INTERNATIONAL COURT OF JUSTICE

OBLIGATIONS OF STATES IN RESPECT OF CLIMATE CHANGE
(REQUEST FOR ADVISORY OPINION)

ANNEXES TO THE WRITTEN STATEMENT OF THE COMMISSION OF SMALL ISLAND STATES ON CLIMATE CHANGE AND INTERNATIONAL LAW

VOLUME II

22 MARCH 2024

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Annex 1

Expert Report of Sarah R. Cooley, Ph.D., on Impacts of Anthropogenic Greenhouse Gas Emissions on the Marine Environment and Affected Communities (22 March 2023)

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(REQUEST FOR ADVISORY OPINION)

EXPERT REPORT OF SARAH R. COOLEY, PH.D., ON IMPACTS OF ANTHROPOGENIC GREENHOUSE GAS EMISSIONS ON THE MARINE ENVIRONMENT AND AFFECTED COMMUNITIES

22 MARCH 2024

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I. Introduction

1. The Intergovernmental Panel on Climate Change (the "IPCC"), the United Nations body for assessing the science related to climate change, has determined over its 35-year existence that "it is unequivocal that human influence has warmed the atmosphere, ocean and land"[1]. Abundant evidence derived from many diverse sources, reported in thousands of scientific studies, and documented in local experience and Indigenous narratives supports this conclusion.

2. In this report, I describe in plain language the impacts of anthropogenic greenhouse gas ("GHG") emissions on the marine environment, how those outcomes affect people and the natural world, and how well-understood these impacts and outcomes are. I have been retained by the Commission of Small Island States on Climate Change and International Law ("COSIS" or the "Commission") to provide this expert testimony. I am providing this testimony for COSIS *pro bono*, aside from reimbursement at cost for my travel and research expenses. I have no relationship with COSIS, its Member States, its legal advisors, or the members of the Court other than my engagements in these two proceedings. To the best of my knowledge, the statements contained in this report are true, correct, and materially complete.

A. Expertise and Approach

3. I am an oceanographer, specializing in the ocean carbon cycle and how ocean systems are changing due to human influence. I was one of the two Coordinating Lead Authors of Chapter 3 (Ocean and Coastal Ecosystems and Their Services) of the contribution of Working Group II (Impacts, Adaptation, and Vulnerability) to the Sixth Assessment Report of the IPCC, published in 2022. In this role, I coordinated all work on Chapter 3 and led the Chapter's Lead Authors, Chapter Scientist, and Contributing Authors in assessing the scientific evidence and summarizing our findings in clear, accurate text and figures. I ensured that authors responded appropriately to public and government comments. I also wrote sections of Chapter 3 and contributed to Working Group II's Technical Summary.

4. I am currently Senior Director of Climate Science at Ocean Conservancy, a nongovernmental organization based in Washington, D.C. I received a Bachelor of Science degree in chemistry from Haverford College in 1999, and a Doctor of Philosophy degree in marine science from the University of Georgia in 2005. My doctoral research focused on the ocean's uptake of anthropogenic carbon dioxide from the atmosphere, particularly in the Western Tropical Atlantic Ocean. I received postdoctoral training at Woods Hole Oceanographic Institution in Massachusetts. There, I participated in numerical computational modeling of climate impacts on the global ocean. I have written seminal scientific papers for the research community on ocean acidification, policy options for addressing ocean-based climate impacts, and marine carbon dioxide removal. I was a contributing author to the United States' Fifth National Climate Assessment released in November 2023, was a review editor for the Fourth National Climate Assessment, and was a chapter lead author of the United States' Second State of the Carbon Cycle Report. I have attached my *curriculum vitae* as an Appendix.

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[1] IPCC, Working Group I, "Summary for Policymakers", *Sixth Assessment Report: The Physical Science Basis* (2021), p. 4.

5. In this report, I draw from the latest IPCC assessments (mainly from the IPCC's Sixth Assessment Report cycle) and subsequent high-quality scientific reporting to describe climate impacts on the ocean and their effects on social systems. As often as possible, I quote IPCC language and figures directly to preserve exact word choices and phrasings, which have undergone extensive vetting by subject matter experts. Sometimes I paraphrase information to summarize longer passages in IPCC reports, but any confidence language (see Section I.C below) is directly from the relevant IPCC passages and not amended. Where helpful, I include illustrations and references produced by others to help explain fundamental concepts or the IPCC assessment findings.

B. ROADMAP

6. This report addresses my assignment in five Sections. In the rest of this Section I, I describe my methodology and that of the IPCC. I then turn to how anthropogenic GHG emissions impact the marine environment. Specifically, I discuss Earth's heat budget and carbon cycle (Section II); outcomes of climate change for the marine environment (Section III); and future risks of climate change above 1.5ºC, as well as mitigation of and adaptation to meaningfully reduce warming-related impacts (Section IV). I briefly conclude in Section V.

