal Government aware of the dangers posed to the global climate, and thus also to the climate in the Federal Republic of Germany, by the indiscriminate clearing of forests in Third World countries, and what steps can the Federal Government take to prevent this threat?

The Federal Government is aware of the dangers posed to the global climate by the clearing of large forests, including in the Third World. Deforestation contributes to further increasing the already high concentration of CO_2 in the biosphere. According to currently known estimates, the annual rate of CO_2 supply caused by deforestation is in the order of 1 to 5 billion tonnes of CO_2-C. If the increase in CO_2 in the atmosphere remains constant, negative effects on the global climate over the next 50 to 100 years are not unlikely.

The German government has therefore been endeavouring for years to promote environmentally friendly energy technologies, modern hydroelectric power plants, the use of solar energy, etc. to the countries of the Third World, the application of which makes the clearing of large areas of forest unnecessary. In this context, the German government considers appeals to developing countries alone to refrain from deforestation to be ineffective. Rather, the industrialised countries have a certain responsibility for the worldwide provision of new environmentally friendly forms of energy, also in view of the energy use they are pursuing.

Deutscher Bundestag

Stenographischer Bericht

162. Sitzung

Bonn, Freitag, den 22. Juni 1979

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Wolfram (Recklinghausen) SPD . . . . . 12922 D
Dr.-Ing. Laermann FDP . . . . . 12924 C

Erste Beratung des von der Bundesregierung eingebrachten Entwurfs eines Zweiten Gesetzes zur Verbesserung und Ergänzung sozialer Maßnahmen in der Landwirtschaft **(Zweites Agrarsoziales Ergänzungsgesetz)**
— Drucksache 8/2844 —

Buschfort, Parl. Staatssekretär BMA . . . 12926 B
Horstmeier CDU/CSU . . . . . 12927 B
Kirschner SPD . . . . . 12929 A
Paintner FDP . . . . . 12930 D

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(A) untersucht oder erforscht, die Ergebnisse daraus bedürfen der praktichen Erprobung. Bisher vorliegende Erkenntnisse möchte ich Ihnen an drei Beispielen erläutern.

— Stroh —

Durch Verbrennen von 1 kg Stroh können etwa 0,3 l Heizöl ersetzt werden. Bei den in der Bundesrepublik zwischen 3 bis 5 Millionen t Überschußstroh kann demnach mit einem Heizöl-Äquivalent von 1 bis 1,5 Millionen t gerechnet werden.

Die Strohverbrennung im landwirtschaftlichen Betrieb kann je nach Höhe des Stroh- und Heizölpreises kostengünstiger als die Ölverbrennung sein. Bei einem derzeitigen Preis für Heizöl von 0,50 DM/l und den Strohpreisen des vergangenen Jahres von 6 bis 7 DM/dt, kann eine derartige Strohnutzung heute bereits wirtschaftlich interessant sein. Bei den auf dem Markt befindlichen Strohverbrennungsöfen bedürfen allerdings die Beschickungsvorrichtungen und der emissionsarme Verbrennungsablauf einer wesentlichen Verbesserung.

— Biogas —

Bei der Biogasgewinnung hängt die Gasausbeute von der Zusammensetzung der zu verarbeitenden Stoffe ab (Rest- oder Abfallstoffe aus der Pflanzenproduktion und der Tierhaltung). Für Einrichtungen zur Speicherung, Aufbereitung und Dosierung des zu faulenden Gutes, für die Faulanlage mit Gasspeicherung, für die Reinigung und Verwertung des Gases sowie für die Zwischenlagerung des anfallenden
(B) Faulschlammes sind hohe Investitions- und Unterhaltungskosten erforderlich. An die Biogasanlagen werden hohe Anforderungen gestellt, deshalb sind qualifizierte Bedienung und Wartung Voraussetzung für das einwandfreie Funktionieren. Unter bestimmten Bedingungen (genügend Rest- oder Abfallstoffe und entsprechend dimensionierte Biogasanlage sowie optimal gewähltes Verfahren) kann der Energiebedarf eines landwirtschaftlichen Betriebes einschließlich Betreiben der Anlage aus dem gewonnenen Gas gedeckt werden. Für landwirtschaftliche Betriebe, die ihren Flüssigmist zur Geruchsbeseitigung behandeln müssen, kann das sog. Speicherverfahren der Biogasgewinnung eine sinnvolle und kostengünstige Lösung sein. Gleichzeitig kann ein hochwertiger geruchärmer Dünger gewonnen werden.

Bei Zusammentreffen mehrerer günstiger Umstände kann die Biogasgewinnung bei den derzeitigen Heizölpreisen (0,50 DM/l) wirtschaftlich sein. In der Mehrzahl der Fälle muß bei dem gegenwärtigen Entwicklungsstand der technischen Verfahren die Energieeinheit über Biogas drei- bis sechsmal teurer bezahlt werden als über Elektrizität oder Heizöl. An der Verbesserung und damit Verbilligung des bisher bekannten Verfahrens zur Biogasgewinnung wird gearbeitet.

— Äthanol —

Die Verwendung des Äthanol als Kraftstoff ist ohne technische Schwierigkeiten möglich, wenn es in Mengen von nicht mehr als 20 % dem Benzin oder nicht mehr als 3 % dem Dieselkraftstoff beigemischt wird. Höhere Beimischungen erfordern technische (C) Änderungen an den Motoren.

In der Bundesrepublik Deutschland könnte aus Zuckerrüben oder Mais Äthanol hergestellt werden. Die Herstellung von 1 l Äthanol aus Zuckerrüben mit 16 % Zuckergehalt würde gegenwärtig für Rohstoff, Verarbeitungs- und Reinigungskosten etwa 2,20 DM kosten. Bei Mais mit 60 % Stärkegehalt würde der Preis für 1 l gebrauchsfertiges Äthanol etwa 3,00 DM betragen. Bei diesen hohen Kosten muß außerdem bedacht werden, daß zur Gewinnung von 100 l Äthanol etwa 70 l Heizöl erforderlich sind. Da der Energiegehalt von Äthanol niedriger ist als der von Heizöl, würde bei der Äthanolherstellung mehr Energie verbraucht als gewonnen.

Eine Verbesserung dieser ungünstigen Relationen durch andere oder verbesserte Destillationsverfahren ist nicht ausgeschlossen. Deshalb wird auch an der Energiegewinnung aus nachwachsenden Rohstoffen weiter gearbeitet.

Anlage 65

Antwort

des Parl. Staatssekretärs Stahl auf die Schriftliche Frage des Abgeordneten **Biechele** (CDU/CSU) (Drucksache 8/2969 Frage B 79):

(D)

Sind der Bundesregierung die Gefahren bekannt, die durch das planlose Abholzen der Wälder in Ländern der Dritten Welt für das Weltklima und damit auch für das Klima in der Bundesrepublik Deutschland drohen, und welche Schritte kann die Bundesregierung unternehmen, um der drohenden Entwicklung vorzubeugen?

Der Bundesregierung sind die Gefahren bekannt, die durch Rodungen großer Wälder auch in der Dritten Welt für das Weltklima gegeben sind. Das Abholzen von Wäldern trägt dazu bei, die ohnehin hohe CO_2-Konzentration in der Biosphäre weiter zu vergrößern.

Nach derzeit bekannten Schätzungen liegt die durch Rodung bedingte jährliche Zufuhrrate an CO_2 in der Größenordnung von 1 bis 5 Mrd. t CO_2-C. Bei gleichbleibender Zunahme des CO_2 in der Atmosphäre sind negative Auswirkungen auf das Weltklima in den nächsten 50 bis 100 Jahren nicht unwahrscheinlich.

Die Bundesregierung ist daher schon seit Jahren bemüht, den Ländern der Dritten Welt umweltfreundliche Energietechnologien, moderne Wasserkraftwerke, Nutzung der Sonnenenergie u.a. zu vermitteln, bei deren Anwendung die Rodung großer Waldgebiete sich erübrigt. Appelle allein an die Entwicklungsländer, auf Abholzungen zu verzichten, hält die Bundesregierung in diesem Zusammenhang für wenig wirkungsvoll. Vielmehr kommt den Industrieländern auch angesichts des von ihnen verfolgten Energieeinsatzes eine gewisse Verantwortung für die weltweite Bereitstellung neuer umweltfreundlicher Energiearten zu.

Annex 591

Oral statement by Australia at the third session of the Conference of the Parties (COP 3) to the United Nations Framework Convention on Climate Change (UNFCCC), 8 December 1997

Australian Statement

Third Session of the Conference of the Parties

United Nations Framework Convention on Climate Change

8 December 1997

Senator the Honourable Robert Hill

Minister for the Environment

Mr President

Australia's National Response

Australia wants a durable and environmentally effective Kyoto agreement. Our collective efforts must demonstrate leadership and lay a solid foundation for a truly global response to climate change. We must particularly recognise those most acutely at risk - and for Australia, we think of our Pacific Island friends.

In Australia, we are implementing a major new program of greenhouse measures to address all greenhouse gas emissions and sources.

The measures Australia has now adopted will cut our growth in emissions by more than half. This is a real turning point. It means a reduction in Australia's per capita emissions of 4 percent against 1990.

We are boosting the uptake of electricity from renewable energy sources and providing substantial support for the commercialisation of renewable energy technologies. We are establishing a mandatory renewables target for electricity retailers. By 2010 eleven percent of our energy will come from renewable sources.

We are accelerating our energy market reforms, and introducing emissions standards for fossil fuel electricity generation. A broad range of national energy efficiency codes and standards for appliances, equipment and buildings will take Australia to best practice in these areas.

Australia's Environmental Strategy for the Automotive Industry will provide a fifteen percent improvement in fuel efficiency by 2010.

Australia is investing heavily in revegetation. We will treble our plantation forestry by 2020.

Industry is responding strongly to the challenge to cut emissions. We are extending our successful voluntary industry Greenhouse Challenge program to achieve greater uptake by industry. We are cutting emissions in the energy, transport, industrial, and household sectors.

We are boosting the uptake of electricity from renewable energy sources and providing substantial support for the commercialisation of renewable energy technologies. We are establishing a mandatory renewables target for electricity retailers. By 2010 eleven percent of our energy will come from renewable sources.

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Industry is responding strongly to the challenge to cut emissions. We are extending our successful voluntary industry Greenhouse Challenge program to achieve greater uptake by industry. We are cutting emissions in the energy, transport, industrial, and household sectors.

The participation of some 300 local governments by 2003, will realise major expansion of the international Cities for Climate Protection campaign.

Australia's action on climate change involves all levels of government. Australia's action and the measures recently announced are unconditional. We are not waiting on what others are prepared to do.

Australia is taking this action now. We are going well beyond any greenhouse action previously undertaken in our country and well beyond what is contemplated by many others at this time. It is at significant economic cost. It involves action across the whole Australian community.

With the inclusion of land-use change and forestry in this agreement we will have cost effective opportunities to cut further our net emissions.

A fully comprehensive approach with all sectors, sources and sinks included - just as the IPCC instructs - will allow us to commit to significant reductions below what we have already said we can do.

The International Response

Throughout these negotiations, Australia has maintained that to be environmentally effective the Kyoto agreement must be:

- fair
- realistic and achievable
- cost effective, and
- comprehensive in its coverage of all sources, sinks and greenhouse gases.

To achieve this, differentiated targets which ensure an equitable sharing of the costs of action across the whole of Annex 1 are essential.

For Australia, therefore, providing for cost effective solutions on the basis of a comprehensive approach is fundamental for a durable and effective agreement.

A Global Response

Climate change is a global problem requiring a global response. Developed country parties have agreed to take the first steps.

Developing countries are right to insist that their economies have the opportunity to modernise and grow. However, a lasting and effective global climate change response will involve us all. An essential part of the Kyoto outcome must be a process for commitment by us all.

We want this Kyoto Conference to mark a significant step forward. If we are prepared to make genuine commitments and ensure our commitments are fair to each other, then we can achieve that goal.

Annex 592

Oral statement by Indonesia at the third session of the Conference of the Parties (COP 3) to the United Nations Framework Convention on Climate Change (UNFCCC), 8 December 1997



MENTERI NEGARA
LINGKUNGAN HIDUP

STATEMENT BY
H.E. MR. SARWONO KUSUMAATMADJA
MINISTER OF STATE FOR ENVIRONMENT
OF THE REPUBLIC OF INDONESIA
BEFORE THE MINISTERIAL SEGMENT OF
THE THIRD CONFERENCE OF THE PARTIES
TO THE UNITED NATIONS
FRAMEWORK CONVENTION ON CLIMATE CHANGE

KYOTO, 8 DECEMBER 1997

PLEASE CHECK AGAINST DELIVERY

Mr. President,
Excellencies,
Distinguished Delegates,
Ladies and Gentlemen.

At the outset allow me on behalf of the Indonesian Delegation to express our sincere gratitude and appreciation to the Government and people of Japan for hosting this Conference and for the warm welcome and cordial hospitality that has been extended to us. I would also like to congratulate you, Mr. President, upon your election as a President of the Conference. We are confident, that under your wise guidance and able leadership, our Conference will arrive at successful Kyoto Protocol conclusion.

Mr. President,

Five years ago, in Rio, we met and adopted the Convention to combat climate change as scientific evidence has shown that the concentration of anthropogenic emissions of greenhouse gases has made a serious interference with the climate system. Regrettably, the alarm bells still continue to sound loud and clear on the growing threat to the long-term survival of the global climate. The expected implementation of the Convention is still far from being realized, despite the fact that we have acknowledged that the climate is at risk. Today in Kyoto, we meet to give guidance to the final stage of the realization of the Berlin Mandate. We should avoid ending up this meeting with no legally binding commitment of Annex I Parties in greenhouse gases emission reduction.

We are, however, gravely concerned in seeing this COP 3 process, as some developed countries have yet to show leadership to move this process forward in combating climate change and the adverse effects thereof. Instead, an attempt has been made to prematurely include the commitment of developing countries to cut emissions by introducing the concept of evolution for the Post-Kyoto process.

Mr. President,

We, the developing countries have in fact been undertaking actions, showing our serious commitment toward the achievement of the objective of the Convention. Indonesia, at the national level, has consistently pursued national development program by formulating its policy to reduce greenhouse gases emissions, as the Convention requires. As an equatorial, tropical, archipelagic state, and one of the countries with a large tropical forest, Indonesia has unique role as carbon sink whilst being vulnerable to sea level rise at the same time. And as an oil exporting country, Indonesia is also paying greater attention to reduce the energy consumption level from fossil fuels related to greenhouse gases emissions sources by developing the use of other sources of energy as well as promoting energy efficiency. Especially after having experienced the environmental disaster recently due to forest fires, which is strongly related to the climate change phenomenon, Indonesia is more than ever aware of the adverse effects of climate change. Therefore, energy development, management of our marine and coastal resources, forest, sustainable agriculture, urban land use, are important issues related to the potential increase of greenhouse gases emissions.

Since we have limited national capacity and environmentally sound technology development options, we must count on various opportunities for international cooperation between Annex 1 and Non-Annex 1 Parties in order to implement the Convention. As such, Activities Implemented Jointly on pilot phase as an instrument for cooperation between developed and developing countries in limiting and controlling greenhouse gases emissions should be developed bilaterally or multilaterally, on a voluntary basis. During the implementation of the A.I.J. on pilot phase, there should be in our considered view no emission credit or trading be given to developed countries. New and additional financial resources as well as the transfer of technology should be sought to ensure its successful implementation and to meet the ultimate objective of the Convention i.e. the stabilization of the greenhouse gases concentration in the atmospheric system. To this end, human resources development and national capacity building in developing countries are imperative. May I also add that in combating the negative effects caused by adverse effects of climate change,

total commitment by government and private sector as well as non-governmental organization is absolutely necessary.

Mr. President,

There is no much time left to take action before the coming years in which global warming is continually increasing. It is therefore imperative that the developed country parties demonstrate their commitments not merely to reducing greenhouse gases emissions, but also to modify longer-term trends in anthropogenic emissions, from their production and consumption patterns and lifestyles. The developed countries must take decisive action now in order to pave the way for a strong agreement by adopting the Kyoto Protocol. Only after the developed country Parties take the lead in fulfilling their obligations under the Convention, could we then deem fair to start talking about the commitment of developing countries on a voluntary basis in the future. The success of the Kyoto Protocol will be indeed measured by the significance of emission reduction undertaken by the developed country Parties, and not by the participation of the developing countries whose per capita GHG emissions are relatively very low even in the years to come.

In conclusion, Mr. President, it is my firm belief that the developed and developing countries could cooperate closely in implementing the parties' commitments to the convention on the basis of fair and equitable sharing of benefit. I would also like to appeal to all Parties to demonstrate our commitment for a genuine partnership in continuing to advance the implementation of the expected Kyoto Protocol. To achieve this spirit, my delegation hopes that the Third Conference of the Parties could become a cornerstone upon which concrete actions toward our partnership to combat the adverse effects of climate change could be well founded.

I thank you Mr. President.

Annex 593

Oral statement by Finland at the third session of the Conference of the Parties (COP 3) to the United Nations Framework Convention on Climate Change (UNFCCC), 9 December 1997

CHECK AGAINST DELIVERY

Statement by Mr. Pekka Haavisto,
Minister for the Environment and Development Cooperation
of Finland
at
the Third Session of the Conference of the Parties
to the United Nations Framework Convention on Climate Change

9 December 1997

Mr. President,

Let me start by thanking the Government of Japan for all hospitality extended to the delegations during this conference. There could be no better place for discussing the future of the globe than this city of great history and determined policies to ensure its sustainable future.

Combatting climate change is a long-term goal with at least 100 years perspective. The UN Climate Convention signed at Rio in 1992 has only set the stage: we must now give those commitments concrete expression – we must take action.

Finland is prepared to do her share in the global effort, in particular within the context of the European Union. As an industrialized country, Finland has the responsibility to address climate change as a matter of urgency in order to contribute to sustainable development of our globe.

It is of critical importance that industrialised countries work together to introduce new forms of energy and new technology and adopt policies and measures to this end, including economic instruments. In Northern Europe, there is growing interest in green electricity. It means electricity produced with renewable energy: solar power, windpower, biomass, and waterpower. Finland has, indeed, been one of the most advanced countries in the world in the use of sustainably produced biomass and combined heat and power production.

Special attention should also be paid to the demand side. Environment related energy taxation could work as an incentive towards sustainable production and consumption patterns and ecoefficiency. Finland was also one of the first countries to introduce carbon dioxide taxation, already 1990.

The question of sinks is of great importance to Finland. In Finland, forests cover 76 % of the land area. We have a long tradition of sustainable forest management. Today, the growth of forests exceeds the rate of their utilization, and we are fully committed to maintaining this natural treasure for our future generations.

The focus on forests as sinks should not work against the goal of conserving the biodiversity. Therefore, a holistic approach to forests is necessary. This is one reason why we, together with the EU and many other countries have been advocating for a legally binding instrument for all types of forests to be developed within the framework of the Commission on Sustainable Development.

We have followed with concern the varying proposals for methods calculating sinks. Unclear concepts and the uncertainty of related methods may lead to unforeseen results. With hastily made decisions, countries, like ours, which have maintained and secured their forests and sinks, may be penalized for their efforts.

Mr. President,

Joint implementation by industrialized countries has aroused much interest in Finland. There is a great potential of reducing emissions in a cost-effective way in countries with economies in transition and in rapidly industrializing countries.

Finland emphasizes that the achievement of goals as well as future trends in global emissions from developing countries call for new types of cooperation by all Parties. Therefore, we have studied with great interest proposals of creating a Clean Development Mechanism through which developing countries will benefit from activities resulting in certified emission reductions and industrialized Parties may use such reductions to contribute to their compliance with the commitment under the Protocol.

At the same time we still see many open questions that need to be addressed in order to ensure that such a mechanism is transparent and credible. Independent verification of emission reductions is important. Furthermore, the new mechanism should not undermine the GEF's position as the financial mechanism of the Convention. Finland will also support the replenishment of GEF.

The role of technology development and diffusion in the reduction of green house gas emissions should not be forgotten either. The Climate Technology Initiative launched by OECD Member Countries offers an effective and flexible mechanism to enhance international collaboration in the field.

Mr President,

Finland will work for an ambitious outcome of this conference. We recognize that the most important part of the work has to be done at home. Achieving the targets will depend on domestic activities. The contribution of all actors – the state, private sector, local authorities and NGOs – is necessary. This has to be reflected in our decisions here and in our actions hereafter.

Thank you, Mr. President

Annex 594

Oral statement by Estonia at the third session of the Conference of the Parties (COP 3) to the United Nations Framework Convention on Climate Change (UNFCCC), 9 December 1997

Statement by H. E. Mr. Villu Reiljan,
Minister of the Environment of the Republic of Estonia
Third Conference of the Parties to the UN Framework Convention on Climate Change
Kyoto, 9 December 1997

Distinguished President, Dear Colleagues, Ladies and Gentlemen,

Allow me to start my statement with the appreciation of the hospitality of our hosts, Government of Japan, Mayor of Kyoto and people of this marvelous ancient capital of Japan. I trust this warm atmosphere will help us to reach a meaningful solution here in Kyoto, leading us towards the reduction of the emissions of greenhouse gases.

Preservation of the global climate system is our common and shared responsibility. The time is ripe for actions. Estonia is ready to commit itself to substantial legally binding reduction targets in line with the proposal of the European Community. We have considered reduction of emissions of main three greenhouse gases included in a basket, but we are also ready to discuss the inclusion of additional gases. Being a country with the economy in transition dealing with restructuring of our industry, we have additional opportunities for win-win solutions reducing further our greenhouse gases emissions. Our positive experience in implementing projects on activities implemented jointly with our Nordic neighbours, proved to be useful and therefore we are supportive for further elaboration of this mechanism in the frames of the Convention. Emission trading seems to have similar merits as well, but more time is needed to elaborate this ~~innovative tool~~ instrument, in order to introduce ~~it in a later stage~~.

Distinguished President, in our view only an ambitious legally binding agreement could lead us towards our goal, stabilization and reduction of the level of anthropogenic greenhouse gases in the atmosphere. In order to support the achievement of agreed quantified emission limitation and reduction objectives and make them really operational, the protocol or another legal instrument has to include a list of policies and measures, clearly designed to contribute to reduction of emissions of agreed gases, especially from fuel combustion, industry, transportation sectors as well as enhancement of sinks and encouragement of the use of renewable energy sources. Estonia is rich in forest and peat and has therefore a good potential to switch further to renewable energy sources. Preservation and sustainable use of natural resources is secured in Estonia by the Act on Sustainable Development and the Act on Forests. Therefore we seem to be able to achieve a reasonable balance between the use of renewable energy sources and ensure further enhancement of reservoirs and sinks. We are looking forward to fruitful discussion on net approach.