C. THE IPCC AND ITS METHODOLOGY

7. The IPCC was created in 1988 by the World Meteorological Organization (the "WMO") and the United Nations Environment Programme ("UNEP") to provide governments with climate policy-relevant scientific information[2]. The IPCC is a body bringing together 195 governments that are part of the United Nations or WMO[3], which carries out a process every five to seven years to develop a set of reports about the causes, impacts, and future risks of climate change. The IPCC reports also assess how adaptation and mitigation measures (see Section IV below) can reduce the risks of climate change or interact with each other. During the Sixth Assessment Report cycle concluded in 2023, thousands of subject-matter experts worldwide volunteered their time to write and review the reports, using a rigorous process to assess and compile the tens of thousands of new studies published since the Fifth Assessment Report cycle, which concluded in 2014. The drafts underwent several rounds of expert and governmental reviews, concluding with government review, approval, and acceptance of the Summary for Policymakers of each report[4]. Together, the reports that comprise each assessment report cycle indicate how strong the latest evidence is about the entire range of climate change-relevant topics, where there is agreement or disagreement, and where knowledge gaps remain.

8. The Conference of the Parties (the "COP") to the UN Framework Convention on Climate Change (the "UNFCCC") relies on IPCC assessment reports to inform international climate policy negotiations. The COP has called on its Subsidiary Body for Scientific and Technical Advice (the "SBSTA") to seek the IPCC's advice[5], explicitly stating that the

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2 IPCC, "About", https://www.ipcc.ch/about.

3 *Id.*

4 A schematic figure illustrating IPCC report creation from start to finish, as well as other information about the IPCC process, is available at https://www.ipcc.ch/about/preparingreports.

5 UNFCCC, "Cooperation with the IPCC", https://unfccc.int/topics/science/workstreams/cooperation-with-the-ipcc.

SBSTA should cooperate closely with the IPCC to satisfy the need for objective scientific and technical advice[6]. Several IPCC special reports have been requested by the SBSTA or the COP, and numerous assessment reports have directly supported deliberations leading to UNFCCC policies (Figure 1). IPCC reports are key contributions to the global stocktake, which is the UNFCCC evaluation of progress towards achieving the Paris Agreement goals that occurs every five years[7].

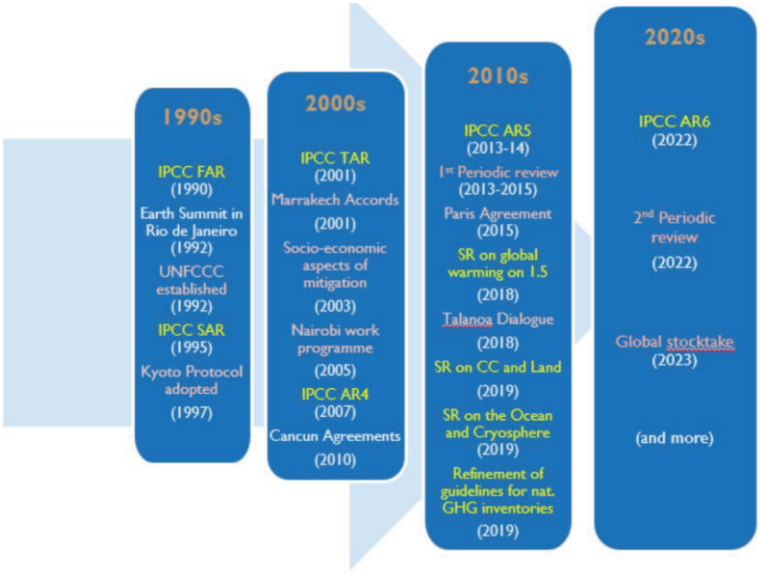


Figure 1: Ongoing relationship between the UNFCCC and IPCC, with notable UNFCCC developments in pink and IPCC products in yellow[8].

9. The type and amount of information available about components of the Earth system and human influences they experience vary greatly. Some relevant information (e.g., observational temperature records) provides long-term information for specific locations, whereas other information (e.g., computer model projections) combines observations and well-understood physical and chemical relationships to derive information about large areas on a variety of time scales. To ensure that IPCC report authors can compare and assess this abundant, widely varying information in a uniform way, the IPCC developed guidance detailing how to convey confidence in findings and how to quantitatively measure uncertainty consistently across all IPCC products[9]. IPCC authors evaluate the type, amount, quality, and consistency of evidence, as well as the degree of agreement within the evidence as they assess a particular subject (Figure 2, steps 1–4). Where available, multiple types of information from independent lines of inquiry (such as models and observations and Indigenous knowledge) are assessed for each topic. For assessments meriting "[*very*] *high*

6 IPCC, Matters Related to UNFCCC and Other International Bodies, document IPCC-XL VII/INF.10 (2018), p. 3.

7 *See* UNFCCC, Subsidiary Body for Scientific and Technological Advice, Report on the Forty-Fourth Session, document FCCC/SBSTA/2016/2 (27 July 2016).

8 IPCC, Matters Related to UNFCCC and Other International Bodies, document IPCC-XL VII/INF.10 (2018), p. 4.

9 *See* IPCC, Guidance Note for Lead Authors of the IPCC Fifth Assessment Report on Consistent Treatment of Uncertainties, document IPCC-XXXII/INF.9 (2010).

confidence", likelihood can sometimes be further assessed through model simulations, experimental outcomes, or expert judgment (Figure 2, step 6)[10].

10. As a result of this universal guidance, IPCC confidence and likelihood statements have quantitative meanings. Confidence and likelihood statements in this report, which are reproduced directly from IPCC reports, are typeset in italic font, just as in IPCC reports. These italicized terms correspond to those explained in Figure 2.

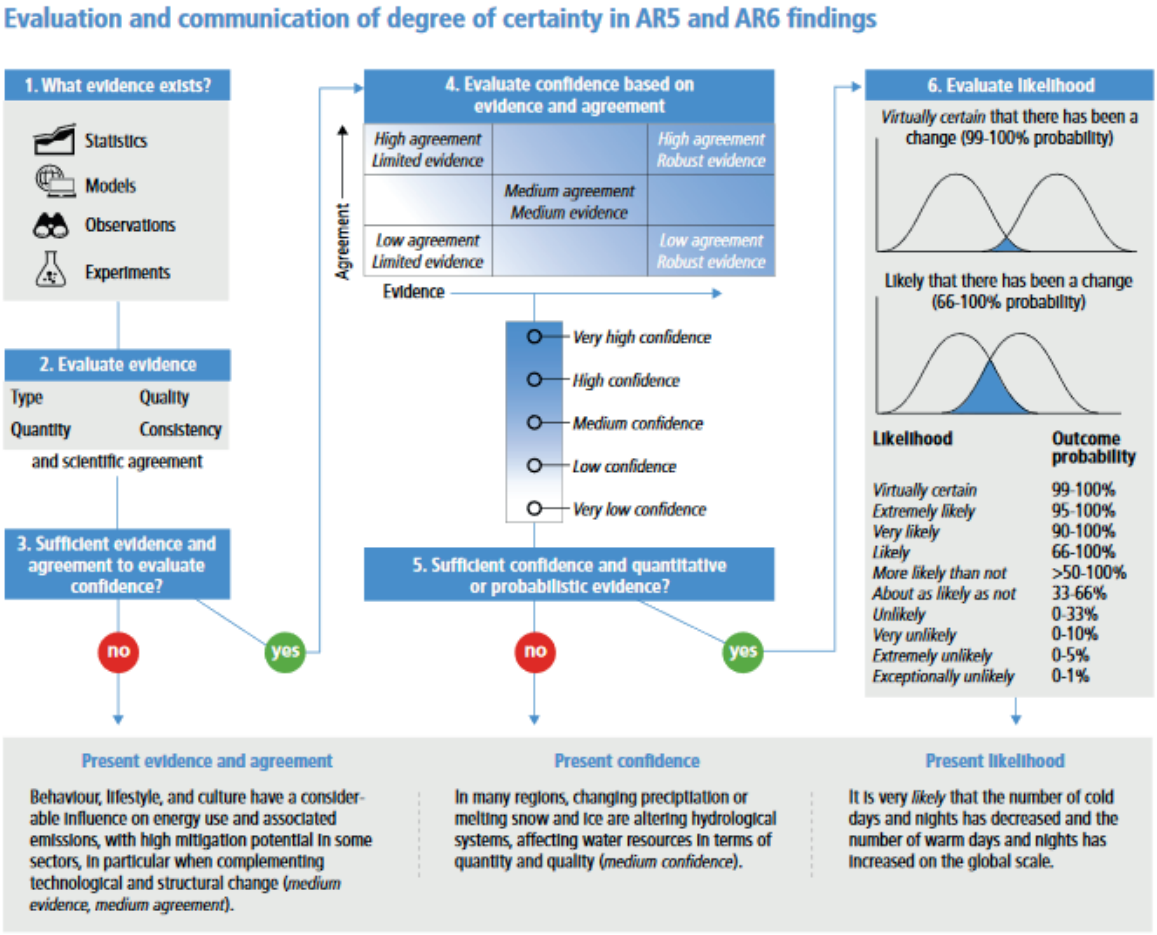


Figure 2: The assessment process undertaken by IPCC report authors to gather and evaluate evidence (steps 1–3), apply confidence language (steps 4–5), and evaluate likelihood of an outcome if possible (step 6)[11].

II. Earth's Heat Budget and the Carbon Cycle

11. In this Section II, I describe how the atmosphere governs Earth's heat budget (Subsection A), the central role of the ocean in the climate system (Subsection B), how anthropogenic GHG emissions are changing planetary heating (Subsection C), and human influence on the Earth's carbon cycle (Subsection D).

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10 *Id.*

11 IPCC, Working Group II, "Technical Summary", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 41.

A. THE ATMOSPHERE AND THE HEAT BUDGET

12. The Earth's atmosphere traps some solar energy[12], reflects some energy, and distributes the trapped energy around the globe (Figure 3). When solar energy transfers to substances in the Earth's atmosphere and surface, it increases the motion of their molecules (i.e., increasing their thermal energy or, conversationally, "heating" them), and this can be measured by a temperature increase or change in physical state (i.e., from solid-liquid or liquid-gas) of the material. Because the molecules that make up the Earth's atmosphere absorb solar energy and transfer it to other substances (including the ocean, see Section I), temperatures on Earth fluctuate less over daily and seasonal cycles than they would on a planet without an atmosphere. This relatively narrow temperature range is one of the characteristics of Earth that support life as we know it. Before the Industrial Revolution, the Earth's energy budget was balanced, and the planet lost as much energy to space as it gained from the Sun.