Distinguished President, mitigation of climate change and its adverse effects is cooperative exercise, which needs involvement of both developed and developing countries. Developed world should make clear its leadership, while most advanced

developing countries should start to take appropriate measures to reverse the trend of their greenhouse gases emissions without delay.

I would conclude my statement with the strong belief that our effort in Kyoto will result in further development and strengthening of international climate regime, with the main aim of preserving our planet to next generations.

Thank you.

Annex 595

Oral statement by Belgium at the third session of the Conference of the Parties (COP 3) to the United Nations Framework Convention on Climate Change (UNFCCC), 9 December 1997

STATEMENT BY MR. JAN PEETERS, STATE SECRETARY FOR SECURITY SOCIAL INTEGRATION AND ENVIRONMENT OF BELGIUM ,

TO THE CONFERENCE OF THE PARTIES OF THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

KYOTO, 9 DECEMBER 1997

Mr. Chairman,

Dear Colleagues, Delegates, Ladies and Gentlemen,

First of all, I would like to join in the remarks made by my colleague, Mr. Lahure, who spoke yesterday on behalf of the European Union and its member states. My country strongly endorses the positions taken by the European Union at this conference.

This week, we have to adopt legally binding commitments by the industrialised countries, who bear the historic responsibility for the current high concentrations of greenhouse gases in the atmosphere. The convention itself requires them to take the lead by reducing their emissions. This is a matter of justice and equity, to which my country fully subscribes. The capacity of the earth's atmosphere to absorb greenhouse gases is limited and, ultimately, we must find a way of achieving a more equitable sharing of this capacity between countries of North and South. We, political leaders of the industrialised world, will lose credibility in this matter, if we fail to reach a meaningful agreement at the end of this conference.

People everywhere want a better quality of life, which cannot be achieved merely by economic growth. But we understand that we cannot expect countries in which basic human needs are not yet adequately met to reduce their greenhouse gas emissions as long as the wealthiest and least energy-efficient countries take no effective action themselves.

We must therefore adopt targets for emission reductions which are not only realistic, but also transparent. Both in the calculation of the target itself, and in the way in which they are to be achieved. The worst possible outcome of this conference would be a protocol which appears ambitious but in reality creates many different loopholes which will allow a continued increase of the emissions of Annex I countries.

Belgium, as a country which exports 70 % of its production to the rest of the world, is a strong proponent of co-ordinated policies and measures. These policies would reinforce the actions we undertake nationally, and would also diminish the opposition against them. We support a market-oriented approach, but also recognise that markets can and must be oriented by economic instruments and fiscal measures which provide real incentives for increased energy efficiency and environmental responsibility. Governments must play their role, to ensure that markets give the right signals to producers and consumers.

Mr. Chairman, in reality we – in the North -- are all countries in transition. We must all achieve a transition from unsustainable modes of production and consumption to a sustainable way of life. At the end of this century, we must shift to a new model of social and economic development. One of the key elements of this model should be a new energy policy, which greatly increases the energy efficiency of our economies. Through such action, we will show that it is possible to increase the level of development of all people in the world, and that quality of life will not be diminished, but increased by a voluntarist approach to the problem of climate change.

Mr. Chairman, our population -- our voters -- have a legitimate desire for economic well-being and economic security. But they also want environmental security and a better quality of life for their children and their children's children. We will have to deliver both at this conference. It will only be a first step for the protection of our atmosphere. But the first step, like the first step of a child, is the most important one.

For policy-makers there cannot be a more rewarding task than to work for the well-being of the generations to come.

Annex 596

Oral statement by Ethiopia at the third session of the Conference of the Parties (COP 3) to the United Nations Framework Convention on Climate Change (UNFCCC), undated

Statement by the Minister of Water Resouces
Shiferaw Jarso
of the Federal Democratic Republic of Ethiopia

Thank you Mr. President
Distinguished Ministers and Delegates

Although our overriding priorities are poverty eradication, socioeconomic development and meeting the basic needs of our people we recognize that climate change is a global problem which needs a global solution. Every nation has to be involved to combat climate change.

Since the Rio Earth Summit, like other developing countries, Ethiopia has taken a number of steps related to the Climate Convention at the national level, including ratifying the Convention, identifying national focal institutions for coordinating and follow up, conducting inventory of GHGs, vulnerability, adaptation, and mitigation assessments in collaboration with the US climate Change Country Study Program, and participating in important meetings of the UNFCCC. Currently Ethiopia is to start enabling activities, which will help in preparing her national communication to the UNFCCC using the financial support obtained from the GEF through the UNDP.

We believe that developed country parties has to enhance such activities by providing adequate financial and technical support as well as appropriate technology transfer.

The IPCC finding indicates that a deep cut in GHGs emission has to be made to migrate and stop Global Warming. The Kyoto protocol is a first step in a long way. In this respect, developing country parties at some stage in the future has to make commitments to limit their GHGs

reductions.

The historical responsibility of developed nations in the reduction of GHGs has been acknowledged in the Berlin mandates. At the present stage it is our firm position that emission reduction proposals must not include legally binding targets for Non-Annex I Parties. If developed country parties are serious about addressing the problem of climate change they have to drastically reduce their GHGs emissions.

We are concerned that a weak protocol with many potential loopholes such as the not-well discussed and formulated concepts of , Net approach, Emission Trading, Exclusion of Hydrofluorocarbons(HFCs), Perfluorocarbons(PFCs), and Sulphurhexafluoride(SF6) will result in an overall increase rather than decrease of actual emission to the atmosphere above the current levels from Annex 1 parties. However we believe clearly formulated and properly discussed with clear methodologies of joint implementation may in the future contribute to our sustainable development objectives.

I would like to convey my appreciate to the Government and the people of Japan for their warm hospitality and honor accorded to us during the historic third conference of the parties to the Framework Convention on Climate Change.

I thank you.

Annex 597

Oral statement by the Republic of Korea at the third session of the Conference of the Parties (COP 3) to the United Nations Framework Convention on Climate Change (UNFCCC), undated

(Check Against Delivery)

Statement by
H.E. Mr. Yoon Yeo-joon
Minister of Environment
of the Republic of Korea
at the Third Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change

December 8, 1997

Kyoto, Japan

Mr. President,
Excellencies,
and Distinguished Delegates,

It gives me great pleasure to begin by congratulating Minister Ohki on his election as the President of this important Conference. I have no doubt that under his able and insightful leadership, this Conference will produce many valuable results. I would also like to commend the government and people of Japan for taking the lead in global environmental preservation by hosting this Conference.

In the two years since the first session of the conference, we have been engaged in truly difficult negotiations on many complicated issues. Despite the collective view among nations that the prevention of climate change is a common task for all humankind, reconciling the differences between nations regarding the specific scope, logistics, and time-frame of the preventive measures has by no means been easy.

Protecting our precious Earth is a responsibility that we, as members of the global community, must all actively fulfill. At the same time, we must not lose sight of every nation's inalienable right to pursue social and economic development.

Industrialized nations have already exercised their power to develop in spite of limited resources of the Earth and I believe they should not inhibit the rightful efforts of other nations to improve their standards of living.

Most of today's developing nations are undertaking development based on the model set by advanced nations, and these efforts will continue in the future. Therefore, advanced nations that have successfully exercised their resources and abilities for development must take the lead in setting an example of protecting and preserving the environment which the rest of the world can follow.

The Republic of Korea lost virtually everything during the Korean War. Losses in social infrastructure, industrial facilities, and damages to the environment were devastating, not to mention the millions of lives that were lost. Despite such adverse conditions, the Korean people worked strenuously for over 40 years to achieve some economic growth, and such growth should continue in the future.

I would like to draw your attention to the fact that Korea's present energy-intensive industrial structure is the result of its industrialization process of the 1970's, which was centered on the petrochemical industry. It should also be pointed out that it will take time before Korea's energy consumption can be stabilized to the levels of most of Annex I parties to the Convention.

As you are all aware, Korea relies heavily on imports for most of its energy. The Korean government has been steadily pushing policies aimed at energy conservation and management of energy demand since the oil crises of the 1970's. Such policies can be seen as both direct and indirect extensions of the Korean government's efforts for climate change prevention.

I have no doubt that this Conference will serve as a catalyst for strengthening Korea's energy-related policies as set forth in the recently formulated national energy plan.

By linking our industrial policy with energy policy on a mid- to long-term basis, the Korean government is striving to create an industrial structure that is both environmentally friendly and less energy-consuming.

Korea intends to be as active participant in the worldwide environmental protection effort within the context of its social and economic capabilities.

The 21st Century is being called the "Century of the Environment."

I am convinced that the preservation of the Earth for all future generations will only be possible when the concept of environmentally sound and sustainable development takes root in the global community, and when every nation participates in the concerted effort to protect the environment.

To that end, all participants of this Conference should strive to serve all humankind by observing the common responsibilities for preserving the Earth, but they should also recognize the special circumstances and rights of individual nations to pursue sustainable development.

I would like to once again express my hope that this Conference will lay a solid foundation on which the global community can build a common future in the coming millennium.

Thank you.

Annex 598

Summary record of the 22nd meeting of the fifty-third session of the General Assembly, held on 22 October 1998, A/C.2/53/SR.22

United Nations A/C.2/53/SR.22

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Summary record of the 22nd meeting
Held at Headquarters, New York, on Thursday, 22 October 1998, at 3 p.m.

Chairman: Mr. Asadi ..... (Islamic Republic of Iran)
later: Mr. Prendergast (Vice-Chairman) ..... (Jamaica)

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(d) Convention on Biological Diversity

(e) Implementation of the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa

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98-81826 (E)

The meeting was called to order at 3.10 p.m.

Agenda item 94: Environment and sustainable development (A/53/25, A/53/72-S/1998/156, A/53/95-S/1998/311, A/53/96, A/53/156-S/1998/78, A/53/165-S/1998/601, A/53/371-S/1998/848, A/53/416, A/53/425, A/53/487)

(b) Protection of global climate for present and future generations of mankind (A/53/449**)**

(c) Implementation of the outcome of the Global Conference on the Sustainable Development of Small Island Developing States (A/53/65-E/1998/5, A/53/358)

(d) Convention on Biological Diversity (A/53/451)

(e) Implementation of the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (A/53/516**)**

1. **Mr. Zammit-Cutajar** (Executive Secretary, United Nations Framework Convention on Climate Change), introducing the note by the Secretary-General (A/53/449), said that the most significant outcome of the third session of the Conference of the Parties had been the Kyoto Protocol, which was as much an economic instrument as an environmental one. The fact that the next session would be held in a developing country, Argentina, underlined the global nature of the climate change problem. The outcomes of that session would be more in the form of action plans, and firm deadlines for action on the part of the Parties. The agenda reflected the concern of Governments to achieve a balance between Convention issues and Protocol issues. One point on which there was a very clear difference of views, was the question of whether and how to debate the future development of commitments under the Convention.

2. The review of the administrative arrangements that linked the Framework Convention on Climate Change and its secretariat to the United Nations proper would be conducted by the General Assembly at its fifty-fourth session and by the Conference of the Parties. However, it had been agreed that administrative responsibilities should be shifted increasingly from Geneva to Bonn.

3. **Mr. Johnston** (Convention on Biological Diversity), introducing the note by the Secretary-General contained in document A/53/451, said that in his view, the Convention's effectiveness basically depended on its being able to generate sound scientific information for use by planners and decision makers. Developing scientific understanding of biodiversity and the human relationship with biodiversity was necessary to preventing the adverse impact that human activities had on biodiversity. The Convention's Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) had developed into a leading source of scientific advice on biodiversity. The secretariat had received over 100 national biodiversity reports, which represented the most significant source of information on biodiversity at the international level. The Convention therefore had a significant contribution to make to the deliberations within the United Nations on those matters.

4. **Mr. Diallo** (Executive Secretary, United Nations Convention to Combat Desertification), introducing the report of the Secretary-General on the implementation of the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, (A/53/516), said that to date 143 countries from all regions of the world as well as regional economic integration organizations, including the European Union, had ratified or acceded to the Convention. The organization in Recife, Brazil, of the first forum between Africa and Latin America and the Caribbean on the implementation of the Convention, with the financial support of the International Fund for Agricultural Development (IFAD) and the Governments of France, Germany and Spain, demonstrated that the Convention was increasingly at the heart of the environmental concerns of the various States Parties.

5. One of the main issues on the agenda of the second session of the Conference of the Parties was the operationalization of the Global Mechanism. The Conference would be invited to endorse the text of the Memorandum of Agreement with IFAD on the modalities and administrative operations for the Global Mechanism. He thanked all the countries and international organizations that had responded to the Secretary-General's appeal for voluntary contributions to the trust funds established for the participation of developing countries in the meetings of the Conference of the Parties and in support of the Secretariat's activities, and paid special tribute to the Government of Japan for its contribution of $1,800,000 for 1998.

6. **Mr. Dengo** (Department of Economic and Social Affairs), introducing the report of the Secretary-General on plans and projects for the sustainable development of the small island developing States implemented, under implementation or envisaged for the period of 1999–2003 by bilateral donors, United Nations organizations and regional and non-United Nations international organizations (A/53/358), said that, the information it provided was helpful in assessing the responsiveness of the international

community to the Programme of Action for such countries and seemed to suggest an increase in projects since 1994. However, since only sketchy information had been made available by respondents regarding projects to be implemented in the coming five years, it was premature to judge whether that increase would be sustained. Those donor agencies that had not provided inputs, or that wished to update their inputs, should do so prior to the donors' conference.

7. **Mr. Wibisono** (Indonesia), speaking on behalf of the Group of 77 and China, welcomed the signing of the Kyoto Protocol by over 50 States. While the Kyoto session was widely seen as a significant first step towards limiting the unbridled growth in greenhouse gas emissions, there were numerous scientific, technical and economic uncertainties about the new mechanisms and their implications. One basic concern was that they moved essential domestic action off shore. It was therefore important not only to develop agreed international standards for monitoring and verification but, above all, to determine a non-compliance regime pursuant to article 18 of the Protocol.

8. In the view of the Group of 77 and China, the activities to be undertaken by Annex 1 Parties under the new mechanisms should be supplementary to domestic actions. Early and committed action by the developed countries was critical and fundamental, since they were the countries historically responsible for the problem and currently had the capacities to produce effective results. It was unfair and unacceptable that the developing countries, which were struggling to attain decent standards of living, should be asked to curtail their industrial activity and share in the efforts to reduce emissions so that the industrialized countries could continue with their unsustainable production and consumption patterns. In accordance with the principles of common but differentiated responsibilities, developed countries must take the lead and not merely reduce emissions, but also modify their production and consumption patterns.

9. The Group of 77 and China reiterated the importance of the Programme of Action for the Sustainable Development of Small Island Developing States and appealed to the international community to participate actively in the activities planned for 1999, including the donor conference and the special session of the General Assembly on small island developing States. Concerning the report of the Secretary-General contained in document A/53/358, the Group welcomed the positive developments in some of the priority areas of concern, in particular the action by the United Nations in support of the system-wide implementation of the Barbados Programme of Action and endorsed the conclusions contained in paragraphs 23 to 26. Small island States had been and were making considerable and strenuous efforts at the national and regional levels. Unfortunately, those endeavours were not being adequately complemented by the international community in line with commitments undertaken under the global conference to operationalize and implement the Programme of Action. The bilateral and multilateral donor community must provide adequate financial resources and technical assistance to enable the small island developing States to address their special socio-economic development constraints more effectively.

10. Turning to the Convention on Biological Diversity, he said that it was gratifying to note that the Parties had been carrying out their work programme on agricultural biodiversity in close cooperation with the Food and Agriculture Organization of the United Nations (FAO). The Convention was an important instrument for translating international commitments into national action, but for that to happen resources had to be increased so that the needs of the developing countries could be addressed more adequately. The Group of 77 and China therefore urged donors to make adequate financial resources available through the Global Environment Facility (GEF) and through other sources, including bilateral sources.

11. The countries affected by serious drought and desertification were giving priority to restoring and protecting their national and global environments, but the eradication of poverty was still the key strategy for combating desertification and achieving sustainable development. The Group of 77 and China hoped that the Global Mechanism would successfully mobilize resources and channel them to the developing countries, particularly to those in Africa. It appealed to all countries to agree to the establishment of a committee on the review of the implementation of the Convention, and reiterated the appeal made by the Conference of Parties to the developed countries, the multilateral and bilateral financial institutions and the private sector to make voluntary contributions to the Global Mechanism.

12. With only a few days before the fourth session of the Conference of the Parties to the Framework Convention on Climate Change and the second session of the Conference of the Parties to the Convention to Combat Desertification, the Group of 77 and China considered that the principle of common but differentiated responsibilities clearly agreed upon at the United Nations Conference on Environment and Development and in Agenda 21 should be fully applied, and the sessions should not be distracted by issues extraneous to the letter and spirit of the two Conventions.

13. **Mr. Biaou** (Benin), speaking as Chairman of the African Group on the United Nations Convention to Combat

Desertification, said that there was only one African State which had yet to ratify the Convention, and all were drawing up national programmes of action. They were confident that once they had adopted national, subregional and regional programmes of action, partnership agreements would be concluded with the developed countries, the financial institutions and the private sector. At the same time as drawing up their national programmes of action, they were taking steps to establish national funds for combating desertification.

14. In each of the five subregions steps were being taken to establish a facilitation fund to finance the elaboration and implementation of the respective subregional programme of action.

15. At the regional level, the process of elaborating a regional programme of action for Africa had been initiated in 1998 with the holding of regional workshops to build its basic structure of seven networks. A regional coordination unit would be operational by 1 January 1999 at the latest, and in parallel with it would be a regional facilitation fund.

16. At the interregional level, there was now a forum on implementation of the Convention linking the countries of Africa with those of Latin America and the Caribbean, which had produced a six-point platform for cooperation.

17. At the international level, since African countries were fulfilling their obligations and undertakings, they also expected their bilateral and multilateral partners to do the same by strengthening their financial support. He noted that in June 1998, the Organization of African Unity had offered US$ 300,000 to finance implementation of the Convention at the regional level. It was hoped that that would encourage development partners to continue with their support in terms of financial contributions.

18. **Mr. Cordeiro** (Brazil) said that, based on the misleading argument that the effectiveness of international efforts to address the issue of climate change would depend on the "meaningful participation and engagement by key developing countries", attempts were once again being made to revive the proposal to establish "voluntary commitments" to reduce emissions by developing countries. The most conspicuous of the many false assumptions lying behind that proposal was that developed countries were taking the lead in fulfilling the objectives of the Framework Convention on Climate Change, and the implication that developing countries were not contributing their share. Nothing could be further from the truth.

19. As a result of a series of fiscal, industrial and technological policies, along with specific programmes for energy efficiency and conservation, Brazil had not only significantly reduced its rate of deforestation but had also reduced its levels of carbon dioxide emissions, which on a per capita basis were no more than 0.3 tons of carbon per year. That compared with 5 tons in the United States of America, 4.3 tons in the Russian Federation, 3 tons in Japan and 2.5 tons in Europe. In terms of Gross Domestic Product, Brazil's carbon dioxide emissions did not exceed 0.05 tons of carbon per US dollar of output, which was one fifth of the United States figure and one third of that for Europe and Japan.

20. With the approach of the fourth session of the Conference of the Parties it was hoped that a clear indication would emerge as to whether annex I countries would live up to their commitments and effectively take the lead in international efforts to address climate change or whether they would continue to lag behind in those efforts. The clean development mechanism should be given precedence over emission trading and joint implementation among annex I countries. It would allow non-annex I countries to benefit from project activities and at the same time introduce an element of flexibility that would help annex I countries to achieve their reduction targets. It also had the potential to enhance the contribution by non-annex I countries in reducing global warming in a manner consistent with the Convention and also advantageous to all parties. Its success would very much depend on the prior establishment by the annex I countries of strict national regulations limiting their emissions, and on the establishment of a strict set of rules penalizing non-compliance with the emission targets agreed at Kyoto. Credits under the clean development mechanism should accrue only to annex I countries that were capable of demonstrating significant reductions in domestic emissions. Emission reduction targets for annex I countries should be based not on purely political compromise but on objective technical and scientific criteria relating historical emissions to their measured effect in terms of global warming.

21. Brazil attached the highest importance to implementation of the Convention to Combat Desertification. Recent studies had shown that land degradation affected approximately 11 per cent of its national territory, and mostly in an area which was home to the largest and poorest rural population. Desertification in Brazil caused estimated economic losses of US$ 300 million per year, and it had been established that the cost of reclaiming the affected regions would be close to US$ 3.8 billion. The Brazilian Government was firmly committed to implementation of its national plan to combat desertification and drought and of the Latin American and Caribbean annex to the Convention. Brazil had offered to host the third session of the Conference of the Parties in August 1999.

22. **Mr. Isakov** (Russian Federation) said that his country was interested in a constructive solution of the problem of global climate change, and was committed to the course set by the General Assembly at its nineteenth special session. The Russian Federation continued to meet in full its obligations under the Framework Convention on Climate Change, and had considerably reduced its level of emission of greenhouse gases as compared with 1990. His Government was working on issues related to ratification of the Kyoto Protocol, and believed that an efficient and fair international system of greenhouse gas emission quotas trading should not impede the sustainable economic development of States parties but should be based on voluntary principles. It should stipulate the parties' right to choose between accumulating unused emission quotas to be realized in the future and using them for trading and attracting foreign investments.

23. Turning to the Convention on Biological Diversity, he welcomed the fact that attention was being paid to the important issue of access to genetic resources and the biological diversity of inland water ecosystems. It was to be hoped that the draft protocol on biological safety would be adopted. The Russian Federation had stepped up its efforts to preserve biological diversity, improving its legal framework and expanding its system of protected areas and conservation of endangered species. However, there remained a fairly large number of problems, chiefly related to the unfavourable financial and economic situation in his country.

24. His delegation reaffirmed its principled interest in accession to the Convention to Combat Desertification and expected that the interests of Central and Eastern Europe would be taken into account and reflected in the additional annex to the Convention. It was ready to cooperate with all the Parties to the Convention in that regard, and was also ready for constructive cooperation within the framework of the Convention.