13. Since the Industrial Revolution, fossil-fuel burning and land-use changes have quickly increased atmospheric levels of heat-trapping gases, frequently called GHGs. GHGs are chemical substances that are especially effective at absorbing solar energy and transforming it into heat. Solar energy makes GHGs' molecular structures bend, twist, and vibrate, converting light energy into molecular kinetic energy, or heat. Carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) are the dominant GHGs emitted by quantity, while minor quantities of fluorine- and sulfur-containing gases and ozone also contribute to total GHG emissions[13]. Each GHG has a particular global warming potential,[14] which IPCC reports convert into "CO_2 equivalents"[15]. This enables the warming effect of different GHGs to be compared and their effects to be considered collectively, as if they were all CO_2. In this report, CO_2 emissions refers to the collective, CO_2-equivalent, impact of all the GHGs.

14. The IPCC assessed with "*high confidence* that current CO_2 concentrations are higher than at any time over at least the past two million years"[16]. Additionally, increases in carbon dioxide (47 percent) and methane (156 percent) atmospheric concentrations observed since 1750 far exceed natural multimillennial changes between geologic eras (*very high confidence*)[17]. Carbon dioxide concentrations have been higher before in the history of the planet, but the current rate of change is exceptional. Planetary processes that operate over

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12 *Energy* is the ability to do work on physical substances. *Solar energy* travels to Earth as light from the Sun.

13 *See* IPCC, Working Group I, "Annex: VII: Glossary", *Sixth Assessment Report: The Physical Science Basis* (2021), p. 2911.

14 The IPCC defines global warming potential ("GWP") as "[a]n index measuring the radiative forcing following an emission of a unit mass of a given substance, accumulated over a chosen time horizon, relative to that of the reference substance, carbon dioxide (CO_2). The GWP thus represents the combined effect of the differing times these substances remain in the atmosphere and their effectiveness in causing radiative forcing." In plain language, GWP is a standard measure of the radiative forcing from a quantity of GHG compared to carbon dioxide. *Id*., p. 2232.

15 The IPCC defines CO_2 equivalents (sometimes "CO_2-eq" or "CO_2e") as "the amount of carbon dioxide (CO_2) emission that would have an equivalent effect on a specified key measure of climate change, over a specified time horizon, as an emitted amount of another greenhouse gas (GHG) or a mixture of other GHGs. For a mix of GHGs, it is obtained by summing the CO2-equivalent emissions of each gas." *Id*., p. 2224.

16 IPCC, "Synthesis Report", *Sixth Assessment Synthesis Report* (2023), p. 6.

17 *Id*., pp. 6–7.

millennia have not been able to counteract this extremely fast change in atmospheric composition. These increasing concentrations of atmospheric GHGs are trapping more solar energy (3).

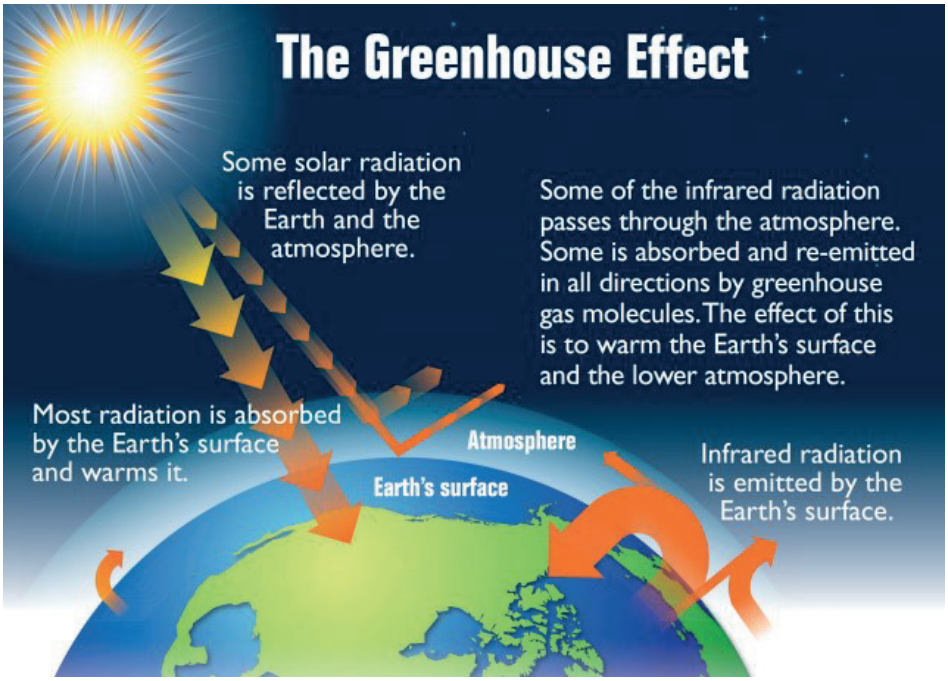


Figure 3: The atmosphere traps some solar radiation and redistributes it, which makes Earth's temperatures fluctuate over a relatively narrow range, and this supports life as we know it. But increasing amounts of heat-trapping gases in the atmosphere (GHGs) are causing more heat to stay in the atmosphere, warming it and the planet's surface[18].