25. Turning finally to the problem of sustainable development of small island developing States, he pointed to the need to complete work on the vulnerability index for them and to ensure that it was duly taken into account when drawing up the policy of their sustainable development.

26. **Mr. Kolby** (Norway) said it was necessary to ensure policy coherence and synergy among the various legally binding conventions and protocols concerning the environment in order to advance their effective implementation. Although the Conferences of the Parties were autonomous bodies, they should be encouraged to take advantage of the benefits that could result from better coordination. Norway supported UNEP's central role in following up the relevant recommendations, and considered that the General Assembly could play a useful role which should be further elaborated.

27. He said that the fourth session of the Conference of the Parties to the Framework Convention on Climate Change should result in tangible progress in clarifying principles, rules and guidelines to facilitate the ratification process, including the necessary work on operational elements of the flexibility mechanisms in a way which ensured cost-effective limitation of gas emissions in accordance with the provisions of the Kyoto Protocol. In that regard, it was important that the session finalize as much as possible of the remaining work and establish a clear timetable for tasks which required more time.

28. Turning to the Convention to Combat Desertification, he said that land degradation and food insecurity were first of all problems of poverty, which was frequently a result of a lack of power and control over resources. The Convention's participatory approach was therefore vital. Norway recognized that the poorest and most seriously affected countries, particularly in Africa, would continue to need international assistance in order effectively to combat desertification: more than 50 per cent of Norway's bilateral assistance and a substantial part of its multilateral assistance was already allocated to sub-Saharan Africa.

29. The fourth session of the Conference of the Parties to the Convention on Biodiversity had made good progress in advancing implementation of the provisions with regard to sector-specific work programmes and cross-cutting issues. Norway attached great importance to a successful conclusion of the negotiations on a protocol on biosafety.

30. Much remained to be done to implement the ambitious Programme of Action for the Sustainable Development of Small Island Developing States; insufficient resources, as well as the El Niño phenomenon, had contributed to making its full implementation more difficult. Norway intended to co-sponsor the draft resolution on the El Niño phenomenon.

31. **Mr. Boucher** (Barbados), speaking on behalf of the 32 States of the Alliance of Small Island States (AOSIS), said that with the adoption of the Framework Convention on Climate Change, the international community had affirmed its determination to protect the global climate. There was strong scientific evidence that such interference was already at high and even dangerous levels. The Alliance had repeatedly stressed the dangers its members faced as a consequence of climate change, the most immediate being sea level rise, which had already resulted in shore erosion and saline infiltration of freshwater sources in almost every region. In addition, devastating hurricanes had rampaged through the Caribbean, wiping out in a matter of hours

economic development which had taken some countries years to achieve.

32. The Alliance had expected that the developed countries in particular would move ahead quickly with the necessary domestic actions or "no regrets" measures recommended by the Intergovernmental Panel on Climate Change. Steps to improve efficiency in the use of fossil fuels and develop alternative sources of energy would constitute a good beginning. However, there was resistance even to such a modest approach to reducing waste of natural resources. He viewed with concern the entrenched behaviours in certain quarters which continued to cling to short-term gains and worked to undermine the Convention to the detriment of all.

33. The Kyoto Protocol was an important first step in forging alliances to foster international consensus on needed actions. However, the emission reduction targets it set were completely inadequate; the developed countries could and must do more. At the forthcoming Conference of the Parties, efforts must be made to ensure that the Kyoto Protocol was not watered down. Stepping up the pace of implementation of the Protocol was a matter of priority.

34. As preparations for the special session of the General Assembly to review the Barbados Programme of Action were under way, Alliance members were particularly worried by the current assessment that overall trends with respect to sustainable development were worse than they had been in 1992. It sometimes appeared that the spirit of Rio had virtually disappeared. Since the Rio Conference, the rapid pace of globalization and liberalization had further underscored the vulnerability of small island developing States. The seventh session of the Commission on Sustainable Development would serve as the preparatory committee for the special session and would conduct a comprehensive review of the Barbados Programme of Action. Its focus on ecotourism and oceans would underline two critical pillars for economic development of small island developing States.

35. Alliance members felt that their concern with the challenge posed by vulnerability for their sustainable development was better understood than previously and they welcomed the growing interest in the work on an applicable vulnerability index as an important tool in the analysis of national policies. Members of the Alliance believed in the continued relevance of the Barbados Programme of Action; the forthcoming special session could provide the necessary impetus and support to revitalize that programme and ensure that their goal of sustainable development would become a reality.

36. **Ms. Wensley** (Australia) said that the international community continued to make important advances in creating institutional mechanisms to deal with major challenges facing the global environment. Its work was made all the more significant through the great progress many countries themselves had achieved in working towards sustainable development on a national and regional basis.

37. Referring to some of the forthcoming key international environment meetings, she said that the fourth Conference of the Parties to the United Nations Framework Convention on Climate Change represented an important opportunity to advance the implementation of the Kyoto Protocol. The flexibility mechanisms provided for were a vital means of ensuring that emissions commitments were implemented at the least possible cost. Devising mechanisms that provided for the most cost-effective outcomes would be critical to the Protocol's success. Another issue central to longer term goals was an effective global response to climate change. Commitments by developed countries would not be sufficient to achieve the ultimate objective of the Convention. It was not a question of evading or avoiding obligations or commitments, it was simply a fact.

38. She paid tribute to the tireless efforts by the Executive Secretary in implementing the Convention to Combat Desertification and looked forward to the positive results of the forthcoming Conference of the Parties in Dakar. The final negotiating session for a biosafety protocol to the Convention on Biological Diversity would deal with the transboundary movement of living genetically modified organisms and their potential effects on biological diversity. It was essential, that the Protocol should deal only with their transboundary movement without attempting to dictate to Parties their domestic management of such organisms. Its procedures must be consistent with multilateral trading rules that had been developed over many years. A workable protocol that assisted Parties to protect their biological diversity while not imposing restrictions on international trade would promote confidence in and shared knowledge of biotechnology and living genetically modified organisms.

39. Australia had continued to support the implementation of the outcomes of the Global Conference on the Sustainable Development of Small Island Developing States and had been closely involved in efforts to further the Barbados Programme of Action in the South Pacific, including through support for the continuing development of the Global Ocean Observing System. It welcomed the opportunity to support preparations for the special session.

40. Her delegation welcomed the report of the Task Force on Environment and Human Settlements. The report of the Secretary-General on ways and means of undertaking the review of progress made in implementing conventions related

to sustainable development (A/53/477) would require careful reflection on the desirability and means of achieving better linkages between the various conventions dealing with global, but distinct, environmental issues.

41. Finally, the seventh session of the Commission on Sustainable Development would consider many things of particular interest to Australia, including oceans, small island developing States and tourism. One of the challenges it would face would be how to establish linkages between those themes. In conclusion, her delegation fully supported the proposal that the Committee should consider the environment conventions in a single omnibus resolution.

42. **Mr. Kebede** (Ethiopia) said that, despite the commitments undertaken at the United Nations Conference on Environment and Development and despite energetic institutional reform, progress had been slow and could not keep pace with new challenges. The international community, therefore, needed to develop additional mechanisms to establish coherent links among existing international environmental conventions.

43. Among the issues which had been considered at that Conference had been the need to conserve biological diversity. Scientific opinion was united in its view that humanity was in the process of squandering an incalculably important resource central to food, health and economic activity. His delegation shared that concern, and was surprised to find that decisions regarding intellectual property rights had major implications for food security, agricultural and rural development and conservation of the environment. The Trade-Related Intellectual Property Rights (TRIPS) Agreement, which defined only the protection of inventions, had formalized the trend to confer private or individual and exclusive rights to intellectual property, while the Convention on Biological Diversity recognized the role of local and indigenous communities in the conservation of biological diversity and considered biological resources as collective property.

44. More than two thirds of all plant species originated in developing countries, and at least 35,000 of them had potential medicinal value. Some of the most commercially attractive enterprises in the international market – pharmaceuticals, cosmetics, seeds and biotechnology – were to a large degree based on biological resources from the South. Yet those materials were often not paid for, being simply gathered and taken away by those with the necessary knowledge. It was ironic that the packages of patented and manipulated biological resources were being sold back to the place of origin as private and exclusive property. There was a widely recognized inequality in the transfer of biological resources between the developed North and the developing South. From that perspective, his delegation placed great importance on the need to protect the rights of communities to enjoy the fruits of their labour and to benefit from the use of the biological resources they nurtured and from their communal knowledge. The Organization of African Unity, in collaboration with the Environmental Protection Authority of Ethiopia, had organized a workshop on community rights and access to biological resources, and he hoped that the recommendations of that workshop would be given due attention and would be taken into account during the forthcoming renegotiation process of the TRIPS agreement.

45. Turning to the issue of environmental degradation in Ethiopia, he said that changes in climatic patterns coupled with anthropogenic calamities had made almost 73 per cent of the land in Ethiopia vulnerable to drought and desertification. Accordingly, environmental issues and sustainable development were at the top of its development agenda and it had prepared a national conservation strategy, an environmental policy and a land use and forestry action plan.

46. Finally, the dream of transforming the outcomes of Rio into effective action would not come true unless sufficient resources were mobilized. Without international collaboration and support, success in the area of environmental protection would be impossible.

47. **Mr. Shihab** (Maldives) said that his delegation attached great importance to the forthcoming special session to review the Barbados Programme of Action and he hoped that the next session of the Commission on Sustainable Development, which would, in effect, serve as the preparatory committee for the special session, would incorporate the outcome of the forthcoming meeting between the small island developing States and prospective donors into the documentation of the special session. His delegation also attached great importance to the Conference of the Parties to the Framework Convention on Climate Change and the opportunity to negotiate on several new mechanisms established under the Kyoto Protocol.

48. With regard to the question of vulnerability, given the immensity of the potential threat to small island developing States such as the Maldives, his delegation stressed the need for an economic and ecological vulnerability index in order to reflect greater reality and balance in the criteria for the designation of least developed countries. It welcomed the report of the Secretary-General on that subject (A/53/65), which outlined the extensive work already undertaken by the Department of Economic and Social Affairs.

49. For the Maldives, given the scientific proof of global warming, sea level rise and ozone depletion, the threat of extinction were very real. Those on the front lines would have to take the lead in the debate, as it would be the smallest and weakest that would be hit first, followed by the rest of the world. There would be no winners.

50. **Mr. Malkani** (India) noted that some developed countries were not only depleting natural resources but also exporting their dirty industries and harmful chemicals that were banned in their own countries to the poorer countries. The special session of the General Assembly for the purpose of an overall review and appraisal of the implementation of Agenda 21 had recognized that considerable progress had been made at the national level. Many developing countries had set up, at considerable cost to themselves, local versions of Agenda 21. India had elaborated a national conservation strategy and policy statement on environment and development, a national forestry policy and a policy statement on the abatement of pollution. A national action plan for the conservation of biodiversity was currently being debated in Parliament. A broad-based participatory approach, involving all sectors of society and recognizing the crucial role of women, had been taken in developing the national policy on environment. An Environment Authority had been established in order to ensure the transparency of environmental measures and there were plans to create a national mechanism to deal with accidents in connection with the handling of hazardous substances. His delegation was therefore deeply concerned that industrialized countries had not fulfilled their commitments under Agenda 21 and were even attempting to erode the partnership forged at the Rio Conference, particularly the principle of common but differentiated responsibilities, by seeking to impose additional obligations on the developing countries.

51. India would participate actively in the fourth session of the Conference of the Parties to the United Nations Framework Convention on Climate Change. He wished to reiterate that, at their recent meeting in Durban, the Movement of Non-aligned Countries had appealed to developed countries to take action at the domestic level to implement their commitments under the Kyoto Protocol. Emissions trading for the implementation of those commitments could not commence until agreement had been reached on the principles and modalities of such trading, including the initial allocation of emissions entitlements to all countries on an equitable basis. He also reiterated the urgent need for immediate action to provide developing countries with the necessary financial and technological resources and environmentally sound technology in order to enable them to fulfil their commitments under the Framework Convention.

52. India would also be participating actively in the forthcoming Conference of the Parties to the Convention on Biological Diversity. One issue that must be addressed urgently was the development of proprietary patents based on biodiversity and the traditional knowledge of indigenous communities without the prior informed consent of, or any arrangements to share the benefits with, the developing countries that were the repositories of such biodiversity and knowledge. Effective protection must be guaranteed to indigenous biotechnology, developed over the millennia.

53. Turning to the issue of coherence between the various environmental Conventions, he said that many of the proposals contained in the report of the Secretary-General (A/53/477) required detailed examination. The report raised a number of questions, including questions about the interrelationship between the Commission on Sustainable Development and UNEP. In his delegation's view, the distinctive role played by the Commission and the General Assembly in facilitating holistic consideration of environmental issues and mainstreaming socio-economic concerns should not be overlooked.

54. **Mr. Drayton** (Guyana), speaking on behalf of the member States of the Caribbean Community (CARICOM), said that they attached great importance to the full implementation of the Barbados Declaration and Programme of Action and felt that it was regrettable that relatively few of the projects listed in the report of the Secretary-General (A/53/358) had been successfully implemented. In many cases projects were discontinued after the donor-funded phase owing to a lack of capacity-building at the national and regional levels. At the national level, that could be attributed to limited human resources; project-driven development, resulting in an overly sectoral approach; and a lack of cooperation from the private sector. At the regional level the obstacles included the lack of an integrated approach to project and programme planning, which often resulted in the insufficient mobilization and utilization of resources; the absence of effective information-sharing mechanisms; institutional weaknesses; and limited human and financial resources.

55. In response to those deficiencies, the Community had adopted a declaration in 1997, according top priority to human resource development and stressing the importance of regional institutions and mechanisms. The recent Caribbean Ministerial Meeting on the implementation of the Barbados Programme of Action had recognized that the establishment of a permanent regional implementation

mechanism was crucial to project execution. While recognizing that the small island developing States bore primary responsibility for the implementation of the Programme of Action, a favourable international economic environment and the continued support of development partners were vital. In that connection, she noted that, at the nineteenth special session of the General Assembly, the international community had reaffirmed its commitment to the implementation of the Barbados Programme of Action and acknowledged that national and regional efforts must be supplemented by external assistance, particularly in the areas of infrastructure, capacity-building and the transfer of environmentally sound technology. The Community therefore attached great importance to the forthcoming donors' conference to be held in February 1999 for which it was compiling project portfolios.

56. The Community welcomed the report of the Secretary-General on the development of a vulnerability index for small island developing States (A/53/65) and noted, in particular, the findings of the ad hoc expert group. It was pleased that the World Bank, the International Monetary Fund and the Commonwealth Secretariat had agreed to work together to support a task force for the study of the special circumstances confronting very small economies with a view to formulating a universally acceptable vulnerability index and hoped that the upcoming special session of the General Assembly would witness further progress to that end.

57. The Community was working, both on its own and with its development partners, to provide input to the seventh session of the Commission on Sustainable Development in preparation for that special session. It hoped that the Commission's deliberations on a number of issues of particular relevance to small island developing States, including oceans and seas, sustainable tourism and consumption and production and consumption patterns, would lead to specific outcomes.

58. **Mr. Hili** (Malta) called for a stronger political commitment by all countries and greater cooperation and coordination within the United Nations system to halt the degradation of the world's natural resource base. As a small island State, Malta attached great importance to the Agenda for Development, which highlighted the particular circumstances of small island developing States and the need for international support for their development. His delegation looked forward to the work of the special session of the General Assembly to review the Barbados Programme of Action. It was continuing its own work on the formulation of the vulnerability index for small island developing States, which it considered vital. In the meantime, the transfer of technology and human resource development were issues of pressing concern to such States.

59. Noting that his delegation had first proposed consideration of the issue of climate change by the United Nations, he urged the international community to accelerate the implementation of the Kyoto Protocol with a view to taking an integrated approach to the stabilization of greenhouse gas levels. Noting that Malta had been among the first signatories of the Kyoto Protocol he invited all States that had not yet done so to accede to it. Of course the Clean Development Mechanism developed under the Kyoto Protocol would not be sufficient to reverse the harmful effects of climate change; the main polluters must take action to reduce their greenhouse gas emissions. His delegation hoped that the fourth session of the Conference of the Parties would bring significant progress to that end.

60. His delegation attached particular importance to the Mediterranean Action Plan coordinated by UNEP. Malta was host to the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea and a member of the Mediterranean Commission for Sustainable Development, whose main purpose was to implement the principles of Agenda 21 in the Mediterranean region. It would also shortly be hosting a meeting of the Contracting Parties to the Convention for the Protection of the Mediterranean Sea Against Pollution, adopted in Barcelona, to be held in October 1999, and, within the framework of the priority action programme, was preparing a coastal zone management plan for the Maltese archipelago.

61. Owing to its size and geographical location, Malta was affected by desertification and land degradation. It had recently ratified the United Nations Convention to Combat Desertification and organized a national awareness seminar on the issue in collaboration with the Convention secretariat. It would also formulate a national action plan and cooperate with other northern Mediterranean countries in that area. His delegation believed that environmental education and information and the participation of the public in decision making were key long-term tools for redressing environmental problems.

62. **Ms. Young-ju Oh** (Republic of Korea) said that being almost entirely dependent on imports for its domestic energy requirements, the Republic of Korea attached the highest priority to energy conservation and the limitation of greenhouse gas emissions, not only from an environmental perspective but as a part of its long-term strategy for sustainable development and energy security.

63. Her delegation welcomed the decisions taken at the fourth session of the Conference of the Parties to the

Convention on Biodiversity and noted that since development of that treaty regime involved such areas as trade and tourism, it would be necessary to consider practical and substantial cooperation with the relevant international organizations. While her delegation supported the adoption of a biosafety protocol at the earliest possible date, it was concerned at the lack of consensus on several substantive issues, and hoped that States parties would make every effort to expedite the negotiation process.

64. Her delegation attached great importance to the close and cooperative relationship between the Convention to Combat Desertification and the other environmental conventions. Early ratification of the Convention by major signatories would be crucial in securing the financial resources needed for its successful implementation. The Republic of Korea was making every effort to speed its own ratification process. Finally, her delegation looked forward to the forthcoming special session to review the implementation of the Barbados Programme of Action.

65. **Mr. Saenz Biolley** (Costa Rica), speaking on behalf of the Central American countries – Belize, the Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, Panama and Costa Rica – said that Central America contained more than 8 per cent of the world's biological diversity, including 33 ecoregions and 20,000 plant species. Panama alone had 925 species of birds and Guatemala, more than 250 species of mammals. With a territory of 511,000 square kilometres and a population of nearly 33 million, Central America was attempting to balance its economic development and the protection of its biological resources. In addition to integrating the Convention on Biological Diversity into their national legislation, the Central American Governments had signed the Central American Alliance for Sustainable Development, with a view to preserving biodiversity through, *inter alia*, the development of ecological zones and protected areas, and had established the Central American Commission on Environment and Development and the Central American Council on Protected Areas. Each country had established a National Commission on Biological Diversity in order to develop strategies and carry out country studies on biodiversity. In addition, the Central American countries and Mexico had established a Central American biodiversity information system.

66. The number of protected areas in Central America had soared from 25 to 415 in just three decades; half of them had been designated within the past 12 years. By far the most important initiative to preserve biodiversity had been the establishment of the Programme for the Central American Biological Corridor by the seven Central American countries and Mexico in 1997. The corridor was a series of interconnected protected natural areas in which ecologically friendly production and soil use, investment in conservation and the sustainable use of natural resources were promoted. The corridor was being developed at the local, national and regional levels, largely with financing from the Global Environment Facility, and had gained international recognition. Examples of contributions to the corridor included the commitment by Honduras to maintain 10 protected areas along the Atlantic Coast; a Nicaraguan plan to protect biodiversity and to enable its indigenous population to use certain resources in a sustainable manner; an initiative by Belize and Mexico to safeguard the largest coral reef in the western hemisphere; a Guatemalan initiative to preserve its indigenous cultures' knowledge of biodiversity and its archaeological heritage; the consolidation and modernization of biodiversity research facilities in Costa Rica and its adoption of framework legislation on biodiversity; and the conservation of the flora and fauna resources of Darién in Panama.

67. The Central American countries had adopted economic measures to stimulate conservation and the sustainable use of biological resources. However, their efforts must be complemented by new as well as traditional forms of financing on the part of the international community. The biologically poorer countries of the North, in particular, must assume their responsibility towards the preservation of biodiversity in the biologically richer countries of the South.

68. **Mr. Arbel** (Israel) said that Israel had not fully understood the long-term effects of cultivating arid and semi-arid land and it provided an interesting case study of the synergies between the loss of biodiversity, desertification, deforestation and climate change. In Israel, the conversation of rangeland into irrigated croplands had resulted in desertification, which, in turn had led to a loss of plant and animal species and, subsequently, of topsoil and the potential for rehabilitating biodiversity. Such biodiversity losses had further aggravated desertification.

69. The current prediction was that there would be a reduction in soil moisture and aquifer recharge as a result of increased water evaporation. The loss of biodiversity and green areas had aggravated climate change and initiated a vicious cycle of desertification, global warming and further loss of biodiversity. However, unlike the climate system, which could be restored by reducing emissions, or desertified land, which could be reclaimed by rehabilitation, once a plant or animal species was lost it was lost forever. Thus, the predicted warming of Israel could well result in the loss of drought-sensitive species and impair its ecosystem.

70. In Israel, the semi-arid region was the richest in flora and fauna. Semi-arid regions were most prone to desertification but, at the same time, their biodiversity could be crucial to rectifying the effects of climate change. Therefore, the natural habitats of semi-arid belts should be protected from both desertification and uncontrolled agricultural development. In the 1950s, Israel's first rime Minister had claimed: "If we don't conquer the desert, the desert will conquer us". Israel had learned that the cost of conquering the desert was the loss of biodiversity.

The meeting rose at 6.15 p.m.

Annex 599

Summary record of the 36th meeting of the General Assembly held on 24 November 2004, A/C.2/59/SR.36

United Nations A/C.2/59/SR.36

General Assembly
Fifty-ninth session

Official Records

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Second Committee

Summary record of the 36th meeting
Held at Headquarters, New York, on Wednesday, 24 November 2004, at 10 a.m.

Chairman: Mr. Balarezo . . . . . (Peru)

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(a) Implementation of the first United Nations Decade for the Eradication of Poverty (1997-2006) (*continued*)

(b) Women in development (*continued*)

(c) Industrial development cooperation (*continued*)

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(a) United Nations Institute for Training and Research (*continued*)

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(c) International Strategy for Disaster Reduction (*continued*)

(d) Protection of global climate for present and future generations of mankind (*continued*)

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(e) Implementation of the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (*continued*)

Agenda item 86: Implementation of the outcome of the United Nations Conference on Human Settlements (Habitat II) and of the twenty-fifth special session of the General Assembly (*continued*)

Agenda item 91: Permanent sovereignty of the Palestinian people in the Occupied Palestinian Territory, including East Jerusalem, and of the Arab population in the occupied Syrian Golan over their natural resources (*continued*)

The meeting was called to order at 10.35 a.m.

Agenda item 39: Strengthening of the coordination of humanitarian and disaster relief assistance of the United Nations, including special economic assistance (*continued*) (A/C.2/59/L.40 and A/C.2/59/L.44)

(b) Special economic assistance to individual countries or regions (*continued*)

Draft resolution on assistance for humanitarian relief and the economic and social rehabilitation of Somalia (A.C.2/59/L.40)

1. **The Chairman** announced that the Syrian Arab Republic had joined in sponsoring draft resolution A/C.2/59/L.40.

2. **Mr. Abdi** (Somalia), introducing draft resolution A/C.2/59/L.40, said that the conditions that had prompted the General Assembly to adopt previous resolutions on the delivery of emergency humanitarian assistance and the economic and social rehabilitation of Somalia persisted and had been exacerbated by unrest in many areas.

Draft resolution on assistance for the rehabilitation and reconstruction of Liberia (A/C.2/59/L.44)

3. **Mr. Sele** (Liberia) introduced draft resolution A/C.2/59/L.44 and announced that the following countries had joined in sponsoring the draft resolution: Belgium, China, Côte d'Ivoire, Denmark, France, Gambia, Ghana, Guinea, Italy, Japan, Lesotho, Mali, Nigeria, Norway, Portugal, Sierra Leone, United Kingdom of Great Britain and Northern Ireland and United States of America.

4. The following paragraph should be added at the end of the preamble: "*Recognizing* the importance of a thriving private sector, employment generation, good governance and rule of law to sustainable economic growth,".

5. The following text should be added at the end of paragraph 4: "including inter alia by emphasizing capacity-building, institutional building and employment generation in their work and ensuring that such work complements and contributes to development of an economy characterized by an investment climate conducive to entrepreneurship, good governance and rule of law;".

6. The people of Liberia were fully cognizant of their primary responsibility in the reconstruction effort; however, the empathy and forbearance of the international community would continue to serve as a tremendous asset in that effort.

Agenda item 89: Eradication of poverty and other development issues (*continued*) (A/C.2/59/L.47, A/C.2/59/L.48, A/C.2/59/L.49 and A/C.2/59/L.50)

(a) Implementation of the first United Nations Decade for the Eradication of Poverty (1997-2006) (*continued*)

Draft resolution on the role of microcredit in the eradication of poverty (A/C.2/59/L.49)

7. **Mr. Al-Mahmoud** (Qatar), speaking on behalf of the Group of 77 and China, introduced draft resolution A/C.2/59/L.49 and said that microcredit had contributed to progress in the achievement of the Millennium Development Goals. The observance of the International Year of Microcredit in 2005 would provide an opportunity for full recognition of best practices and ideas on the wider application of microcredit.

Draft resolution on the implementation of the first United Nations Decade for the Eradication of Poverty (1997-2006) (A/C.2/59/L.50)

8. **Mr. Al-Mahmoud** (Qatar), speaking on behalf of the Group of 77 and China, introduced draft resolution A/C.2/59/L.50, and recalled the hope, expressed in paragraph 34, for the annual observance of an International Human Solidarity Day.

(b) Women in development (*continued*)

Draft resolution on the World Survey on the Role of Women in Development (A/C.2/59/L.48)

9. **Ms. Feller** (Mexico), introducing draft resolution A/C.2/59/L.48, said that the Survey was of supreme importance to the international community in identifying and analysing the impact of the role of women in development. She welcomed the current focus on the link between women and migration and urged Member States to follow up on the proposals made by the Survey in that regard.

(c) Industrial development cooperation (*continued*)

Draft resolution on industrial development cooperation (A/C.2/59/L.47)

10. **Mr. Al-Mahmoud** (Qatar), speaking on behalf of the Group of 77 and China, introduced draft resolution A/C.2/59/L.47, which, among other things, focused on the critical role of productivity factors and industrial development in poverty alleviation.

Agenda item 92: Training and research (*continued*) (A/C.2/59/L.51)

(a) United Nations Institute for Training and Research (*continued*)

Draft resolution on the United Nations Institute for Training and Research (A/C.2/59/L.51)

11. **Mr. Al-Mahmoud** (Qatar), speaking on behalf of the Group of 77 and China, introduced draft resolution A/C.2/59/L.51 and stressed the need to resolve the critical financial situation and other issues related to the high costs for Institute premises, especially given the important training programmes and activities carried out by the Institute.

Agenda item 44: Information and communication technologies for development (*continued*) (A/C.2/59/L.18 and A/C.2/59/L.32)

Draft resolution on the World Summit on the Information Society (A/C.2/59/L.32)

12. **Mr. Bernardini** (Italy), Vice-Chairman, introduced draft resolution A/C.2/59/L.32, which he was submitting on the basis of informal consultations held on draft resolution A/C.2/59/L.18. A consensus had been achieved during the informal consultations.

13. **Mr. Snoussi** (Tunisia) pointed out that the text of the draft resolution in French should be revised to match the English text. After the word "*Sommet*", in paragraph 2, the French translation of the phrase "which will take place in Tunis from 16 to 18 November 2005;" should be added.

14. The following countries had joined in sponsoring draft resolution A/C.2/59/L.32: all members of the Group of 77 and China, Andorra, Canada, Finland, France, Germany, Japan, Luxembourg, Norway, Portugal, Spain, Switzerland, Sweden and Turkey.

15. *Draft resolution A/C.2/59/L.32 was adopted.*

16. *Draft resolution A/C.2/59/L.18 was withdrawn.*

Agenda item 85: Sustainable development (*continued*)

(c) International Strategy for Disaster Reduction (*continued*)

Draft resolution on the International Strategy for Disaster Reduction (*continued*) (A/C.2/59/L.11 and A/C.2/59/L.45)

17. **Ms. Anzorge** (Poland), Vice-Chairman, introduced draft resolution A/C.2/59/L.45, which she was submitting on the basis of informal consultations held on draft resolution A/C.2/59/L.11.

18. In the fifth preambular paragraph, the word "such" before "extreme" should be moved and placed after the word "events". In the sixth preambular paragraph, the words "inter alia" should be replaced with "among others". In the tenth preambular paragraph, the phrase "and mitigation strategies and" should be replaced with ", mitigation,". In paragraph 4, the words "the International Strategy for Disaster Reduction" should be inserted after "strengthening of" and the words "national platforms" should be spelled with initial capital letters. Similarly, in paragraph 5, the words "International Strategy for Disaster Reduction" should be inserted after "respective", and the words "national platforms" should be spelled with initial capital letters. In paragraph 7, the word "available" should be moved and inserted between "all" and "resources".

19. *Draft resolution A/C.2/59/L.45, as orally revised, was adopted.*

20. *Draft resolution A/C.2/59/L.11 was withdrawn.*

(d) Protection of global climate for present and future generations of mankind (*continued*) (A/C.2/59/L.13 and A/C.2/59/L.30)

Draft resolution on protection of global climate for present and future generations of mankind (A/C.2/59/L.13 and A/C.2/59/L.30)

21. **Ms. Anzorge** (Poland) Vice-Chairman, introduced draft resolution A/C.2/59/L.30, which she was submitting on the basis of informal consultations held on draft resolution A/C.2/59/L.13. The words "by

continuing to provide support for" in the eighth preambular paragraph should be replaced by the words "through continuing support to". In paragraph 7, the word "officers" should be replaced by the word "offices". At the end of that paragraph, a comma should be inserted between the words "secretariats" and "while".

22. *Draft resolution A/C.2/59/L.30, as orally revised, was adopted.*

23. **Ms. Tamlyn** (United States of America), speaking in explanation of position, said that her delegation was committed to the objective of the United Nations Framework Convention on Climate Change and to addressing climate change in a science-based, cost-effective manner. The United States had made it clear that it would neither ratify the Kyoto Protocol nor engage in efforts to ensure its entry into force. It therefore considered the ninth preambular paragraph of the text, which recalled a declaration made during the Millennium Summit of September 2000, to have been overtaken by changed policies and circumstances.

24. **Ms. Eizema** (Netherlands), speaking on behalf of the European Union, Albania, Bulgaria, Croatia, Norway, Romania, Serbia and Montenegro and the former Yugoslav Republic of Macedonia, welcomed the adoption of the draft resolution and the Russian Federation's recent ratification of the Kyoto Protocol, paving the way for the Protocol's entry into force. The Kyoto Protocol would provide an additional legal basis for international efforts to address climate change, and the European Union looked forward to a successful outcome of the tenth Conference of the Parties to the United Nations Framework Convention on Climate Change. The European Union was committed to achieving concrete results, notably on joint implementation and clean development mechanism agreements. The third climate change assessment had revealed that climate change was indeed real and occurring more quickly than originally thought. That alarming trend had recently been further confirmed by the Arctic Climate Impact Assessment. Indeed, addressing that first comprehensive regional study on climate change would be a main priority for the European Union in 2005. She urged all those States that had not yet done so to ratify the Kyoto Protocol in a timely manner.

25. **Ms. Woudberg** (New Zealand) welcomed the recent ratification of the Kyoto Protocol by the Russian Federation, paving the way for the Protocol to come into force in early 2005. That would be a small but significant first step in the long but challenging process by the international community to address climate change. More work clearly needed to be done and her delegation intended to make a constructive contribution to the discussions on the next steps, beginning with the tenth Conference of the Parties to the United Nations Framework Convention on Climate Change in December 2004 and the January 2005 International Meeting in Mauritius to review the Barbados Programme of Action on small island developing States.

26. *Draft resolution A/C.2/59/L.13 was withdrawn.*

(e) Implementation of the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (*continued*)

Draft resolutions on the implementation of the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (A/C.2/59/L.14 and A/C.2/59/L.46)

27. **Ms. Anzorge** (Poland), Vice-Chairman, introduced draft resolution A/C.2/59/L.46, which she was submitting on the basis of informal consultations held on draft resolution A/C.2/59/L.14.

28. *Draft resolution A/C.2/59/L.46 was adopted.*

29. *Draft resolution A/C.2/59/L.14 was withdrawn.*

Agenda item 86: Implementation of the outcome of the United Nations Conference on Human Settlements (Habitat II) and of the twenty-fifth special session of the General Assembly (*continued*) (A/C.2/59/L.5 and A/C.2/59/L.38)

Draft resolutions on the implementation of the outcome of the United Nations Conference on Human Settlements (Habitat II) and strengthening of the United Nations Human Settlements Programme (UN-Habitat) (A/C.2/59/L.5 and A/C.2/59/L.38)

30. **Ms. Anzorge** (Poland), Vice-Chairman, introduced draft resolution A/C.2/59/L.38, which she

was submitting on the basis of informal consultations held on draft resolution A/C.2/59/L.5. In paragraph 7, the words “UN-Habitat” should be inserted before the words “regional offices”. In paragraph 21, the word “it” should be replaced by the words “the General Assembly”.

31. **Mr. Seth** (Secretary of the Committee), explaining the programme budget implications of draft resolution A/C.2/59/L.38, noted that paragraph 9 requested the Secretary-General to keep the resource needs of UN-Habitat and the United Nations Office at Nairobi under review so as to permit the delivery, in an effective manner, of necessary services to UN-Habitat and the other United Nations organs and organizations in Nairobi. Provisions had been made in the programme budget for the biennium 2004-2005 for implementing the terms of the resolution. Therefore, should the Second Committee adopt draft resolution A/C.2/59/L.38, there would be no requirement for additional appropriation, as the necessary expenses would be accommodated within existing resources. He drew attention to the provisions of section VI of General Assembly resolution 45/248 B of 21 December 1990, in which the Assembly reaffirmed that the Fifth Committee was the appropriate Main Committee of the Assembly entrusted with responsibilities for administrative and budgetary matters and also reaffirmed the role of the Advisory Committee on Administrative and Budgetary Questions.

32. *Draft resolution A/C.2/59/L.38, as orally revised, was adopted.*

33. *Draft resolution A/C.2/59/L.5 was withdrawn.*

Agenda item 91: Permanent sovereignty of the Palestinian people in the Occupied Palestinian Territory, including East Jerusalem, and of the Arab population in the occupied Syrian Golan over their natural resources (*continued*) (A/C.2/59/L.41)

Draft resolution on permanent sovereignty of the Palestinian people in the Occupied Palestinian Territory, including East Jerusalem, and of the Arab population in the occupied Syrian Golan over their natural resources (A/C.2/59/L.41)

34. **Mr. Elfarnawany** (Egypt) introduced the draft resolution on behalf of the sponsors and noted that the seventh preambular paragraph should read “*Recalling* the advisory opinion rendered on 9 July 2004 by the International Court of Justice on the Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory, and recalling resolution ES-10/15 of 20 July 2004,”.

35. **Ms. Chong** (Brunei Darussalam), **Ms. Navarro** (Cuba) and **Mr. Barry** (Senegal) said that their delegations had become sponsors of the draft resolution.

36. **The Chairman** said that the United States delegation had requested a recorded vote on draft resolution A/C.2/59/L.41.

37. *A recorded vote was taken on draft resolution A/C.2/59/L.41.*

In favour:

Afghanistan, Algeria, Andorra, Angola, Argentina, Armenia, Austria, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Brunei Darussalam, Bulgaria, Burkina Faso, Burundi, Cambodia, Canada, Central African Republic, Chile, China, Colombia, Congo, Costa Rica, Croatia, Cuba, Cyprus, Czech Republic, Democratic People’s Republic of Korea, Djibouti, Dominica, Ecuador, Egypt, El Salvador, Eritrea, Estonia, Ethiopia, Finland, France, Gabon, Germany, Ghana, Greece, Guatemala, Guyana, Hungary, Iceland, India, Indonesia, Iran (Islamic Republic of), Iraq, Ireland, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kuwait, Lao People’s Democratic Republic, Latvia, Lebanon, Lesotho, Liberia, Libyan Arab Jamahiriya, Liechtenstein, Lithuania, Luxembourg, Madagascar, Malaysia, Maldives, Mali, Malta, Mauritius, Mexico, Monaco, Mongolia, Morocco, Mozambique, Myanmar, Namibia, Nepal, Netherlands, New Zealand, Norway, Oman, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Republic of Korea, Romania, Russian Federation, Saint Lucia, Saint Vincent and the Grenadines, San Marino, Saudi Arabia, Senegal, Serbia and Montenegro, Singapore, Slovakia, Slovenia, Somalia, South Africa, Spain, Sri Lanka, Suriname, Swaziland, Sweden, Switzerland, Syrian Arab Republic, Tajikistan, Thailand, Timor-Leste, Togo, Tunisia, Turkey, Uganda, Ukraine, United Arab Emirates, United Kingdom of Great Britain and Northern Ireland,

United Republic of Tanzania, Uruguay, Venezuela, Viet Nam, Yemen, Zambia, Zimbabwe.

Against:

Israel, Marshall Islands, Micronesia (Federated States of), United States of America.

Abstaining:

Albania, Australia, Cameroon, Côte d'Ivoire, Dominican Republic, Haiti, Tuvalu, Vanuatu.

38. *Draft resolution A/C.2/59/L.41 was adopted by 140 votes to 4 with 8 abstentions.*

39. **Ms. Sindbjerg** (Denmark) pointed out that her delegation's vote in favour of the draft resolution had not been recorded.

40. **Mr. Leu** (Republic of Moldova) said that his delegation had intended to vote in favour of the draft resolution.

41. **Mr. Toktomushev** (Kyrgyzstan) said that his delegation had intended to vote in favour of the draft resolution.

42. **Mr. Boureima** (Niger) said that, had his delegation been present, it would have voted in favour of the draft resolution.

43. **Mr. Manis** (Sudan) said that, had his delegation been present, it would have voted in favour of the draft resolution.

44. **Mr. Van Loosdrecht** (Netherlands), speaking on behalf of the European Union, Bosnia and Herzegovina, Bulgaria, Croatia, Iceland, Liechtenstein, Norway, Romania, Serbia and Montenegro, the former Yugoslav Republic of Macedonia and Turkey, said that the European Union had voted in favour of draft resolution A/C.2/59/L.41 because it believed that the natural resources of any territory seized by force or arms should not be used inappropriately or illegally by the occupying Power. In that regard, the European Union reaffirmed the applicability of the Fourth Geneva Convention of 1941 to the Occupied Territories and also reaffirmed that any infringement of the rights of the Palestinian people with regard to that Convention was illegal.

45. However, the issues referred to in the resolution were matters which were to be addressed within the framework of the permanent status negotiations of the Middle East Peace Process. The European Union remained committed, in close cooperation with its partners in the Quartet and in the Arab world, to assisting the Parties in their efforts to find a final settlement to the Middle East conflict. Therefore, the resolution just adopted must not be considered as prejudicial to or preemptive of the outcome of those negotiations.

The meeting rose at 12.05 p.m.

Annex 600

Official records of the 84th meeting of the General Assembly held on 13 February 2008, A/62/PV.84

United Nations A/62/PV.84

General Assembly

Sixty-second session

Official Records

84th plenary meeting

Wednesday, 13 February 2008, 6 p.m.

New York

President: Mr. Kerim . . . . . (The former Yugoslav Republic of Macedonia)

In the absence of the President, Mr. Hannesson (Iceland), Vice-President, took the Chair.

The meeting was called to order at 6 p.m.

Thematic debate entitled "Addressing climate change: The United Nations and the world at work"

Agenda items 48, 54 and 116 (*continued*)

Integrated and coordinated implementation of and follow-up to the outcomes of the major United Nations conferences and summits in the economic, social and related fields

Sustainable development

Follow-up to the outcome of the Millennium Summit

Report of the Secretary-General (A/62/644)

The Acting President: I now give the floor to the representative of Norway.

Mr. Hirsch (Norway): I am delivering this statement on behalf of Ambassador Juul, who had to attend to another matter at this very moment. Let me assure you, Mr. President, that this does not in any way reflect the priority that Norway gives to the issue of climate change, which is at the top of our, as well as the global, agenda.

"The reports of the Intergovernmental Panel on Climate Change (IPCC) have given us the facts, but we can also see them clearly with our own eyes.

"Norway sees this clearly in the Arctic, where ice is now melting three times faster than expected. Furthermore, the extent of the Arctic Sea ice was at a record low last year. The same tendencies can be seen in the Himalayas and elsewhere. Since ice reflects heat while water absorbs it, the melting of ice is a self-reinforcing process that will further accelerate global warming. The melting of the Arctic ice cover will have ramifications for the climate in regions thousands of kilometres away. For example, it is likely that Asian monsoons, crucial for the livelihoods of millions of people, will be affected.

"As many speakers before have already mentioned, we need action now.

"It is a positive factor that we agreed on the Bali Plan of Action, even though we feel we were not ambitious enough. A global agreement on climate change has to have a common vision that matches the scale of the challenge. Norway agrees with the European Union that to avoid dangerous climate change, global temperatures must rise no more than two degrees above the pre-industrial levels. According to the IPCC, that means that global emissions must peak no later than 2015 and must be reduced at least by half, compared to 2000 levels, no later than 2050.

"Industrialized nations such as Norway and the United States have to have cut emissions by 25 to 40 per cent by 2020. We recognize,

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however, that what is most important is that we now need to work together and bridge our differences in order to tackle the significant challenges ahead.

"The fact that the greatest burden of global warming will be on the poor, who have the least responsibility for the current state of affairs, also makes climate change a central issue of justice and ethics in world politics today. Industrialized countries therefore need to take the lead in the efforts to tackle climate change, but all countries must be on board and do what they can in accordance with their capabilities.

"The Norwegian Government is ready to play its part and has therefore decided to cut global emissions by an amount equivalent to 100 per cent of our own emissions by 2030. That way, Norway will become a carbon-neutral nation. Norway believes that being a big exporter of oil and gas gives us a particular responsibility to provide a more climate-friendly option for using fossil fuels, including coal, during the transition to a low-carbon energy system.

"According to the International Energy Agency, the use of carbon capture and storage in the industrial, fuel transformation and power generation sectors can account for 20 to 28 per cent of the CO_2 emissions savings. Norway is therefore strongly committed to developing carbon capture and storage technologies. Hopefully, our efforts will contribute to making that technology commercially viable at a global scale.

"Furthermore, Norway also recognizes the need to bring emissions from deforestation and forest degradation to a halt and has decided to support forestry efforts in this context with more than $500 million annually. Through effective measures against deforestation, we can achieve large cuts in greenhouse gas emissions quickly and at a low cost.

"We welcome the significant developments at Bali on the need to bring reduced emissions from deforestation and forest degradation seriously into the negotiations for a post-2012 agreement. This is a difficult sector to tackle, and a comprehensive effort with close cooperation among all parties involved will be necessary to meet all the challenges we face.

"The world cannot choose between development and environment. We need both. In fact, without tackling the problem of climate change, development will be harder to achieve and definitely more costly. Sustainable development will therefore be a key factor. So will developing mechanisms that reward environment-friendly practices. We will also need a major push for new technologies. Rapid technological progress, as well as the rapid transfer of technology, is vital for achieving sustainable development.

"Let me also take this opportunity to welcome the report of the Secretary-General (A/62/644), which gives a useful overview of the activities of the United Nations. I can see from the report that many things are being done at both the local and global levels, but the report also underlines the need for the United Nations to streamline its efforts.

"The Executive Secretary of the United Nations Framework Convention on Climate Change, Yvo de Boer, has talked about the need for a 'Climate Change Marshall Plan'. I agree with this idea and the principles behind it, but in this respect it will be important first that the United Nations can deliver as one and, secondly, that it can coordinate and cooperate with international financial institutions, as well as donor and programme countries, so that a 'Climate Change Marshall Plan' can deliver results effectively."

The Acting President: I now give the floor to Mr. Jeem Lippwe, Deputy Permanent Representative of the Federated States of Micronesia.

Mr. Lippwe (Federated States of Micronesia): I wish to express my appreciation to the President of the General Assembly for organizing this meeting to discuss the important issue of climate change. It is not only fitting, but indeed appropriate that we do this.