B. Central Role of the Ocean in the Climate System

By exchanging heat and materials, the ocean is centrally important to the Earth's climate system and is a major reason why the planet hosts life. The ocean covers 71% of the planet and contains 97% of Earth's water reservoir[19]. Water is especially able to take up heat energy from the atmosphere without showing a rapid temperature rise. So as the Earth's surface receives solar radiation, the ocean surface takes up a great deal of heat energy due to its size and water's special heat-retaining property. At the same time, GHGs in the atmosphere like carbon dioxide capture solar energy, and some of this heat energy is transferred to the ocean surface by conduction. The large amount of water in the ocean stores heat and redistributes it around the Earth, and this helps keep temperatures in a narrow band compared to other planets. The water cycle—driven by heat—delivers fresh water from Earth's central reservoir, the ocean, around the planet, and this supports most terrestrial life.

15. The ocean is also the largest carbon reservoir on Earth, holding about 50 times more carbon than the atmosphere. Both physical and biological processes move carbon in different forms through the ocean and between the ocean and atmosphere, which affects the amount of

[18] U.S. Environmental Protection Agency, "Basics of Climate Change", https://www.epa.gov/climatechange-science/basics-climate-change.

[19] IPCC, "Summary for Policymakers", *Special Report on the Ocean and Cryosphere in a Changing Climate* (2019), p. 5.

carbon dioxide in the atmosphere available to trap solar radiation (see Section II) and heat the planet.

C. Anthropogenic GHG Emissions and Changes to Planetary Heating

16. The IPCC assessed that it "is unequivocal that human influence has warmed the atmosphere, ocean and land", and that "[o]bserved increases in well-mixed greenhouse gas (GHG) concentrations since around 1750 are unequivocally caused by human activities"[20], which is to say they are "anthropogenic"[21]. Furthermore, IPCC authors assessed that the best estimate of present global surface temperature increase from approximately 1850–2019 is 1.07°C; of that, it is likely that GHGs contributed a warming effect of 1.0°C to 2.0°C, while other human drivers[22], especially aerosols, contributed a cooling effect of 0.0°C to 0.8°C; natural processes and climate variability changed global surface temperature by smaller amounts very close to 0°C[23]. In fact, the ocean is taking up the greatest proportion of this added heat (Figure 4)[24].

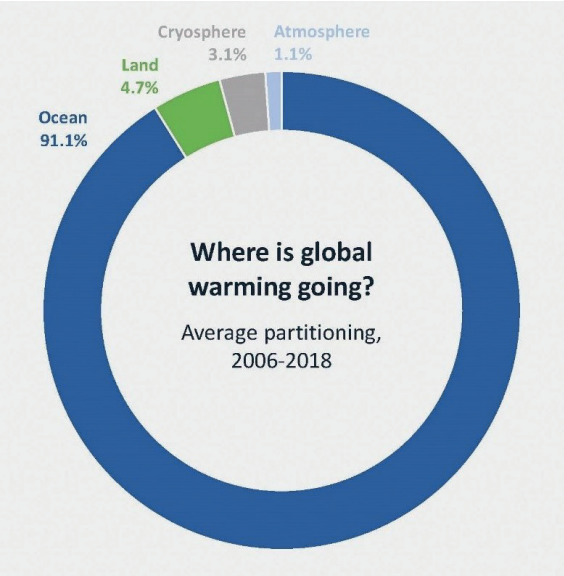


Figure 4: The ocean is taking up most of the heat captured by atmospheric GHGs. Proportions reflect average partitioning of heat energy gained for the period 2006–2018[25].

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20 IPCC, Working Group I, "Summary for Policymakers", *Sixth Assessment Report: The Physical Science Basis* (2021), p. 4.

21 *Anthropogenic* means resulting from humans. Anthropogenic GHG emissions are the emissions of radiatively active gases released by human activities including fossil-fuel burning, land-use changes, and certain industrial activities, such as concrete formation). *See* IPCC, "Annex II: Glossary", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), pp. 2900, 2907.

22 The IPCC's Sixth Assessment Report defines "climatic impact-drivers" as "physical climate system conditions (e.g., means, events, extremes) that affect an element of society or ecosystems. For simplicity, I will use the terms *driver* or *climate driver* in this report to indicate any climate-driven process that induces a change in another system. *See id*., pp. 2224 (defining and explaining climatic impact-drivers).

23 *Id*., p. 5.

24 IPCC, "Chapter 7: The Earth's Energy Budget, Climate Feedbacks, and Climate Sensitivity", *Sixth Assessment Report: The Physical Science Basis* (2021), p. 938.