The *Human Development Report 2007/2008* addressed the clear link between human development and climate change. In recent years, the people of Micronesia have had to witness the consequences associated with climate change. More intense storms

with higher wind speeds, higher tides and wave surges have damaged our subsistence agriculture and fishing, as well as endemic marine and terrestrial species, including coral reefs. Increasingly, extreme weather conditions lead to droughts, destroyed crops, contaminated wells, eroding beaches and unprecedented land slides. These effects pose a great threat to my country's culture, livelihood and sustainable development.

If climate change continues at this pace, we might be forced to abandon our islands. Relocation is already happening in several Pacific islands, including my own. That clearly shows that small island States, which have contributed little to the causes of climate change, are the ones now suffering the most. Their inhabitants are strongly affected by climatic disasters, and are therefore victims of the effects created by the intimate relationship between poverty and exposure to climate risks.

The latest Human Development Report traces climate-related risks to the energy consumption patterns and political choices of the major emitters. We therefore ask those who pollute the most to take responsibility and underwrite the cost of adaptation in developing States, particularly in small island developing States.

Fighting the consequences of climate change leads to a growing dependence on technical and financial support from partners. How can countries like ours, which are so reliant on the environment, improve their current situation if there exists so little international cooperation on the issues of mitigation and adaptation?

Micronesia has already adopted mitigation and adaptation measures in its infrastructure and strategic development plans — for example, initiatives that protect mangrove areas and coastal beaches and climate-proofing procedures for infrastructure. But the truth is that that is as much as we can do given our financial resources. What opportunities does a small island developing State like Micronesia have? Being a federation of islands, situated only a few metres above sea level, how can we defend ourselves against rising sea levels? One possible solution — to build sea walls around every island in Micronesia — would not only mean a huge investment, but it would also be impractical.

Investing in renewable sources of clean energy in vulnerable countries will help us to meet our energy needs and combat climate change. Support for development and the utilization and distribution of renewable energy technologies to small island developing States is necessary. In order to facilitate that, it is important to mainstream the Mauritius Strategy into all United Nations processes.

As climate change progresses, basic human rights — such as the right to food, the right to safe water, the right to education, health and development and the right to exist — are in danger, especially for small island developing States. The effects of climate change will slowly remove basic human rights from society. The United Nations must address those interrelations.

Article 3 of the Universal Declaration of Human Rights declares that "Everyone has the right to life, liberty and security of person". Not to act on the threats climate change imposes on us would lead to a violation of those universal human rights. Forcing inhabitants to leave their ancestral homelands because of changes to the climate caused by other nations would certainly qualify as a violation of article 3.

I want to emphasize that we are all responsible for the future of planet Earth. Engaging actively in the prevention of climate change is a moral obligation that all should be willing to fulfil. The attention paid to climate change worldwide is a step in the right direction. But what we all need to do is to collectively find a way to prevent further damage to the planet for future generations through cooperation and communication. I know this debate is part of that process.

The Acting President: I now give the floor to Ms. Melanie Santizo-Sandoval, the representative of Guatemala.

Ms. Santizo-Sandoval (Guatemala) (*spoke in Spanish*): My delegation is grateful for this renewed opportunity to delve into the issue of climate change, especially as it pertains to the United Nations system. Before we do so, I should like to associate Guatemala with the statement delivered by Ambassador Ashe of Antigua and Barbuda on behalf of the Group of 77 and China.

Instead of once again reiterating what Guatemala and the Central American subregion have suffered as a

result of the devastating effects of this phenomenon, my delegation would like to focus on what the future holds for us as a Latin American country in our struggle to address this problem.

As pointed out by a recent report by the United Nations Environment Programme, the Latin American and Caribbean region as a whole only produces 5 per cent of the world's greenhouse gases. Nevertheless, we face a disproportionate series of threats resulting from the negative effects of climate change and global warming. In the past 12 years, the region has experienced historically high temperatures, natural disasters and desertification — all of which affect and hamper our economic and social development. Our ongoing efforts to eradicate poverty are becoming even more of an uphill struggle.

The efforts of the United Nations system, and any partnership established with the private sector or civil society to be implemented at the local or national level, should of course serve to support the United Nations Framework Convention on Climate Change. Today's thematic debate is an opportunity to identify ways to more effectively support the Convention. As we meet to focus on the roles of the United Nations system and partnerships vis-à-vis climate change, we must not forget that Member States themselves have an arduous task ahead.

With the recent conclusion of the thirteenth session of the Conference of the Parties to the Framework Convention, we now have some good news — for example, the Bali Road Map, the decisions taken with regard to deforestation and the operationalization of the Adaptation Fund. Nevertheless, the negotiations were not easy. The agreements reached are merely the beginning of a more demanding negotiating process — one that will require genuine compromise and the search for serious solutions.

I should like to say once again that the Framework Convention is the appropriate forum to address climate change. The adoption of the Bali Road Map was in effect merely a courageous decision to launch a complicated process. At the end of April, the working groups that were recently established will begin their work. The battle to defeat climate change has barely begun.

In that regard, among other things, my delegation would like to underscore the importance of finally beginning to address the issue of deforestation in a more comprehensive manner within the framework of the Convention. We must not forget that protecting forests should benefit all those involved — those of us who will benefit from conserving them as well as the peoples who depend on forests for their development and well-being. Finding solutions to such dilemmas will be challenging.

With regard to developing countries, we are working to adapt to climate change. As we said during last September's high-level event on climate change, given Central America's special vulnerability to climate change, a summit of the region's Presidents will be held in Honduras in April 2008 to discuss climate change and the environment. The summit will consider a Central American climate change and environment strategy that integrates efforts to improve information with a regional adaptation plan, together with a programme aimed at promoting the establishment of a new economic sector for climate-friendly goods and services.

As we in developing countries make efforts to adapt to climate change, annex I developed countries have unavoidable commitments in the areas of emissions reduction, technology transfer and financing that they should meet, instead of making them part of their rhetoric or trying to modify or renegotiate them every time we have a debate, a dialogue or a negotiation in the context of the Convention.

On the global level, the thirteenth session of the Conference of the Parties has charted the path ahead of us. My delegation hopes that, throughout this debate and in subsequent meetings on climate change, there will be real progress towards meeting commitments and establishing agreements that truly reflect the fact that we have common but differentiated responsibilities with regard to climate change.

The Acting President: I now give the floor to Mr. Tirtha Raj Wagle, representative of Nepal.

Mr. Wagle (Nepal): At the outset, allow me to express my delegation's appreciation to the President for convening this debate on climate change. We also thank the Secretary-General for his useful reports which provide us an overview of the United Nations environment activities. My delegation is confident that this debate will help accelerate the constructive momentum generated by the Bali Road Map since its adoption last December.

Let me also associate my delegation with the statements made by Antigua and Barbuda on behalf of the Group of 77 and China and by Bangladesh on behalf of the Group of Least Developed Countries (LDCs).

It is an irony that the LDCs and small island developing States, which are least responsible for greenhouse gas emissions, are bearing the brunt of the effects of global climate change. These countries are struggling to eradicate poverty, while their scarce resources, meant for development, are swallowed up by unforeseen expenditures as climatic calamities increase unabated along the way.

We cannot overemphasize the importance of partnership and cooperation among government authorities, the United Nations, development agencies, non-governmental organizations (NGOs), civil society and the business community in creating a sustainable climate future. We need to galvanize common efforts under the United Nations Framework Convention on Climate Change, by sincerely fulfilling the obligations and commitments made in accordance with the principle of "common but differentiated responsibilities and respective capabilities".

Nepal is serious about addressing climate change. We have incorporated a climate change perspective in our national development strategies and country-specific priorities. The expansion of alternate and renewable energy sources has been encouraged. Successful community forestry development programmes and programmes introducing household biogas plants for cleaner domestic lighting and cooking have been carried out with the cooperation of NGOs.

These initiatives have brought social and environmental benefits to rural areas and have effectively contributed to environmental sustainability by steering us onto a cleaner energy path, ending deforestation, encouraging afforestation and preserving biodiversity. We need to foster such local environmental efforts through increased technical support.

As a country with snow-capped mountains and over 2,300 glacial lakes in the Himalayan region, Nepal is dangerously exposed to glacial lake outburst floods due to snow melting and the unforeseen consequences to the people living downstream.

The depletion of Himalayan glaciers means reduced water resources for one fifth of humankind. It will have a detrimental effect on our hydropower potential and agricultural production. Furthermore, it will cause the failure of sustainable mountain tourism efforts.

The urgent adaptation needs of poor and vulnerable countries like Nepal should be addressed before it is too late to avert irreversible damage to human development potential.

We underscore the importance of scientific information and public awareness to improve early warning capacity as well as to build resilience and preparedness in vulnerable communities. In this regard, we urge the international community to support the establishment of a research centre in Nepal with a view to facilitating the scientific assessment of climate change in the Himalayas and adaptation to it.

Nepal appreciates the effective role of the United Nations for adaptation and mitigation efforts at the country level. We emphasize that greater attention should be given to the question of providing sustained, swift and substantial financial and technical assistance to the LDCs, poor mountainous countries and small island developing States.

It is equally imperative that the Global Environmental Facility and its implementing agencies be more proactive in operationalizing technical and funding resources, including the Least Developed Countries Fund. Procedural aspects or any other technicalities should be simplified so as to ensure efficient implementation of national adaptation programmes of action.

Similarly, the clean development mechanism under the Kyoto Protocol should be made more inclusive and should cover small-scale environmental conservation projects at the local level, thereby bringing social and environmental benefits to poor people while promoting low-carbon investments.

Thanks to the scientific evidence presented by the Intergovernmental Panel on Climate Change and recent studies on the economics of climate change, and thanks to the placing of climate change at the top of the global agenda, we are all now aware that we cannot afford the cost of inaction.

The international community should stay focused, linking the climate change issue to a sustainable

development agenda and paying special attention to the creation of human development opportunities for poor countries and vulnerable communities.

In closing, let me reiterate that there is no other option but to immediately draw up a concrete multilateral action plan with binding targets on greenhouse gas emissions and a built-in monitoring mechanism. The need to make technological solutions affordable and readily transferable from developed to developing countries is more pressing than ever, as is the need to generate new, additional and predictable financial and technical resources for immediate adaptation and investment in a sustainable development infrastructure.

My delegation is committed to working in concert towards the timely achievement of an ambitious framework for a post-2012 Kyoto world.

The Acting President: I now give the floor to Mr. Sirodjidin M. Aslov, Permanent Representative of Tajikistan.

Mr. Aslov (Tajikistan) (*spoke in Russian*): First of all, I would like to express our appreciation to the President for organizing today's thematic debate on climate change. I also wish to avail myself of this opportunity to express my delegation's gratitude to the Secretary-General, Mr. Ban Ki-moon, for his tireless efforts in advancing the issue of climate change, thanks to which it has risen to the very top of the United Nations agenda.

Last year, as a result of these particular efforts, States and international organizations attended the thirteenth session of the Conference of the Parties, which culminated in the Bali Action Plan and the definition of a strategic framework for near-term cooperative efforts in the areas of adaptation, mitigation, technology and financing.

I shall confine my remarks to adaptation. As was affirmed during the High-level Event on Climate Change in September 2007, adaptation has become inevitable, given the ongoing climate changes.

Vivid proof of this statement is the current unfavourable weather conditions faced by my country. In January and February in Tajikistan's valleys, the temperature dropped as low as minus 18 to minus 23 degrees Celsius, which is 8 to 13 degrees lower than usual. This severe cold was followed by heavy snowstorms.

For the past 50 years our weather records have never registered such an extremely cold winter. As a consequence of this cold, rivers were frozen and numerous pumps and water supply networks were damaged. This actually caused an energy crisis, as a result of which the work of a great number of industrial enterprises was suspended. Almost all winter crops were affected, and severe damage was done to fruit trees, vineyards and the like. The estimated economic damage amounted to several hundred million dollars.

I would like to take this opportunity to express our gratitude to the United Nations, the United Nations Development Fund, the World Bank, the World Food Programme and various specialized agencies, as well as to a number of Member States, for the assistance and support given to my country.

We support the thesis that climate change and development are inseparable elements of a common agenda — sustainable development, which is based on three components: economic development, social development and environmental protection.

In that connection, we also believe that another very important component deserves to be specifically addressed — a component without which life on Earth cannot be sustained: water. It is common knowledge that the shaping of climate and the emergence of life are closely connected to this natural resource, which, like the climate itself, must be treated with care. Some areas of our planet are already experiencing chronic shortages of drinking water. Against the background of the ever-increasing effects of climate change, particularly in the dry regions of our planet, the issues of supplying the population with drinking water and developing the many water-dependent economic sectors are becoming increasingly urgent.

A unique natural resource, water is used by humanity for drinking, producing food, manufacturing goods and generating alternative forms of electric energy, which in turn are essential for the success of our efforts to achieve the Millennium Development Goals (MDGs), to provide access to electric energy and, ultimately, to achieve sustainable development.

For that reason, we believe it is important to accord special attention to the issues related to water supply and to hold a high-level event or convene a special session of the General Assembly on those issues with a view to discussing current progress, adopting specific measures aimed at achieving the

MDGs and implementing the International Decade for Action, “Water for Life”, and the International Year of Sanitation.

Finally, I should like briefly to discuss another aspect of climate change: natural disasters, which have been occurring more frequently and on a larger scale in recent years. Water-related disasters account for the majority of natural disasters throughout the world. Floods, mud flows, landslides, droughts and other water-related disasters have a considerable impact on the well-being of countries. According to the Intergovernmental Panel on Climate Change, the current trends are likely to produce an even worse scenario, because the scale and frequency of floods and droughts could increase in the twenty-first century as a result of climate change. Moreover, the losses caused by natural disasters are more severe in developing countries than in industrial nations.

We call for enhanced cooperation among Member States and international organizations in this area. To that end, the Government of the Republic of Tajikistan has decided to make a practical contribution to this cause by holding an international conference on water-related disaster reduction in Dushanbe on 27 and 28 June 2008. We hope that the United Nations and its specialized agencies, as well as Member States, will participate actively in the Dushanbe conference.

The Acting President: I now call on Mr. Bature Lawal, representative of Nigeria.

Mr. Lawal (Nigeria): On behalf of the Nigerian delegation, I wish to commend Mr. Srgjan Kerim, President of the General Assembly, for once again convening a thematic debate to address what the Secretary-General has aptly described as the defining issue of our time. This debate is indeed timely, as it affords the international community the opportunity to evaluate and maintain the momentum of the success recorded at Bali.

My delegation associates itself with the statements made by the representative of Cameroon on behalf of the African Group and by the representative of Antigua and Barbuda on behalf of the Group of 77 and China.

Nigeria welcomes the Bali Road Map, which has set the stage for the establishment of a comprehensive and all-inclusive post-2012 climate change regime. The Road Map has thus rekindled hope not only that negotiations will be advanced, but also that action will be taken on the key issues of adaptation, mitigation, financing, technology and deforestation.

The report of the Secretary-General (A/62/644) offered useful insights into how the United Nations system can assist in addressing climate change. Nigeria, as a strong advocate of global partnerships, is convinced that measures to address climate change should be taken within the United Nations framework. In our view, the daunting challenge facing developing countries is how to address climate change without compromising or impeding the implementation of the development agenda of those countries — particularly the achievement of internationally agreed goals, including the Millennium Development Goals. In that respect, measures to address climate change and sustainable development strategies should be mutually reinforcing.

We believe that the United Nations system is uniquely placed to facilitate the implementation of the commitments set out in the United Nations Framework Convention on Climate Change and its Kyoto Protocol, particularly the commitments of the developed countries to reduce emissions and to support developing countries with the requisite technology and financing for addressing climate change.

Similarly, the United Nations system could assist developing countries in promoting the use of new and renewable forms of energy, such as solar power and wind energy, at an affordable cost and in promoting research on drought-resistant and saline-tolerant crops. However, we urge caution with regard to the production of biofuels in areas where it could threaten food security. We continue to draw attention to Lake Chad, which is drying up rapidly as a result of climate change, and reiterate our appeal to the international community, and particularly the United Nations system, to complement the efforts of African countries to reverse that trend.

Another important matter in addressing climate change is the promotion of clean energy technology, especially as it relates to the carbon market and to carbon capture and storage. However, these involve highly complex and technical terminologies that are not well understood by the layperson. Moreover, many countries are wary about the safety of carbon capture and storage technology. It would therefore behove the United Nations system, using its global outreach, to

launch a sustained public enlightenment campaign aimed at explaining the relevant mechanisms and allaying the fears of some developing countries as to the safety and viability of carbon capture and storage technology.

One serious impediment to the transfer of new and renewable technologies to developing countries is the issue of intellectual property rights. In that respect, we suggest that, just as we facilitated the Aid for Trade Initiative, we facilitate aid-for-technology transfer, in the form of incentives offered by developed countries to their multinational companies to make the use of patented technologies affordable for developing countries. The United Nations system could also play a vital role in taking stock of the technologies that are in the public domain, free of charge, and making such technologies available to developing countries. We also support the idea of setting up a monitoring mechanism to regularly assess the implementation of the developed countries' obligations on technology transfer.

One important initiative that could be vigorously promoted by the United Nations system is the Strategic Investment Program for Sustainable Land Management in Sub-Saharan Africa, which is being coordinated by the Global Environment Facility and the African Ministerial Conference on the Environment. Through that initiative, about $l billion was to be raised to rehabilitate damaged and degraded lands and to prevent new land degradation. One key aspect of the initiative is the provision of funds, expertise and know-how directly to grass-roots organizations, local communities and farmers to combat land degradation. It is pertinent therefore for all the relevant United Nations agencies to work in a coordinated manner to ensure the success of that laudable initiative in Africa.

In a similar vein, we call on the United Nations agencies to redouble their efforts in assisting African countries to garner an equitable share of clean development mechanism projects through the Nairobi Framework.

Finally, we hope the upcoming negotiation process in Poland and Copenhagen will be transparent and all-inclusive, devoid of the selectiveness that was occasionally witnessed in Bali, and will, in line with the Bali Road Map, produce the desired results by the target date of 2009.

The Acting President: I now give the floor to Mr. Alpha Ibrahima Sow, Permanent Representative of Guinea.

Mr. Sow (Guinea) (*spoke in French*): I wish, on behalf of the Republic of Guinea, to express our full appreciation for the President's welcome initiative in holding this thematic debate of the General Assembly on climate change. I also wish to congratulate the Secretary-General, His Excellency Mr. Ban Ki-moon, for his report (A/62/644), which provides an exhaustive overview of the work carried out by the United Nations system on climate change.

I wish to associate myself with the statements, at the 80th meeting by Antigua and Barbuda on behalf of the Group of 77 and China, and at the 81st meeting by Bangladesh on behalf of the least developed countries and by Cameroon on behalf of the African Group.

In placing climate change at the centre of the political agenda, the international community reaffirms its determination to meet this urgent and critical global challenge, which calls for both individual and collective responses. In the general debate of September 2007 and the high-level meeting convened by the Secretary-General and supported by the impetus of the Bali objectives and Road Map, the General Assembly provides an irreplaceable framework for action and cooperation on the multilateral level to promote the fruitful negotiation of an international regime on climate change for the period after 2012.

My country welcomes the laudable results of the Bali conference, which succeeded in launching negotiations on climate change in order to reach a general global agreement before the end of 2009.

For the Republic of Guinea, climate change constitutes a challenge to both peace and security and to sustainable development. Rapidly advancing global warming is seriously affecting my country and the region, with considerable consequences in terms of environmental disruption, desertification and effects on natural and water resources. Without multiplying the alarmist, well-known and recognized examples, I can emphasize that if nothing is done right away, our region could be condemned to destitution and poverty, with no real hope of attaining the Millennium Development Goals by the planned date.

In that context, we welcome the active participation of the least developed countries and the

Group of 77 in the Bali negotiations and support the international community's focus on areas of concrete action, namely mitigation, adaptation, capacity-building, technology and financing, sustainable development, et cetera. After Bali, the world needs clear and firm commitments and, above all, action, because the efforts undertaken thus far remain insufficient, even given the modest promises made and what is at stake.

As the President has emphasized, the current debate cannot replace the negotiations launched in Bali, but it could influence the process by encouraging, in a coordinated and effective manner, partnership on all levels — national, regional and global — among Member States, the United Nations system and other participants, including the private sector, civil society, financial institutions, universities, scientists and researchers, et cetera. My country welcomes the inclusive participation of all actors in the area of climate change and development in this current debate. We hope to see the gradual establishment of a global agreement in accordance with the principle of shared but differentiated responsibilities.

We also recall the urgent need to fully mobilize the necessary financial, technical and institutional tools expected under the Bali framework convention, to strengthen the capacity for adaptation of the poorest and most vulnerable countries to the harmful — and often catastrophic and unforeseeable — effects of climate change. In that context, we must undertake to make the Nairobi Framework plan operational, in order to ensure the participation of developing countries in the development mechanism itself.

My country welcomes the launching of numerous national, bilateral and multilateral initiatives to improve the living conditions of populations and to reduce poverty and marginalization while taking the environment into consideration. We therefore express our gratitude to all the countries and partners that have made concrete, measurable and targeted commitments to support in practical terms the efforts of the developing countries in confronting climate change.

Allow me to conclude by quoting the President's words, which were inspired by his resolute commitment to the fight against climate change, which we share.

> "What we need is a common vision, a global consensus and a global alliance for action, shared by individuals, the media, lawmakers, business leaders, Governments, regional organizations and, ultimately, the global community embodied in the United Nations. Only then will we have a chance to tackle this enormous challenge to our way of life."

The Acting President: I give the floor next to Ms. Paulette Bethel, Permanent Representative of the Bahamas.

Ms. Bethel (Bahamas): At the outset, the Bahamas would like to align itself with the statements made at the 80th meeting by Antigua and Barbuda on behalf of the Group of 77 and China, and at the 81st meeting by Grenada on behalf of the Alliance of Small Island States, and Barbados on behalf of the Caribbean Community. The Bahamas also welcomes the convening of this debate, finding the subject matter particularly topical, and would like to take this opportunity to add a few comments from a national perspective.

We all acknowledge the import of the Fourth Assessment Report of the Intergovernmental Panel on Climate Change and its conclusion that climate change is a result of human activities. For those of us who live at sea level, the picture is particularly bleak. The Bahamas, labelled among the 100 countries most vulnerable to climate change, is now facing inundation from storm surges, depletion of fragile water resources, erosion and further land degradation, as the sea begins to reclaim the land that rose out of the last ice age. It is this reality that informs our desire for urgent action on climate change.

A short while ago, the infrastructure of the central Bahamas was badly damaged when a little over 50 per cent of our annual rainfall flooded the islands over a two-day period. Tropical storm Noel caused economic loss to our salt industry and crops, and our vital tourist industry was also disrupted. A life was lost. That occurred despite having an advanced early warning system and natural disaster system in place. Clearly, there is much more to do.

The Government of the Bahamas recognizes that the future development of the Bahamian people will depend on the responsible exploitation of the natural and man-made resources available in the country, in the context of a comprehensive policy framework. However, we must acknowledge that climate change presents more complex global challenges, warranting a

reassessment of our collective response to this issue and a renewal of our efforts in support of the broader sustainable development question — the wider context within which climate change should be considered.

In that connection, the Bahamas welcomes the opportunity to add to the debate on how best the United Nations system, in collaboration with Member States, the private sector and civil society, can collectively support the most important work of the United Nations Framework Convention on Climate Change (UNFCCC) — the primary comprehensive framework for addressing climate change — and the implementation of commitments under the Convention, its Kyoto Protocol and the Bali Action Plan.

In that context, the Bahamas notes with interest the report of the Secretary-General on the overview of the United Nations activities in relation to climate change, particularly as it refers to supporting global, regional and national action on climate change. We agree that the United Nations, given its universality, has a central role in supporting global efforts to meet the global challenge of climate change and in providing policy direction to support the Bali Action Plan. In that connection, the Bahamas would indeed welcome the strengthening of the United Nations system, particularly the United Nations Development Programme, the United Nations Environment Programme, the Department of Economic and Social Affairs, and the Small Island Developing States Unit, in its efforts to assist national adaptation activities and national sustainable development activities in general.

It is worth noting in that regard that the Bahamas has initiated policies to respond to climate change at the national level; however, our adaptation options are limited. In fact, in some cases, particularly the case of some of the smaller islands in the archipelago, the only option may be retreat and abandonment of property. The problem for the Bahamas, as with many other small island developing States, is that we are often found lacking with respect to indigenous science and technology capability. There are also many gaps in existing data and information and a lack of tools to assess the physical, social and economic impacts on the most vulnerable sectors of our society and economy.

Access to international assistance, new and additional financial resources and the availability of scientific and technological solutions are critical in our efforts to reduce vulnerability and achieve sustainable development. In that context, the Bahamas wishes to welcome the decision taken by the parties to the Kyoto Protocol to continue the work of the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol. We anticipate that such a decision would lead to the necessary support to developing countries in the areas of adaptation, mitigation, technology and financing.

The Bahamas also welcomes in particular the operationalization of the Adaptation Fund during the Bali Conference last year. That, together with mechanisms such as the Caribbean Catastrophe Risk Insurance Facility, would do much in the way of assisting countries like the Bahamas to access funding for recovery from natural disasters and for other vital adaptation activities. The recent contribution of $2.5 million by the Government of Ireland to the Facility is most welcome and greatly appreciated. We sincerely thank Ireland for that generous gesture of partnership and support.

As I conclude, I would once again like to thank the President for convening this most timely debate and hope that events such as these will continue to gather the momentum necessary to effect real change.

The Acting President: I now give the floor to Mr. Somduth Soborun, Permanent Representative of Mauritius.

Mr. Soborun (Mauritius): The journey from Rio to Bali in our quest for a cleaner environment and the preservation of planet Earth has taken us over a decade and a half thus far. Although slow in its progress, this quest has nonetheless been able to generate a consensus that climate change is real and that global warming is caused by human activities.

I should like to commend the President for convening this timely thematic debate on a subject of serious concern to us all. I should also like to commend Secretary-General Ban Ki-moon for his tireless efforts to secure top priority for the issue of climate change, which he has rightly described as the defining issue of our time. Indeed it is.

I encourage the President and the Secretary-General to remain continuously engaged with respect to the issue of climate change, together with other equally important issues confronting us, such as the achievement of the Millennium Development Goals, financing for development and, of course, the reform of

the United Nations, including Security Council reform. Those issues are not mutually exclusive.

I would also like to thank the Secretary-General for his comprehensive report, which not only provides an overview of the activities of the United Nations in relation to climate change, but also sets the guidelines on what can be done to make United Nations participation even better. Undoubtedly, the United Nations remains the best-placed Organization to deal with the issue of climate change. However, it is important to stress that all United Nations strategies and activities on climate change — and other issues as well — should be coordinated in a coherent manner so as to deliver as one.

Last but not least, I associate myself with the statement made by Antigua and Barbuda on behalf of the Group of 77 and China, and by Cameroon on behalf of the African Group.

We are already late in tackling the problems and adverse effects of climate change. Time is running out, and it is imperative that we hammer out an agreement well before 2009 to move the process forward for a comprehensive post-Kyoto agreement. In that context, we should refrain from overloading the agenda of the Bali Action Plan, as rightly pointed out by some of the eminent panellists at the meeting of the working group held on Monday, 11 February 2008.

The Bali Action Plan has called for enhanced national and international action on mitigation of climate change; enhanced action on adaptation; enhanced action on technology development and transfer to support action on mitigation; and enhanced action on the provision of financial resources and investment to support action on mitigation, adaptation and technology cooperation. Furthermore, it has also called for urgent action on, inter alia, the immediate needs of developing countries that are particularly vulnerable to the adverse effects of climate change, especially the least developed countries and small island developing States.

I should therefore like to emphasize some of the challenges confronting the small island developing States with regard to climate change and global warming. Small island developing States face severe threats from sea-level rise and extreme weather conditions, increasing beach erosion, coral bleaching and sea surges caused by climate change. Those threats seriously undermine the tourism and fishing industries, which by and large constitute the main economic pillars of most small island developing States. We therefore support United Nations initiatives to assist developing countries and small island developing States in identifying and implementing national mitigation strategies to reduce greenhouse gas emissions while promoting local sustainable development and cleaner economic growth.

We also reiterate our call for the setting up of a special fund for small island developing States to enable the development and implementation of adaptation measures in the same manner as the Least Developed Countries Fund under the Global Environment Facility. Funding should be based on vulnerability and the level of urgency for adaptation.

The initial sum of $300 million recently pledged to start the Adaptation Fund is a drop in the ocean if we consider the magnitude of the problems caused by the adverse effects of climate change. We are convinced that the international community can do much more, as it has the capabilities and resources to mobilize billions and trillions of dollars for the purpose, given that we now all agree that whatever we neglect to do today in addressing the challenges of climate change may cost us several times as much to remedy in the years ahead.

We welcome the recent initiative of the Government of Japan to establish a financial mechanism called the “Cool Earth Partnership” consisting of $10 billion in the aggregate over the next five years to assist developing countries that are making efforts to reduce greenhouse gas emissions and achieve economic growth in a compatible way, on the basis of policy consultations between Japan and those countries. We also welcome Japan’s intention to set up a multilateral fund together with the United States and the United Kingdom, and we note its call for other donors to participate in the fund.

We also support the Government of India’s commitment to focus on areas such as natural disaster preparedness, resilience, capacity-building, adaptation and mitigation with regard to small island developing States. We express our appreciation for India’s committed project aid of $70 million to small island developing States, in addition to its $350 million in concessional loans and credit lines.

Small island developing States are deprived of mineral and natural resources such as iron ore, coal, gold, diamonds, copper and oil, to name but a few.

However, nature has been quite generous in providing them with an abundance of sunshine year in and year out. It goes without saying, therefore, that at a time when we are putting all our efforts into extracting carbon dioxide from the atmosphere, solar energy should be put to the best and most effective use. In that context, the transfer of technology and know-how to small island developing States in the use, application and development of solar energy — free of charge, or at subsidized and affordable rates — could be highly instrumental in helping them along the path towards cleaner energy and significantly reduced import bills for fossil fuels, as well as reduced dependability on fossil fuels. In that respect, under the umbrella of one of the United Nations agencies, the establishment of joint ventures between small island developing States and countries with advanced levels of technology and know-how in solar energy would be most welcome.

Coming back to the broader picture of climate change and global warming, and acknowledging that the planet is in peril, let me conclude with a more practical approach. Ask not what others can do; ask what I can contribute towards a cleaner environment. That "I" ranges from the most powerful to the least fortunate — from Governments, the most successful business corporations, industries and financial institutions to street vendors, civil societies, non-governmental organizations and many individuals and celebrities, such as Sir Richard Branson and actress Daryl Hannah, who were your chief guests at the luncheon on climate change hosted at the United Nations by President Srgjan Kerim on Monday, 11 February. We need to build bridges and partnerships with all the stakeholders. We all have a stake, based on the agreed principle of common but differentiated responsibilities and respective capabilities, in making the world a better, safer and cleaner place to live in, for us and for generations to come.

The Acting President: I now give the floor to Mr. Carlisle Richardson, representative of Saint Kitts and Nevis.

Mr. Richardson (Saint Kitts and Nevis): The Federation of Saint Kitts and Nevis would like thank the President for convening this debate in the General Assembly on the theme "Addressing climate change: the United Nations and the world at work".

Saint Kitts and Nevis associates itself with the statement made by the representative of Antigua and Barbuda on behalf of the Group of 77 and China, the representative of Barbados on behalf of the Caribbean Community and the representative of Grenada on behalf of the Alliance of Small Island States.

The Federation of Saint Kitts and Nevis, being among the smallest independent nations, feels compelled to have its voice heard in this debate. There has been much talk and discussion on the issue of climate change. It is evident that some nations are willing to do much. The picture in relation to others is not yet clear.

Saint Kitts and Nevis joins the many who call for action — not just any action, but meaningful and focused action that will reduce the consequences of climate change. For us it is no longer a question of addressing the threats of climate change; the problem is beyond that. It is a matter of addressing its consequences. As the science in this area has yet to mature, it is the unknown that is waiting to haunt us.

Today, Saint Kitts and Nevis will describe a few of the ways in which climate change presently affects us. We are small. There is a rain forest. Our people live in coastal areas. The rest of the land is used for agriculture. It is not a lot of land. The destruction of our beaches and the damage to our rain forest and topography have begun. Sooner rather than later, rising sea levels could cause us to lose our beaches. Deforestation can soon be a real possibility.

Our rainfall is now unpredictable. We receive less rainfall than before but, when it comes, it is heavy. Rainfall and floods are constantly eroding our topsoil. We depend on the rain to irrigate our crops to feed our people. To irrigate otherwise is expensive. The present patterns are affecting our attempts to achieve food security. Prolonged periods of drought produce no crops. As a result, our bill for food imports continues to rise, using up much-needed foreign currency.

We continue to be affected by some, if not all, the hurricanes that visit the region yearly. Even when they do not hit us directly, we are affected by their outer bands, whether it be in the form of coastal erosion from the activity of the sea or land erosion from the resulting heavy rains, both of which cause us to continually lose our soil.

As a result of the decline in rainfall, our water resources are stretched to the limit. Desalination plants are now considered a necessary part of our planning for

the future to meet water demands. It is an expensive way forward, but we have no choice.

Unfortunately, since tourism is our main engine of growth, the degradation of our natural assets will eventually make us unattractive to tourists. That in turn will have a negative impact on the many jobs that the tourism sector has produced for our economy.

My country agreed to ratify the Kyoto Protocol. That was our way of saying that we are on board with the rest of the international community in setting greenhouse gas emission reduction targets for the world. Reducing greenhouse gas emissions is the only way forward if we are to end the overall warming of the planet brought on by human activity.

The significance of the measures taken to protect and preserve our planet should be a concern of all nations — developing nations as well as those that are developed. To ignore the roles that we have to play in the process would have implications for us all. None of us is too large or too well placed geographically to consider ourselves safe from the ravages associated with unmitigated climate change; the historical data attest to that. Therefore, it is necessary and also wise to conclude that we are all in this together and must join in the efforts to protect our planet — which we hold in trust for the generations to come — and to ensure our own survival.

Saint Kitts and Nevis are among those countries contributing least to global warming. In fact, when one applies the principle of de minimis, one concludes that we contribute nothing to global warming. Yet, we are also among those who are beginning to suffer dearly as things grow worse.

No matter what the military or diplomatic strength of the victim nation-States may be, there is a moral imperative that the emitters and polluters join in partnership to find a solution. The industrialized countries have created the problem. There is very little that the rest of us can do on our own. The partnership of the industrialized world is necessary for a solution.

There can be no doubt as to the need for financial flows from the developed to the developing world to address the issues of mitigation and adaptation. We do not believe that everything must stand still until the negotiations end; there is much that we can do and much that can be done in the interim.

We are willing to contribute to the solution in our own small way, through the use of alternative sources of energy. In that regard, in our Federation there is evidence of viable commercial sources of geothermal energy. We ourselves are working to gain access to those sources, but there is still a need for financial and technical assistance from the developed world if we are to succeed in bringing them into production.

Therefore, in our response to this multifaceted challenge, we must be nations that are united as partners in the area of climate change. I therefore invite the fullest positive participation of all Members as nations united in efforts to address the issues associated with climate change. We ask that all nations be proactive in the implementation of strategies and solutions to mitigate the impending disaster and misfortune for us all. As a small island State, we are anxious to help ensure that no island is left behind.

The Acting President: I now call on Mr. Peter Maurer, Permanent Representative of Switzerland.

Mr. Maurer (Switzerland) (*spoke in French*): Switzerland very much welcomes the holding of this thematic debate, and we thank the Secretary-General for his report (A/62/644). That document is a very good source of information and of proposals aimed at better coordination of the activities of United Nations agencies to support negotiations and the implementation of measures. Still to be resolved is the important issue of carrying out the process initiated by the Secretary-General to ensure that United Nations agencies address climate change issues in a more effective and consistent manner.

We urge that the priorities related to climate protection in the areas of emissions reduction and adaptation be integrated into the strategies of United Nations agencies. Thus, we support the approach taken by the Secretary-General: identifying sectoral objectives and making concrete proposals aimed at the attainment of each of them. Roles must still be assigned to the relevant agencies to ensure the attainment of those objectives.

The strategies of United Nations agencies must integrate, develop and meet the needs and priorities identified by the two forums responsible for addressing global climate change within the United Nations system: the United Nations Framework Convention on Climate Change and its Kyoto Protocol. As the Secretary-General indicated in his report, the scientific

issues of observation, follow-up and research with regard to the climate system and the assessment of knowledge in that area must also be priorities for the specialized agencies of the United Nations system.

However, many sectoral objectives identified in the Secretary-General's report are not only climatic objectives, but sources of broader interest in the area of development. In that connection, we should like issues related to environmental protection to be considered and to contribute to sustainable development. More generally, we believe that adequate resources must be made available to United Nations agencies in order to support national and international processes regarding climate change.

In the immediate future, we should like the United Nations system to effectively meet the requirements of the Bali Action Plan with regard to emissions reduction, adaptation, technology transfer and the mobilization of sufficient financial resources. The Plan sets out objectives for each of those areas, and United Nations agencies can contribute and respond to them.

We recall that the Bali Action Plan identifies disaster risk prevention as an essential element in climate change adaptation strategies. Thus, we urge the United Nations system to systematically integrate risk prevention programmes into climate change adaptation programmes, particularly in national development plans. In that context, we welcome the World Bank's recent innovative initiatives in the field of disaster reduction.

Finally, we underline the importance of the Third World Climate Conference, to be held in Geneva in early September 2009. The Conference was decided upon at the Fifteenth World Meteorological Congress and should be supported by all relevant United Nations agencies. The Conference will include a high-level segment during which important recommendations will be made for the fight against climate change, particularly in the area of adaptation.

The Acting President: I now give the floor to Mr. Rodrigo Riofrío, representative of Ecuador.

Mr. Riofrío (Ecuador) (*spoke in Spanish*): Permit me at the outset to associate myself with the statement made by the representative of Antigua and Barbuda on behalf of the Group of 77 and China. My delegation also congratulates the President of the General Assembly on the convening of this important debate on climate change, which is a priority issue for Ecuador.

Our country emphasizes the importance of the establishment of the Road Map as a result of the Bali Conference. The Road Map will enable the international community to achieve the necessary agreements to address the effects of climate change by establishing targets for the reduction of greenhouse gas emissions and to implement new mitigation and adaptation measures.

The historical responsibility of developed countries in the area of climate change is of great concern to us, given that ever more intense climatic events produce disastrous consequences, especially for developing countries. We therefore call on developed countries to assume their historical commitment and put in place measures that can help developing countries to mitigate the resulting effects.

Ecuador is a marginal country as regards emissions, producing less than 1 per cent of the world's total. However, in recent years our country has suffered from severe natural disasters resulting from climate change. As a result, at this very moment, various areas of our country — especially along our coast — are under a state of emergency following the serious flooding that has taken place as a result of torrential rains. These rains were due to the phenomenon known as La Niña, and have had an unprecedented impact and produced thousands of victims.

Climate change affects us all. It knows no boundaries and has an impact on both developed and developing countries. Ecuador, which agrees with the principle of shared responsibility, therefore proposed an initiative to the international community several months ago that would involve leaving the crude oil contained in the Ishpingo Tambococha Tiputini (ITT) oil fields of Ecuador's Yasuní National Park in the ground. By exploiting the ITT-Yasuní fields Ecuador could produce more than 100,000 barrels of crude oil per day, with a value of $720 million annually. Production would continue for approximately 13 years, during which 107,000 barrels on average would be produced daily.

The proposal we have made would obligate Ecuador not to exploit the almost 920 million barrels of oil in the highly biodiverse Yasuní ecological region. In return for that economic sacrifice, our country would ask the international community to assume

co-responsibility in this initiative by establishing the ITT-Yasuní trust fund and contributing $5 per non-extracted barrel. To that end, a technical secretariat has already been established to implement the project. The total amount that the international community would have to contribute to the compensation fund would be approximately $4.6 billion, which we would use to carry out our national development plan. That plan includes provisions for diversifying our energy supply, developing our capacities and investment in ecotourism and implementing a comprehensive agenda covering the areas of health, education and environmental restoration.

This is an initiative by a small country, whose economic resources depend upon exploiting oil resources. However, because we are aware of the devastating effects of climate change, we are willing to make the necessary efforts to mitigate that phenomenon, even if it means forgoing a significant amount of revenue. Ecuador therefore once again calls on the international community to support our initiative to leave the ITT-Yasuní oil in the ground as an innovative, creative and humane proposal to mitigate the effects of climate change.

The Acting President: I now give the floor to Mr. Hugo Siles Alvarado, Permanent Representative of Bolivia.

Mr. Siles Alvarado (Bolivia) (*spoke in Spanish*): First of all, I would like to congratulate the presidency on the time and effort it is devoting to addressing such an important issue as that of climate change.

The Mission of Bolivia associates itself with the statement delivered by the representative of Antigua and Barbuda on behalf of the Group of 77.

I do not want to repeat all the arguments and facts that have been set out in a very detailed and exhaustive manner by the representatives who have spoken before me. Nevertheless, I should like to refer to some issues of importance to the Bolivian Mission.

It seems that, in our determination to promptly address the potential disastrous consequences looming on the horizon as a result of climate change, we are forgetting the fundamental causes that led to the current situation. As a result, we are dealing only with short-term problems and forgetting those that may arise in the medium and long terms. We should remember that climate change is the result of a long process of environmental pollution, which began, as is well known, in the 1850s with the industrial use of the steam engine and the internal combustion engine. The accelerated process of industrialization was accompanied by a huge demand for natural resources and energy. In many cases, this led to armed conflicts that continue to this day and are preventing humankind from living together in peace.

Industrialization, although it made unquestionable contributions to the improvement of the living conditions and quality of life of millions of human beings, was unfortunately accompanied by very detrimental consequences for the preservation of the human race, of nature and of the planet in general. Let us hope that finding a solution to the problems of climate change does not take as long as environmental pollution took to create climate change. Because if it does, we shall need something like 150 years to bring climate change under control.

Industrial overproduction in consumer societies and their irrational and insatiable demand for sources of energy have led to the unbridled overexploitation of non-renewable resources, the pollution of rivers, seas, air and land and the ongoing depredation of natural forests. The excess demand for energy is today forcing some countries to convert millions of hectares of arable land, which could be used to grow food crops to alleviate the hunger of millions of human beings, to the production of corn, sugar cane and other crops for biofuels, which are beginning to be used in millions of cars that generally do not fulfil an essential need. Cities such as London and New York, however, are beginning to search for disincentives to curb the lavish use of cars.

We sometimes wonder what poses the greater threat to the survival of the human race; climate change or the insensitivity of those who have everything. Climate change, leading to climate disasters today, is actually the result of excessive demand and the waste of energy and consumer goods in developed countries.

Countries like Bolivia, which have never benefited to any significant amount from scientific and technological development and which have never contributed significantly to environmental degradation, have to pay the consequences of climate change. Paradoxically, countries which have caused the greatest amount to the grim picture facing our planet are those who decide that now we all have a shared

responsibility to confront the challenges of adapting to and mitigating climate change.

At this point in time, Bolivia is going through a very difficult period as a result of the devastating rains and floods that threaten the personal safety, security and health of thousands of people. All of this is the consequence of the sudden cold or warm air masses that have in recent years fundamentally affected the South American continent.

Last year, following the floods in the city of Trinidad in Bolivia and with the help of our Venezuelan brothers and sisters, we built a dike in order to prevent even more floods. Building the dike on the basis of pre-flooding water levels seems not to have proven adequate: water levels have now risen above that containment wall. This tells us that adaptation measures may be insufficient and that it is not possible to predict the actual scope of climatic changes.

More economically developed countries, which are responsible for the ecological changes that we are now experiencing, have put forth two strategies to slow down ecological and climatic collapse: adaptation and mitigation. In both cases, less developed countries lack the technology necessary to implement these policies of adaptation to and mitigation of climate change. This technology must be made immediately available to all countries and at no cost for all of the least developed countries (LDCs): this is the least that countries which have contributed most to environmental degradation over the last 150 years can do to help us to confront the challenges of adaptation and mitigation. Furthermore, policies of adaptation and mitigation are only palliative measures. They cannot guarantee the effective control of climate change, as long as developed countries continue to maintain and increase their energy consumption.

The future of the LDCs over the next 50 years is very uncertain in terms of energy resources. The voracious demand for natural resources seems to have ensured the exhaustion of those resources. The new types of energy production that are being developed today carry with them costs that put them beyond the reach of the poorest and least developed among us.