25 I built this graphic based on data from IPCC Working Group I. *See id*., p. 938.

17. IPCC reports, and the climate studies they assess, use a specific consistent set of scenarios in computer model projections to describe and compare future possible conditions. The current generation of scenarios, the "shared socioeconomic pathways" (SSPs), are differentiated by numbers (SSP*x*-*y*), where *x* indicates assumptions about the social system and *y* indicates the resulting radiative forcing (in Watts m^{-2})[26] by 2100[27]. Socioeconomically, the SSP1 scenarios assume "sustainability"; SSP2, a "middle-of-the-road" approach; SSP3, "regional rivalry"; SSP4, "inequality"; and SSP5, "fossil fuel-intensive development"[28]. These scenarios result in different amounts of average global warming above preindustrial levels, especially by the middle and end of the century (Figure 5).

	Near term, 2021–2040		Mid-term, 2041–2060		Long term, 2081–2100	
Scenario	Best estimate (°C)	*Very likely* range (°C)	Best estimate (°C)	*Very likely* range (°C)	Best estimate (°C)	*Very likely* range (°C)
SSP1-1.9	1.5	1.2 to 1.7	1.6	1.2 to 2.0	1.4	1.0 to 1.8
SSP1-2.6	1.5	1.2 to 1.8	1.7	1.3 to 2.2	1.8	1.3 to 2.4
SSP2-4.5	1.5	1.2 to 1.8	2.0	1.6 to 2.5	2.7	2.1 to 3.5
SSP3-7.0	1.5	1.2 to 1.8	2.1	1.7 to 2.6	3.6	2.8 to 4.6
SSP5-8.5	1.6	1.3 to 1.9	2.4	1.9 to 3.0	4.4	3.3 to 5.7

Figure 5: Emissions scenarios used in the latest set of IPCC reports, and the best estimate and very likely range of global average temperature increases over preindustrial temperatures expected from each scenario[29].

18. The current global GHG emissions trajectory or any SSP scenario can be connected with projected planetary heating through a carbon budget. The "remaining carbon budget" frequently mentioned in climate policy discussions refers to the amount of CO_2 or CO_2 equivalents that can still be emitted while keeping global warming to either 1.5°C or 2°C (Figure 6)[30].

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26 *Radiative forcing* is the net amount of energy landing on the Earth's surface. It measures the balance of incoming and outgoing energy, and it is affected by numerous atmospheric properties. Before the widespread release of greenhouse gases to the atmosphere, the radiative forcing was nearly zero and the Earth's energy budget was balanced (see Section II.A).

27 IPCC, Working Group II, "Summary for Policymakers", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), pp. 7–8.

28 M. Meinshausen et al., "The Shared Socio-Economic Pathway (SSP) Greenhouse Gas Concentrations and Their Extensions to 2500", *Geoscientific Model Development*, Vol. 13, p. 3571 (2020) at 3572; IPCC, Working Group I, "Chapter 1: Framing, Context, and Methods", *Sixth Assessment Report: The Physical Science Basis* (2021), p. 230.

29 IPCC, Working Group I, "Summary for Policymakers", *Sixth Assessment Report: The Physical Science Basis* (2021), p. 14, table SPM.1.

30 *Id*., "Chapter 5: Global Carbon and Other Biogeochemical Cycles and Feedbacks", pp. 777–778.

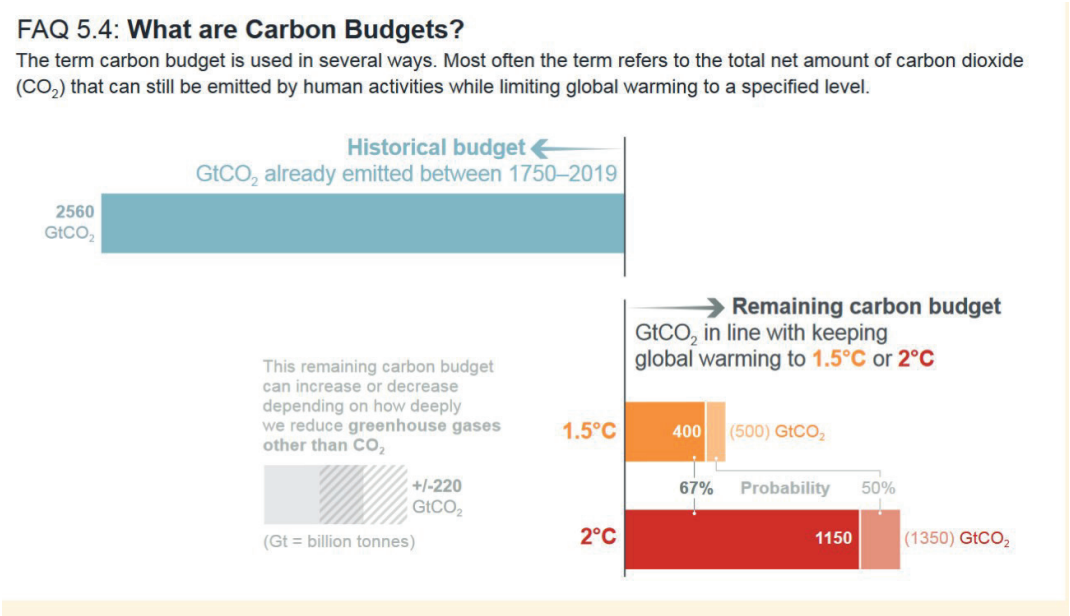


Figure 6: Historical cumulative GHG emissions (blue) have yielded warming to date. The remaining carbon budgets to limit global warming to 1.5°C (orange) or 2°C (red) are shown, both the amount remaining to ensure a 67% probability of staying below the boundary (solid color) and the amount remaining to ensure a 50% probability of staying below the boundary (shaded color)[31].