The point, therefore, is to decrease the per capita energy demand in all countries of the world and especially in those countries whose energy consumption is excessive. The United Nations has the obligation to propose educational policies that will change consumption habits, slow down deforestation of natural forests and eliminate pollution in rivers and seas. All of us must commit ourselves to working to save our planet from the voracious appetites of the insatiable.

The Acting President: I now give the floor to Mr. Christian Wenaweser, Permanent Representative of Liechtenstein.

Mr. Wenaweser (Liechtenstein): We value this opportunity to offer our view on climate change once again and are grateful for the high-quality and stimulating discussions of the day before yesterday in the framework of the panels organized by you, Mr. President.

Clearly, climate change is an exemplary challenge for global cooperation, since the need for multilateral action can hardly be more obvious. It therefore constitutes a unique challenge to the United Nations system.

The leadership that the Secretary-General has shown on this topic ever since he took office is thus crucial. Tremendous momentum has been created on the issue of climate change in recent months and the Bali Road Map on climate change was the first step in translating this momentum into concrete action. More must follow, of course.

In tackling climate change, we must realize that this is not merely an environmental issue, but predominantly one of sustainable development. Since climate change can also exacerbate existing security threats, it also has a strong security dimension and thus contains elements of the priorities of United Nations work in general. It is also highly relevant for another priority topic that we will address later this year, namely, our ongoing work on the Millennium Development Goals.

The report of the Secretary-General before us today illustrates the impressive range of activities related to climate change in which different players within the United Nations system are already engaged. It also shows that the response to the challenge of international environmental governance that is under discussion can make an important contribution to targeting our response to climate change. The key areas for action of mitigation, adaptation, technology and financing, as well as deforestation, must be carried out

in a manner based on an inclusive and coherent approach, as reflected in the report of the Secretary-General.

We therefore support the statement made by the two Chairpeople in charge of the institutional framework. We also look forward to the continued leadership of the Secretary-General in shaping a coordinated United Nations approach, in particular the work under way with the Chief Executives Boards.

Financing and technology rightfully occupy a central place in the framework we have agreed in Bali. Clearly, the resource side is one aspect where much thinking is yet to be done, and we hope for creative proposals on mechanisms for financing. At the same time, we must not be led to believe that there is a technological answer to the complex challenge that climate change poses.

An indispensable element of our success is sustained political will, as well as the promotion of a global consciousness of the magnitude of the problem we are facing. In this respect, partnerships between all the stakeholders can have a strong catalytic effect.

The Acting President: I now give the floor to Mr. Martín García Moritán, representative of Argentina.

Mr. García Moritán (Argentina) (*spoke in Spanish*): First of all, let me begin by thanking the President of the General Assembly, Mr. Srgjan Kerim, for convening this singular event, as well as Secretary-General Ban Ki-moon for the commitment he has shown in bringing a multilateral focus to bear on the scourge of climate change. The Argentine Republic strongly emphasizes the importance of negotiations within the relevant major forums and reaffirms the key role of the United Nations system in relation to this topic.

We believe that the natural arena for negotiations on this issue is the United Nations Framework Convention on Climate Change, without minimizing the possible contributions of efforts made outside the climate change system. We are, therefore, not convinced as to the benefits of a possible proliferation of forums for efforts to address the issue. If it is dealt with outside the framework of the Convention, that could have negative implications for ensuring the active participation of developing countries in the discussions.

We consider the report of the Secretary-General on this issue (A/62/644) to be extremely important, and we believe that the United Nations system should assist in the two-year-long negotiation process set out in the Bali Action Plan, with a view to reaching an agreement that will improve the multilateral regime dealing with climate change, without compromising the legitimate right of non-annex I parties under the Kyoto Protocol to sustainable development.

An improved international response requires that all industrialized countries adopt stricter commitments than those set out in the Kyoto Protocol. To that end, we must also find ways to promote the participation of developing countries, including by establishing criteria that will make it possible to differentiate between them, taking account of each country's national circumstances and capacities.

The countries not included in annex I of the Protocol could adopt sustainable development policies and measures contributing to mitigation and adaptation. However, there are difficulties with implementation, which are due in part to a lack of sufficient resources. Activities by developing countries should be appropriately encouraged through international cooperation in the areas of investigation, observation, technology transfer and financing.

Some entities of the United Nations system are already assisting in the climate change regime in these areas, but they should be encouraged to focus their efforts on developing countries. Improving multilateral cooperation is essential in carrying out mitigation and adaptation efforts. Under the Convention, developed countries are obligated to help developing countries to meet their commitments, through financial resources, capacity-building and technology transfer. The time has come to honour that commitment.

As former President Néstor Kirchner stated in this Hall at the 2007 High-level Event on Climate Change:

> "Everyone recognizes that the developing countries have contributed the least to the creation of this imbalance known as climate change, one of whose causes has been identified as the impact of human activity. On the contrary, it is the developed countries that have received a virtual environmental subsidy from our countries for a long time — a subsidy that has enabled

them to enjoy the high consumption levels that have caused this situation.

"That has clearly caused the world and the developing countries to become the environmental creditors of the developed countries. This situation has created a moral and environmental debt that must be duly repaid to eliminate the inequities caused by the adverse effects of climate change. For too long, adaptation to climate change has been the unfulfilled promise of the international regime created for that purpose."

The activities of the United Nations system to promote the implementation of mitigation and adaptation measures and the transfer of financial and technological resources could be strengthened if the parties to the climate change system reach agreement in the primary forum and in negotiations to help it move forward. Otherwise, our efforts could be fragmented. Far from promoting an effective response to the challenge, that would compromise the coherence of the regime.

The United Nations Framework Convention on Climate Change and its Kyoto Protocol are fully valid areas for immediate national action and international debate. With all our political will, we must focus on meeting the obligations already established and must reject any initiative aimed at undermining those forums, those goals and our future.

The Acting President: I now call on Mr. Jean-Marie Ehouzou, Permanent Representative of Benin.

Mr. Ehouzou (Benin) (*spoke in French*): My delegation expresses its great appreciation to Mr. Srgjan Kerim, President of the General Assembly, for his initiative to invite eminent personalities to enliven our panel discussions on mobilizing the international community to respond to the terrible effects of climate change.

Benin associates itself with the statements made by the representative of Cameroon on behalf of the Group of African States and by the representative of Antigua and Barbuda on behalf of the Group of 77 and China.

Climate change is no longer in the realm of the merely imaginary or possible; it is already a tangible reality affecting the basic necessities of life for peoples throughout the world. It is shown in the increased frequency of natural disasters, which are causing enormous damage in the countries affected. Climate change is jeopardizing the very existence of many coastal and island States and could lead to a dwindling of available living space, by considerably reducing the area of habitable land and making environmental conditions more difficult for life and human activity. In fact, we are already facing coastal erosion and flooding in many regions of the world as a result of sea-level rise, in addition to falling groundwater tables, the drying up of watercourses and lakes, the salinization of rivers and many other phenomena, which are complicating access to natural resources essential for the survival of humanity.

The fruitful panel discussions that we have had on this issue have certainly benefited the quest for ideal and innovative solutions to the challenges confronting humanity in all fields of activity. Such solutions must be collective and based on international solidarity and the principle of shared but differentiated responsibilities. That is the only way to ensure not only that we can make the necessary behaviour and lifestyle changes, but also, and in particular, that we can limit the damage through mitigation and adaptation efforts. To that end, we must swiftly mobilize the financial resources required to ensure the transfer of appropriate technologies as well as capacity-building.

The President took the Chair.

In addition to systematic measures set out within the framework of conventions on the environment aimed at addressing the human factors contributing to climate change, our societies must make sweeping changes to stave off the threat of major climate shocks. The most recent report of the United Nations Environment Programme, which is devoted to the fight against climate change, is based on, inter alia, the work of the Intergovernmental Panel on Climate Change (IPCC). It highlights the mostly positive cost-ratio advantage of proactive action as compared with the cost of natural disasters caused by climate change.

The technological progress of recent years has made it possible to introduce and promote the use of new and renewable sources of energy in order to reduce the constantly increasing pressures on finite natural resources. For example, giving a solar oven to a poor family in my country would contribute to the fight against desertification by considerably reducing the use of firewood, and thus would assist in the fight against

deforestation. That is a proven fact. Solar panels are another alternative to providing abundant energy, especially in Africa, where there is sunshine 365 days a year. Unfortunately, solar panels are not within the reach of our peoples, who are too poor to buy them. The time has come to end market speculation in this type of product, and to make them accessible to the poorest segments of populations in need.

We have at our disposal both the financial and technological resources necessary to adapt to climate change. What is needed is more political will and vision to be able to bequeath a liveable world to future generations. Any mitigation and adaptation strategy must necessarily incorporate the element of sustainable development, which includes eradicating poverty and enabling individuals to lead lives that are healthy, decent and respectful of the normal order of things. We should maximize existing synergies in order to activate all potential actors of change, by reorienting existing frameworks for traditional cooperation.

Along the same lines, we should also maximize the benefits that could be derived from the convergence and complementarity of international conventions on global environmental governance. Also in that framework, the international community, especially donors, must understand that the successful implementation of the United Nations Convention to Combat Desertification requires financial resources at the same level as other conventions concluded during the Rio period.

Benin calls for the synergetic implementation of the programmes of action to combat the negative effects of climate change — as regards both policy and, above all, resources. In the same vein, the resources allocated to the Adaptation Fund to combat climate change — which must be increased — should also be utilized to finance projects to combat degradation of the land and to support a massive reforestation and soil-protection programme. Those efforts will contribute to improving both the health of the world's environment and that of its inhabitants by generating revenue. The Convention to Combat Desertification should be the basis for efforts to adapt to climate change and mitigate its effects, as well as to strengthen the resiliency of countries in which soil degradation is a critical problem.

In that connection, the Commission on Sustainable Development should further dedicate itself to issues related to climate change. There is room for improving the existing limited capacities in monitoring and analysing phenomena associated with climate change in Africa. There is also a need to establish a global databank that can provide statistics and scientific information of equal accuracy for all the world's regions, so as to ensure that we have at our disposal effective surveillance that can bolster our forecasting capability. Above all, the United Nations should help low-income developing countries to incorporate the climate change situation into their national investment strategies, so as to make those strategies more rational in the light of climate change.

With regard to the mobilization of resources, the United Nations could, in addition to fulfilling the commitments already undertaken, consider the possibility of a solidarity levy on resources generated by activities involving production factors that have been declared to be the common patrimony of humankind — such as the seabed and historic sites — in order to provide resources for the Adaptation Fund. The United Nations is in the best position to find innovative formulas for the mobilization of additional resources to combat climate change. We should carefully consider the various proposals to which I have referred.

The President: I now call on the Permanent Observer of the Holy See, Archbishop Celestino Migliore.

Archbishop Migliore (Holy See): The ongoing debate on climate change has helped put into focus the inescapable responsibility of one and all to care for the environment, thereby building consensus around the common objective of promoting a healthy environment for present and future generations.

The recent United Nations Climate Change Conference in Bali has shown that through increased concern for our neighbour, in particular those most vulnerable to climatic change, we are better equipped to adopt strategies and policies that balance the needs of humankind with the urgent need for a more responsible stewardship.

The Holy See assures the General Assembly of its collaboration in achieving the objectives set in Bali. To that end, the personal commitment and numerous public appeals of Pope Benedict XVI have generated awareness campaigns for a renewed sense of respect for, and the need to safeguard, God's creation.

Individuals and communities have started to change their lifestyles, aware that personal and collective behaviour impacts the climate and the overall health of the environment. While such lifestyle changes at times may seem irrelevant, every small initiative to reduce or offset one's carbon footprint, be it the avoidance of the unnecessary use of transport or the daily effort to reduce energy consumption, contributes to mitigating environmental decay and concretely shows commitment to environmental care.

On a more practical side, the Holy See has already taken certain measures to reduce and offset the carbon emission of the Vatican City State, such as the use of solar panels and the planting of trees. Through its involvement in a reforestation project in Hungary, it will provide environmental benefits to the host country, assist in the recovery of an environmentally degraded tract of land and provide local jobs.

The interrelated issues of environmental preservation, economic development and climate change can have competing demands on our priorities and concerns. It is incumbent upon every individual and nation to seriously assume one's share of the responsibility to find and implement the most balanced approach possible to this challenge. Sustainable development provides the key to a strategy that harmoniously takes into account the demands of environmental preservation, climate change, economic development and basic human needs.

The use of clean technologies is an important component of sustainable development. To help industrializing countries avoid the errors that others committed in the past, highly industrialized countries should share with the former their more advanced and cleaner technologies. The pooling of resources makes initiatives of mitigation and adaptation economically accessible to most, thereby assisting those less equipped to pursue development while safeguarding the environment. Moreover, markets must be encouraged to patronize green economics, and not to sustain demand for goods whose very production causes environmental degradation. Consumers must be aware that their consumption patterns have a direct impact on the health of the environment.

Indeed, the challenge of climate change is at once individual, local, national and global. Accordingly, it urges a multilevel coordinated response, with mitigation and adaptation programmes simultaneously being individual, local, national and global in their vision and scope. My delegation therefore commends the United Nations Framework Convention on Climate Change for providing a global framework for concerted international action to mitigate climate change and to adapt to its impacts. The almost universal membership in the Convention will not fail to facilitate the launching of national strategies — starting with those most vulnerable, such as small island States and coastal, low-lying populated areas — and will promote a more equitable pooling of resources and technology to help vulnerable countries with lesser resources to better understand and assess the risks they face.

The President: In accordance with General Assembly resolution 49/2, of 19 October 1994, I now call on Mr. Raymond Forde, of the International Federation of the Red Cross and Red Crescent Societies.

Mr. Forde (International Federation of the Red Cross and Red Crescent Societies): The International Federation of Red Cross and Red Crescent Societies (IFRC) congratulates you, Mr. President, on your decision to convene this thematic debate on climate change. For us, the issue of partnerships is particularly appropriate because of its vital relevance to the fulfilment of commitments in the Hyogo Framework and the United Nations International Strategy for Disaster Reduction (ISDR) contexts.

This same theme was addressed at the 30th International Conference of the Red Cross and Red Crescent Societies, held in late November 2007 in Geneva. That conference brought together all the world's Governments and their partner Red Cross and Red Crescent Societies and resulted in the adoption by consensus of a declaration entitled "Together for Humanity". One of the four major challenges identified in the declaration is the humanitarian consequences of environmental degradation and climate change, with an emphasis on adaptation.

The debate at the International Red Cross and Red Crescent Conference was driven by exactly the same realizations as those which underpin the discussions here. The first is that there can be no argument about the impact today of climate change and global warming on tens — no, hundreds — of millions of people all over the world.

We are an organization composed of 186 National Societies functioning as auxiliaries to the public

authorities in every country. Our “Together for Humanity” declaration envisages each Government meeting with its National Society to establish what they can do together to combat the challenge of climate change. Our Societies are committed to their part of this initiative, and some have already engaged their Governments on defining roles and responsibilities. We urge all Governments to take up the opportunity that our Geneva consensus provides to make a real difference, especially in fields such as adaptation.

In anticipation of that, we worked with the Netherlands Red Cross Society to establish the Red Cross and Red Crescent Climate Centre on Climate Change and Disaster Preparedness in The Hague in 2002. Since then, we have utilized its expertise and resources to contribute to a large number of international meetings and events all over the world and have used that experience to build national actions on humanitarian consequences in selected countries.

We have also established partnerships between the IFRC and global and regional organizations to address disaster risk reduction. One such organization, in my own region, is the Association of Caribbean States. But the diversity of our interest is also illustrated by our intention to work more closely with the Sustainable Development Working Group of the Arctic Council. We also pay tribute to the work of the Alliance of Small Island States for the priority its members are undertaking to give climate change and its consequences the priority it deserves.

We in the Red Cross and Red Crescent are profoundly committed to ensuring that all Governments fully appreciate the humanitarian consequences of climate change. To address this, and in fulfilment of the consensus achieved at the November 2007 International Conference of the Red Cross and Red Crescent, we will use all means at our disposal to ensure that climate change is fully integrated into disaster risk reduction and disaster management policies and plans at the national level. We will continue giving the highest priority to those with the greatest needs, especially in the small island developing States, land-locked countries and least developed countries.

One of our key messages that we delivered in Bali and will be delivering again in Poznan and in Copenhagen is that adaptation to climate change must be prioritized in all countries and in all programmes. Despite the support the concept always receives, it has yet to become truly embedded.

I repeat this message today: adaptation must receive its own funding support. It must not be seen as a competitor for development funds. It requires its own resources, and unless serious commitments to new funds are made, we will have to face the prospect of an annual cost to the planet of one trillion dollars by the year 2040 — the figure published by the United Nations Environment Programme Finance Initiative in 2006.

I hold this topic of climate change most dear to my heart. I am from a small island developing State, Barbados, in the Caribbean archipelago and am naturally worried that if various aspects such as rising sea levels are not fully addressed, my own country — to which other nations refer to as a paradise — might not exist as I now know it in 2050.

I implore the General Assembly to fully endorse the conclusions of this conference and commit to concerted action.

The President: In accordance with General Assembly resolution 35/2, of 13 October 1980, I now call on Ms. Diane Jumet, of the Asian-African Legal Consultative Organization.

Ms. Jumet (Asian-African Legal Consultative Organization): Although climate change has come to the forefront of global attention over the past few years, we should note that the United Nations has been addressing this issue since 1986. More recently, however, the growing competition among populations for natural resources, the desires and indeed the rights of increasing numbers of people to have access to the benefits already enjoyed by the most developed world, and the availability of information about the state of the environment in all parts of the planet have propelled the climate change issue to the top of the agenda.

There is a general acceptance by most Member States, if not all of them, that climate change is no longer a controversial issue. There is no impasse. All States, by now, are cognizant of the threat not only to the Earth’s ecosystems but also to the quality of life of all humankind. Therefore, we must avoid setting up a false dichotomy between those States that have the moral will to address this issue and those that wish to

develop at any cost. We understand that we must either work to meet this challenge together or fail separately.

The dire predictions and pessimism about our capability to deal with climate change should be contrasted with some of the commendable steps that have been taken by Member States and those in the private sector. For example, the comprehensive energy policy recently adopted by the European Commission demonstrates a willingness to set targets and promote innovative solutions, even if policies must be modified as more is learned about their actual effectiveness. In addition, many corporations are discovering that becoming environmentally friendly is not only beneficial for the planet but also cost-effective and is positively received by consumers.

The policy of reducing consumption is an important and necessary measure, given that technological advances have not kept up with the incremental growth in exploitation of the resources of the planet. However, investment in research and development may well lead to technologies that will allow more people to have more benefit, whereas reduction measures leave an ever-greater number of people to divide up an ever-diminishing share of resources. Therefore, we should increase our commitment to expanding and refining technology that can help us to use what resources we have in the most efficient way possible.

The sharing and transfer of technology is a moral imperative and a laudable goal. At the same time, we cannot share what does not yet exist. For example, there is an urgent need for more efficient and safe renewable energy sources and for clean coal-burning technologies. There is also a dire need for an improved internal combustion engine that will meet transport requirements while minimizing harmful emissions. The recent introduction of a very low-cost automobile designed for first-time owners in one of our member States has raised outcries among some who fear that its mass production will add dangerously to the level of greenhouse gases. The implication is that the sum total of allowable pollution has been reached and no new members may be added to the club.

In the absence of acceptable technologies, we cannot expect that developing States are morally bound to put development on hold until science catches up with present-day needs. Reduction must be shared by all, but with regard to the proportion of the Earth's resources being exploited by each. In addition, technology development and transfer must be a priority and the special responsibility of those who have the capacity to undertake it.

The United Nations, as the world's most representative intergovernmental forum, can make its most effective contribution to the debate on climate change by identifying areas of agreement among Member States and promoting cooperation and information-sharing among the parties. The goals that are set must be attainable, for setting the bar too high may become a reason for procrastination or failure.

The Asian-African Legal Consultative Organization believes that, as a starting point, Member States, working through the United Nations system, can address climate change by working on the implementation of existing treaties. States have already agreed on rules with respect to adaptation to, and mitigation of, climate disruption. However, there has been too little follow-through in the enactment of national and local legislation.

An example of the effectiveness of existing agreements can be found in the cooperation and adherence to obligations by the parties to Ramsar Convention. The Montreal Protocol on Substances that Deplete the Ozone Layer is another example of successful partnership and the benefits of technology-sharing.

Member States can also address climate change by promoting the dissemination and sharing of information. The Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters guarantees the rights of citizens to information from public authorities and encourages democratic engagement in environmental decisions.

All those examples indicate that attention and adherence to existing agreements can do much to move the process forward.

Finally, AALCO would like to note that the United Nations Framework Convention on Climate Change is the relevant body for dealing with the climate change issue.

The President: In accordance with resolution 57/32, of 19 November 2002, I now call on Mrs. Anda Filip, Permanent Observer for the Inter-Parliamentary Union.

Mrs. Filip (Inter-Parliamentary Union): The Inter-Parliamentary Union (IPU) welcomes the opportunity to address this thematic debate today.

For several years now, IPU has concerned itself with the environment. During recent Assemblies it has debated climate change, energy security, environmental degradation, natural disasters and the protection of biodiversity. Its members have negotiated and adopted resolutions that in many cases have served to mobilize parliamentary action on the respective issues.

Secretary-General Ban Ki-moon told the one hundred and sixteenth IPU Assembly, which was held in Bali in April last year, that when it comes to climate change, the cost of inaction far outweighs the cost of action. Parliaments have a contribution to make in ensuring that the necessary resources are made available, and their legislative role is particularly important, since in their hands lies considerable power to forge the laws, guidelines, frameworks and incentives that will allow business, industry and other actors to play their part in achieving the deep emissions cuts that are needed.

The IPU Assembly in Bali closed with the adoption of a declaration on climate change. The declaration called on parliaments to reinforce climate change policy and legislation with a view to achieving the ultimate objectives of the United Nations Framework Convention on Climate Change and the Kyoto Protocol. Parliamentarians pledged to raise the issue of climate change in their respective parliaments and to engage with Government ministers on preparations for the Conference of Parties to the Framework Convention held in Bali last December — with results that we can only welcome.

Different examples may be quoted of reactions within parliaments in follow-up to the Bali parliamentary declaration. The parliament of Chile has started to look at ways to make the national budget more environment-friendly. The German Bundestag committee on the environment, nature conservation and nuclear safety recently debated several motions on proposed climate protection measures introduced by parliamentary groups. The Bundestag also sets an example for climate protection and energy efficiency in the operation of its own buildings. In Israel, the Knesset committee for internal affairs and the environment is currently preparing the second and third readings of a clean air bill. At a recent session the Japanese Diet enacted a law relating to the promotion of Government contracts that pay due consideration to environmental concerns, assessing the environmental load of each project rather than simply looking at price competitiveness. In the United Kingdom, the parliamentary joint committee on the draft climate change bill, which aims to reduce that country's net carbon account by at least 60 per cent from the 1990 baseline by the year 2050, expressed its concerns recently about the legal enforceability of targets and budgets and proposed a system of annual milestones and a compliance mechanism to create a strong legal framework. In Belarus, the Parliament is currently debating two bills designed to mitigate climate change, one to amend the environmental protection law on compensation for environmental damage and the other concerning a draft code on Earth resources. I could quote many other examples.

Parliaments alone will not save the world from its own extinction by greenhouse gases. That will be done by the right partnerships being forged between Governments, civil society and the private sector, putting the interests of the general public before more narrow concerns. What parliaments can do, however, as the Secretary-General has suggested, is to lay the legal foundations that are necessary for such partnerships to really work in practice. They can also play a useful role in explaining to the public why radical action is in their best interests. To do that as effectively as possible, IPU has identified three main areas of focus that constitute the pillars of the global parliamentary campaign on climate change.

Under the heading of leadership, parliaments are called upon to promote a more robust national commitment to global cooperation in climate observation and research. They can engage national stakeholders, civil society and local industry in discussion of national action plans. They can initiate work to estimate adaptation needs and to include them in social, economic and development planning. They can also monitor the publication of regular Government green accounting reports and make sure that parliaments are places in which innovative financial mechanisms and new technologies are amply discussed.

Under the heading of knowledge and its dissemination, parliaments can better foster understanding within communities of the threat of climate change and the action needed to avert

dangerous human interference in the climate system. They can also draw on their countries' experts from the most recent report of the Intergovernmental Panel on Climate Change to promote a better understanding at all levels of society of the climate change issue; disseminate a better understanding of the socially optimum level of mitigation; and monitor local news for misinformation about climate change and respond publicly where that is needed.

Under the third heading — technology transfer and capacity-building — parliaments can strengthen national support for the transfer of greenhouse-friendly technologies to developing counties and support capacity-building for adaptation to natural climate variables and humankind-induced climate change in developing countries.

In the international arena, the IPU campaign will seek to compile good practices, pin-pointing case studies where legislators have been instrumental in plans and projects that have proved their worth. Members of parliament will meet regularly to talk with the scientific community, so as to forge a shared understanding of what is practical and workable in societies, especially poor ones. Finally, they will channel those findings into the international arena in order to better inform international organizations of how progress can be made and how win-win solutions can take real shape.

The President: In accordance with resolution 47/4, of 16 October 1992, I now give the floor to Mrs. Anke Strauss of the International Organization for Migration.

Mrs. Krauss (International Organization for Migration): The International Organization for Migration (IOM) appreciates the opportunity to participate in this thematic debate on climate change to underline the issues of climate change, environmental degradation and migration.

As we have heard throughout this debate, discussion of the impact of climate change and environmental degradation on human mobility is not entirely new. As early as 1990, the Intergovernmental Panel on Climate Change (IPCC) had noted that

> "the greatest single impact of climate change could be on human migration — with millions of people displaced by shoreline erosion, coastal flooding and agricultural disruption".

Yet, until recently, comparatively little attention has been paid to the long-term migration consequences of predictable environmental forces. Therefore, it is an important and timely development that the discussion on climate change, including environmental degradation and its nexus with migration, has been revitalized and stimulated by the IPCC reports and the debates held here at the United Nations.

Both gradual climate change and great natural disasters will put at risk the inhabitants — particularly indigenous peoples — of coastal regions, low-lying islands and areas susceptible to drought, and may force them to move to safer areas. While no consensus exists thus far as to whether or not migration can be considered as a way of adaptation or as a failure of adaptation strategies, it is indeed often a survival mechanism for those affected. The implications of the climate change and migration nexus for human vulnerability, including its potential for sparking new, and reigniting old, conflicts, have yet to receive sufficient attention, both from policy makers and researchers.

IOM is currently promoting policy dialogue and research on that nexus. First, to establish effective policy approaches for managing the migratory causes and consequences of global environmental change, Governments and other stakeholders need to address a number of broad policy challenges, namely, by entering into a multi-stakeholder and multidisciplinary dialogue and cooperation, commencing early planning to address migratory consequences and the causes of environmental change, leveraging the development potential of migration as an adaptation strategy, and improving capacity-building and awareness-raising.

To advance that multi-stakeholder and multidisciplinary dialogue on policies and related issues, and in the context of the Greek chairmanship of the Human Security Network, IOM and the Government of Greece are organizing a conference, to be held next week in Geneva, to address the nexus of climate change and human security and its impact on vulnerable groups.

Secondly, research is another urgent priority. To advance this debate among researchers, the United Nations University, IOM and the Munich Reinsurance company are organizing an expert group meeting among multidisciplinary researchers on the theme "Towards a global agenda for research on migration

and the environment", in order to define the research agenda on environmental migration. The experts aim at three primary goals, namely, assessing the existing knowledge base on environmental migration, promoting a new agenda of policy-oriented research on migration and the environment, and identifying key questions, research themes and innovative research methods needed for more accurate data collection and cross-cutting approaches to migration and the environment.

Recognizing that policy, research and operational activities need to be consistent in order to ensure the necessary coherence at all levels, IOM, along with humanitarian partners from the United Nations system and the Inter-Agency Standing Committee, is addressing the operational aspects of supporting environmentally displaced persons.

As the Secretary-General stated in his opening remarks at the September event,

> "We know enough to act; if we do not act now, the impact of climate change will be devastating; and we have affordable measures and technologies to begin addressing the problem right now. What we do not have is time."

As we speak, environmentally induced migration resulting from both climate processes and climate events is already uprooting communities and transforming cultures at an alarming rate.

The President: In accordance with resolution 54/195, of 17 December 1999, I now give the floor to Mr. Narinder Kakar, Permanent Observer of the International Union for the Conservation of Nature and Natural Resources.

Mr. Kakar (International Union for the Conservation of Nature and Natural Resources): The International Union for Conservation of Nature and Natural Resources (IUCN) applauds your initiative, Mr. President, to convene this thematic debate on climate change, which is very timely given the urgency of dealing with the issue. The debate also provides an opportunity to discuss ways to address climate change collectively.

It is important to realize that, although climate change will affect all, it is the poor and vulnerable who will be affected most severely. The international community's actions must therefore be rooted in sustainable development and equity, while recognizing the vulnerability of poor people, the need for economic growth and poverty alleviation, and a comprehensive approach to sustainable development, with its economic, social and environmental pillars. IUCN's own work on climate change focuses on links between climate change, equity and biodiversity, and the opportunities and challenges that those links present for mitigating and adapting to climate change.

We are pleased that the need for collaboration between Member States, the private sector and civil society in efforts to address the challenges posed by climate change is being realized. IUCN fully supports efforts to develop such partnerships in order to respond to the key areas described in the Bali Action Plan.

IUCN works towards preventing biodiversity loss in support of human well-being. In that regard, we wish to highlight the value of biodiversity and the ecosystem services it provides in reducing the impacts of climate change. Activities aimed at increasing adaptation to climate change and resilience will secure livelihoods and reduce vulnerability to disaster. We therefore hope that biodiversity-related action towards climate change adaptation will be fully integrated into the development programmes of United Nations agencies.

In that context, partnerships at the local level are essential in order to ensure adaptation to climate change. IUCN highlights the crucial role of forest and water resources in climate change adaptation and the importance of capacity-building in sustainable ecosystem management to enhance adaptive capacity. In collaboration with the International Institute for Sustainable Development, the Stockholm Environment Institute in the United States and the Swiss Foundation for Development and International Cooperation, IUCN has developed a community-based risk screening tool for adaptation and livelihoods, which could be used by United Nations agencies in developing their programmes.

It is important that all stakeholders be engaged in the design of the new framework for reducing emissions from deforestation and degradation in developing countries. IUCN welcomes the decision adopted at the thirteenth Conference of the Parties to the United Nations Framework Convention on Climate Change, held in Bali, regarding the integration of reductions into a post-2012 agreement. IUCN believes that the new framework should, among other things, be

integrated into a broader strategy focused on securing deeper reductions of emissions from the use of fossil fuels, rather than on simply offsetting carbon emissions.

IUCN welcomes the decision adopted at the thirteenth Conference regarding the establishment of the Adaptation Fund, with equitable representation from developed and developing countries alike. As the Secretary-General emphasized earlier, significant new investments need to be made in financing for adaptation, including resources from multilateral institutions, together with the World Bank, the Global Environment Facility and other sources of multilateral and bilateral financing. Increased adaptation resources could also be raised through a more robust Clean Development Mechanism and philanthropic support.

It is very encouraging to see that the United Nations system is making efforts to harness the capacities of the system to the fullest and intends to align its strengths in a coordinated approach to climate change in order to support the efforts of Member States at the national, regional and global levels in tackling the multifaceted challenge presented by climate change. It is also commendable that efforts are being made to explore ways of making the United Nations more climate-friendly and environmentally sustainable and of developing a climate-neutral approach to United Nations premises and operations that would reduce its own carbon footprint.

Before closing, we would like to commend the work that the Intergovernmental Panel on Climate Change has done — and continues to do — to assess on a comprehensive, objective and transparent basis the latest scientific, technical and socio-economic literature relevant to the understanding of the risk of human-induced climate change, its impacts and options for adaptation and mitigation.

IUCN hopes that the United Nations will aim for a comprehensive and equitable post-2012 regime by 2009, with the inclusion of specific mitigation targets with the ultimate objective of preventing dangerous anthropogenic interference with the climate system. We also hope that the necessary support will be provided to all stakeholders for equitable and effective participation in the negotiations that will take place at the 14th Conference of parties to the UNFCCC in Poznan, Poland, this year and at the 15th Conference of parties in Copenhagen in 2009.

The President: In accordance with General Assembly resolution 48/265 of 24 August 1994, I now call on Mr. Robert Shafer, Permanent Observer for the Sovereign Military Order of Malta.

Mr. Shafer (Sovereign Military Order of Malta): The Sovereign Military Order of Malta recognizes the link between environmental health and social well-being and the implicit responsibility of the current generation, the United Nations community included, to secure the health of the planet for future generations. We are not merely consumers of a once seemingly boundless supply of natural resources, but stewards of an environment, which not only is limited in the fruits that it shares, but also sensitive to the way mankind uses those gifts.

As noted by the President of the General Assembly at its sixty-first session, during the informal thematic debate in July and August 2007, climate change is an issue of economic development as much as one of global justice and equality. Inaction on climate change would have serious social and economic implications and would magnify the existing inequalities between developed and developing countries. Projected climate change will exacerbate the occurrence of infectious diseases, such as malaria and dengue fever, and further strain the natural resources necessary for our survival. Widespread prevalence of infectious diseases leads to increasing levels of poverty. Poverty in turn is strongly associated with infectious diseases not typically associated with climate change, such as HIV/AIDS, and in many situations leads to civil unrest.

Members and volunteers of the Order, who live in the service of others, of the poor and the sick, regardless of their race, origin or religion, bear daily witness to that painful cycle and understand that all three aspects must be addressed. The United Nations must strengthen public health planning capacities, including through improved monitoring and evaluation of climate and health impacts; strengthen health systems to enable them to provide protection from climate-related health risks; and adopt a more forward-looking preventative approach to health protection.

The most important cause of the current climate change crisis is human activity and its energy requirements, which is at the heart of this climate agenda. We have allowed it to become an extraordinary crisis, and it therefore demands an extraordinary

response from all of us, individually and collectively. True stewardship requires a keen awareness of the environment and challenges us to use our intelligence, ambition and ability to adapt and innovate to discover the Earth's productive potential in an environmentally sustainable way while satisfying our needs. The United Nations must facilitate and motivate that reform of human activity by drawing on its strengths; providing a neutral forum for brokering negotiations; establishing trust and galvanizing high-level political support; and securing participation, engagement and ownership of a broad constituency of Members.

To conclude, sensitivity to the fragility of the only place that humans can call home must be cultivated and nurtured through renewed education in solidarity. Such teachings exalt the principles of respect for one another, for the recognition of that which is great within all of us, even if unseen, and for understanding and patience. With those beliefs, the prospect of delving into a difficult task, such as stemming the tide of environmental destruction brought about through climate change, will be seen as necessary and right in order to preserve a viable home planet for future generations.

The President: In accordance with General Assembly resolution 3208 (XXIX) of 11 October 1974, I now call on Ms. Maria Spatolisano of the European Community.

Ms. Spatolisano (European Community): 2008 is a crucial year for addressing climate change. By convening this debate of the General Assembly, Mr. President, you offer to all of us a timely opportunity to contribute to making progress in the right direction, for which we thank you.

We know climate change is happening. The evidence is irrefutable and has been piling up for some time. We know that climate change can only be tackled on a world scale and the window of opportunity for action on climate change is closing. The longer we wait to act, the worse the impact of climate change and the greater the challenge.

It is time to move from words to action. A new framework for action must be agreed before the current international commitments under the Kyoto Protocol come to an end in 2012. That requires, first and foremost, a strong political will to tackle this global challenge from the world's largest emitters of greenhouse gases.

The European Union's objective is to limit the rise in average global temperatures to two degrees above pre-industrial levels. To send a clear signal to partners around the globe, the European Union took on an independent commitment to reduce its greenhouse gas emissions relative to 1990 levels by at least 20 per cent by the year 2020 and by as much as 30 per cent as part of a global agreement, in which all developed countries commit to comparable efforts and developing countries also contribute.

On 23 January 2008, the European Commission presented the legislative climate action and renewable energy package, which will be instrumental in shaping a response in line with our commitments. The climate action and renewable energy package will enable the European Union to achieve sharp cuts in greenhouse gas emissions and a major increase in renewables through a combination of cost-effective action through the carbon market and a fair sharing of the effort between member States.

Those proposals could make an important contribution to strengthening climate action globally. Allow me to briefly explain how.

First, a new international agreement on climate change is essential. Only global action — under the leadership of developed countries but with a meaningful contribution by emerging economies — can deal effectively with this global challenge. The United Nations climate conference in Bali in December 2007 brought the breakthrough we needed by deciding that a global agreement for the period after 2012 should be reached by the end of 2009. I believe the European Commission's climate action and renewable energy proposals will help the forthcoming negotiations in two main ways.

First, the political importance of leading by example is considerable.

The EU is responsible for approximately 14 per cent of worldwide emissions and this share is falling. Our package has a role to play here. It shows that making the deep emissions cuts necessary to avert dangerous climate changes is fully compatible with continued economic growth and prosperity.

The second way the European Community package could make a useful contribution to an international agreement is through its approach to effort-sharing among different countries. Currently

within the EU, there is a 23-fold difference in the average wealth per person between the richest member State and the poorest. The mechanism we devised for our package allows poorer member States to continue growing while they reduce or keep their emissions below the usual level for businesses. We are, in fact, giving practical effect to the international principle of "common but differentiated responsibility".

Let me add that the stakes could not be higher. With world temperatures rising at an accelerated rate, the challenge is not just to reach a post-2012 climate change agreement. It is to ensure that we are ambitious enough to prevent climate change from reaching devastating levels over the coming decades, which could put the lives of millions in danger and impose a crippling burden on our economies.

This brings me to the second point I want to highlight. The climate action and renewable energy proposals of the European Commission take as their starting point the cut of at least 20 per cent of greenhouse gas emissions relative to 1990 and this commitment is unconditional. But it has also put in place the arrangements for scaling up the emissions reduction to as much as 30 per cent, once a global agreement is reached.

We believe that a 30 per cent cut in collective emissions from developed countries is needed by 2020, if we are to have a chance of stopping global warming before it reaches dangerous levels. It is with this responsibility in mind that the EU leaders have endorsed the 30 per cent cut that the EU has argued for in Bali. We will continue arguing for it, as the next necessary step towards an ultimate reduction in global emissions of at least half by 2050.

The package of the Commission foresees that emission reduction targets will be scaled up automatically and proportionally in line with a higher international target. This means we are fully prepared to make a cut of up to 30 per cent by 2020. We also create a strong incentive for third countries to join the future global agreement by proposing that only emission credits from countries that ratify it should be accepted by EU Governments.

My third and final point concerns the European Union's emissions trading scheme. By adopting our independent commitment, the EU is also sending a clear signal to the business community, namely, that the carbon market will continue without interruption. In fighting climate change, we will need to make better use of markets. Emissions trading is the key tool for achieving emission reductions at the lowest cost.

For us, there is no question that the global carbon market must play a central role in a post-2012 climate agreement so as to limit the costs of the deep emission reductions that will need to be made globally. In this respect, public-private partnerships have a major role to play. Public authorities can facilitate the creation of a framework and long-term incentives to attract private investment towards activities that contribute to low-carbon economic development. In fact, the largest share of investment and financial flows for addressing climate change comes from the private sector, namely, 86 per cent, according to the report of the secretariat of the United Nations Framework Convention on Climate Change (UNFCCC).

Climate change affects everyone on this planet. For some, it is their very survival that is in question. We are talking about their home, their livelihood, their food and the water they drink; all of that is at stake and the human dimension of the impact of climate changes must be taken into account. But climate change is a worldwide phenomenon. It cannot be overcome by one country or group of countries, no matter how rich or powerful. All major emitters must take action, and all nations must participate in the effort by adopting the right policies in a timely way.

The United Nations has to lead global efforts to address this global challenge. No organization is better suited to dealing with these issues. Climate change is a global problem and requires global solutions. The United Nations family of agencies, funds and programmes is best placed to act in an increasingly coherent manner to support Member States, during both the negotiation and the implementation phases of a new climate change agreement. We welcome, in this respect, the work led by the Chief Executives Board.

We would like to conclude by reaffirming the active support of the European Commission for the multilateral negotiations under the UNFCCC and the United Nations role in this area.

The President: We have heard the last speaker in this thematic debate. At this very late hour, I am afraid I can offer you no more than my closing remarks.

Let me begin by saying how grateful I am to Member States for powerfully articulating a clear

message that climate change must remain one of the top priorities of the United Nations. The number of delegations that have spoken, 115 in total, is a testament to the importance of taking immediate practical action to address climate change.

Over the past three days we have heard some compelling reasons why the United Nations should promote integrated partnerships and approaches with all interested stakeholders, in particular the private sector and local authorities, so as to successfully overcome the threat that climate change presents to our way of life.

But this does not mean that, as individuals, we should feel disempowered by the scale of the challenge. Small contributions add up. Many of our speakers, indeed, made the case that we can all make a difference through simple changes in our daily behaviour.

There is a general conviction that has emerged from this debate and the panels. This is, that the actions necessary to address climate change are so intertwined that they can only be tackled through combined efforts.

Long-term targets to reduce carbon emissions must go hand in hand with adapting to the global warming that is already taking place and which could accelerate. We need to do this because we want more growth, more development, but, at the same time, we must also secure our planet and safeguard our future. In support of this approach, there is no doubt among Member States, as demonstrated during the debate, about the nexus of the relations between climate change and sustainable development.

The United Nations Secretariat must now respond by developing policy solutions that can help Member States answer some of the questions that I and others have posed during the debate. For example, we need a better understanding of how to mainstream climate change into nationally owned development strategies; we need clearer advice about how to prepare for a strengthened United Nations Framework Convention on Climate Change regime, in particular, clearer guidance to facilitate access to financial resources and investments; we need more comprehensive proposals on how to achieve coherence and promote synergies within the United Nations system in order to close the implementation gap; we need to know how the United Nations can most effectively stimulate financial flows for adaptation, mitigation and climate-resilient development; finally, we also need to know how the United Nations system can best support developing countries in adapting to the inevitable impact of climate change.

The challenge for us now is to implement policies globally that can create low-carbon economies and promote sustainable economic growth and provide incentives for individuals to change behaviour. Member States, regional and multilateral organizations must therefore develop stronger, more mutually supportive partnerships with the private sector. The United Nations, through the Global Compact, already has made a head start to promote more ethical, global corporate leadership.

It is clear that, when leading global businessmen, like Sir Richard Branson and Mayor Michael Bloomberg of New York City are willing to throw their weight behind the United Nations General Assembly, the private sector and local government take this issue extremely seriously. Moreover, they recognize the contribution that we can make.

By bringing in business creativity and innovation, we have a real opportunity to create a virtuous cycle whereby Member States — providing market incentives and a clear enabling framework for the private sector — bolster confidence in green investment over the long term.

Increasingly, many developed countries are demonstrating their willingness to provide fresh financing and to enhance the critical roles played by international financial institutions and the private sector to reduce greenhouse gas emissions. That is key, because the importance of accelerating technology transfers to developing countries and securing sufficient financing for adaptation and mitigation cannot be underestimated.

In that regard, the General Assembly has sent a clear signal to the World Bank and the donor community to scale up investment in developing countries to support national and international efforts to address climate change. The United Nations system also has a significant role to play in facilitating those goals and Member States' own initiatives on climate change.

Member States recognize that the United Nations is best placed to provide an integrated response to the complementary challenges of addressing climate

change and achieving the Millennium Development Goals. The system also has an important role in raising awareness globally, generating broad-based support and providing technical cooperation to ensure the full implementation of existing and future agreements under the UNFCCC. To support that process, it is extremely important that Member States work speedily and cooperatively to agree on the principles of a strategic policy framework to steer the United Nations system's activities on climate change.

Finally, I would like to thank all Member States for their insightful contribution to this thematic debate, "Addressing climate change: the United Nations and the world at work". We have heard various comments on the Secretary-General's report. There appears to be a general understanding, however, that further work is necessary.

Given the sense of urgency expressed by many, I propose that, in due course, the Secretary-General provide the General Assembly with a more detailed briefing on efforts to strengthen and coordinate the United Nations activities on climate change. Furthermore, and in order to give continuous consideration to climate change within the General Assembly, I intend to convene two meetings so that we have the opportunity to consider specific aspects of the climate issue in more detail. One will focus on the needs and concerns of vulnerable countries, and the other on corporate responsibility and sustainability.

The General Assembly has concluded its thematic debate entitled "Addressing climate change: the United Nations and the world at work". The General Assembly has thus concluded this stage of its consideration of agenda items 48, 54 and 116.

The meeting rose at 8.55 p.m.