19. In June 2023, an updated estimate of the remaining carbon budget concluded that only 150 gigatons ("Gt") of CO_2 can now be emitted to ensure a 67% probability of staying below 1.5°C (instead of the prior 400 Gt CO_2 estimate, see Figure 6, in orange); and only 950 Gt CO_2 can be emitted to ensure a 67% probability of staying below 2°C (instead of the prior 1150 Gt CO_2 estimate, see Figure 6, in red)[32]. To ensure a 50% probability of staying below 1.5°C, the remaining carbon budget is 250 Gt CO_2 (instead of the prior 500 Gt CO_2 estimate, see Figure 6, in pale orange); and a 50% probability of staying below 2°C implies a remaining carbon budget of 1150 Gt CO_2 (instead of the prior estimate of 1350 Gt CO_2, see Figure 6, in pale red).

20. In September 2023, the UNFCCC's Subsidiary Body for Scientific and Technological Advice (SBSTA) conducted the first global stocktake to measure global progress towards Paris Agreement goals, and it found that "based on current NDCs, the gap to emissions consistent with limiting warming to 1.5°C in 2030 is estimated to be 20.3-23.9 Gt CO2 eq[uivalents]"[33]. It further concluded that much more ambition is needed "in order to reduce global GHG emissions by 43 per cent by 2030 and further by 60 per cent by 2035 compared with 2019 levels and reach net zero CO2 emissions by 2050 globally"[34]. During COP28 in

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31 *Id.*, p. 778.

32 P. Forster et al., "Indicators of Global Climate Change 2022: Annual Update of Large-Scale Indicators of the State of the Climate System and Human Influence", *Earth System Science Data*, Vol. 15, p. 2295 (2023) at 2313, Table 7.

33 UNFCCC, Subsidiary Body for Scientific and Technological Advice, Technical Dialogue of the First Global Stocktake: Synthesis Report by the Co-Facilitators on the Technical Dialogue, document FCCC/SB/2023/9 (8 September 2023), ¶ 10.

34 *Id.*, ¶ 13.

December 2023, parties released the global stocktake and prepared for a swift, just and equitable transition away from fossil fuels supported by deep emissions cuts, more specific targets for adaptation, and increased finance, particularly funds to address loss and damage[35].

D. Human Influence on the Earth's Carbon Cycle

21. Carbon is found everywhere on Earth in multiple forms, or chemical compounds, and provides the foundation for life on the planet. For millennia, the Earth's carbon cycle was in steady state, with carbon releases balanced by carbon storage. Human activities that emit GHGs—such as fossil fuel burning, production of fertilizers, land use changes, and disposal of organic waste, all of which accelerated greatly after the Industrial Revolution—have essentially "short circuited" the Earth's carbon cycle. These activities are releasing vast amounts of geologically stored carbon, which accumulated over millennia, into the atmosphere as carbon dioxide over decades to centuries. As noted above (Section C), human activities are "unequivocally" responsible for the increase in atmospheric carbon dioxide concentrations. Atmospheric CO_2 concentrations reached 421.00 ppm in March 2023 and continue to increase (Figure 7)[36]. CO_2 emissions through 2019 have released approximately 2560 Gt CO_2 (Figure 6). The ocean has taken up 26 percent of human-released CO_2 from 1850 to 2021 through air-sea gas exchange[37]. (See Section III.A.1.vii. for the chemical effects of increased atmospheric CO_2 on the ocean.) Even if CO_2 emissions ceased soon, enough anthropogenically emitted CO_2 is in the atmosphere that warming would continue for centuries, and ocean uptake of CO_2 would continue for thousands of years, after which rock weathering would dominate the removal of remaining anthropogenically emitted atmospheric CO_2 for tens to hundreds of thousands more years[38].

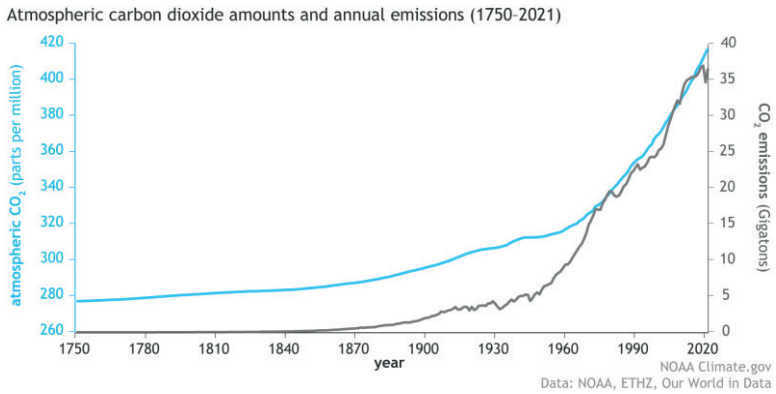


Figure 7: The amount of carbon dioxide in the atmosphere (blue line) has increased along with human emissions (gray line) since the start of the Industrial Revolution in 1750. Emissions rose slowly to about 5 billion tons per year in the mid-20th century before skyrocketing to more than 35 billion tons per year by the end of the century[39].

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35 *See* COP28, Outcome of the First Global Stocktake, decision -/CMA.5 (Advance Unedited Version) (13 December 2023).

36 CO_2 Earth, https://www.co2.earth/daily-co2.

37 P. Friedlingstein et al., "Global Carbon Budget 2022", Earth System Science Data, Vol. 14, P. 4811 (2022) at 4834.

38 *See* C. Stager, "What Happens AFTER Global Warming?", *Nature Education Knowledge* (2012).

39 Figure and caption published 13 June 2022 by climate.gov, https://www.climate.gov/media/14596. Atmospheric CO_2 data from National Oceanic and Atmospheric Administration and the Institute for

III. Outcomes of Climate Change for the Marine Environment

22. In this Section, I describe the outcomes of climate change that the IPCC has determined have occurred or are likely to occur with regard to the marine environment, including for natural systems (Subsection A) and human systems (Subsection B).

A. Outcomes for Natural Systems

23. As regards natural systems, I address in turn outcomes that are both *abiotic* (i.e., not associated with or derived from living organisms) and *biotic* (i.e., associated with organisms). I identify eight principal abiotic outcomes and give five principal biotic ones described in the IPCC's reporting on the marine environment.

1. Abiotic Outcomes

i. Temperature Changes

24. The steady global increase in ocean heat content has increased temperatures from the surface to deep ocean. The IPCC assessed that "global mean sea surface temperature (SST) has increased since the beginning of the 20th century" by "0.88°C [0.68–1.01°C]", and it is *virtually certain* that the global ocean has warmed since at least 1971[40]. The surface ocean warming rate varies from about -3°C century^{-1} to +3°C century^{-1} because of physical circulation[41]. The IPCC assessed: "Ocean warming will continue over the 21st century (*virtually certain*), with the rate of global ocean warming starting to be scenario-dependent from about the mid-21st century (*medium confidence*)."[42]

25. Although specific locations experience gradual average temperature increases over time, isotherms (curves of equal temperature on a map) appear to move towards the poles under climate change[43]. The speed and direction of this change is called climate velocity. The IPCC assessed that "[m]edian climate velocity in the surface ocean has been 21.7 km per decade since 1960, with higher values in the Arctic/sub-Arctic and within 15° of the Equator"[44]. Subsurface water is also warming, and climate velocity in the very deep ocean (1000–4000m) is actually faster than it is in the middle layers (200–1000m)[45].

26. Marine heatwaves are another outcome of global heating. A marine heatwave is a period of days to months in which seawater temperature is significantly higher than the long-

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Atmospheric and Climate Science. CO_2 emissions data from Our World in Data and the Global Carbon Project.

40 IPCC, Working Group I, "Chapter 9: Ocean, Cryosphere and Sea Level Change", *Sixth Assessment Report: The Physical Science Basis* (2021), pp. 1221, 1228.

41 IPCC, Working Group II, "Chapter 3: Oceans and Coastal Ecosystems and Their Services", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 392.

42 *Id*., p. 391.

43 See M. Burrows et al., "The Pace of Shifting Climate in Marine and Terrestrial Ecosystems", *Science*, Vol. 334, p. 652 (2011).

44 IPCC, Working Group II, "Chapter 3: Oceans and Coastal Ecosystems and Their Services", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 392.

45 *Id*.

term mean seasonal cycle[46]. The IPCC assessed that marine heatwaves became more frequent over the 20th century (*high confidence*) and into the beginning of the 21st century, approximately doubling in frequency (*high confidence*) and becoming more intense and longer since the 1980s (*medium confidence*), and that human influence has *very likely* contributed to 84–90% of them since at least 2006[47].

ii. Sea-Level Rise: Mechanisms and Projections

27. Sea-level rise ("SLR") has been a recognized outcome of climate change since the first IPCC report[48]. In its 2019 Special Report on the Ocean and Cryosphere, the IPCC assessed: "The dominant cause of [global mean sea level] since 1970 is anthropogenic forcing."[49] Sea-level rise is an outcome of heat-driven seawater expansion[50] and melting of land-supported ice[51]. The IPCC concluded:

> The rate of global mean [sea-level rise] was 1.35 mm yr^{-1} (0.78–1.92 mm yr^{-1}, *very likely range*) during 1901–1990, faster than during any century in at least 3000 years (*high confidence*). Global mean [sea-level rise] has accelerated to 3.25 mm yr^{-1} (2.88–3.61 mm yr^{-1}, *very likely range*) during 1993–2018 (*high confidence*).[52]

28. The IPCC assessed that it is *very likely* to *virtually certain* that sea-level rise will continue throughout the 21st century under all emissions scenarios[53]:

> Relative to 1995–2014, the likely global mean sea level rise by 2100 is 0.28–0.55 m under the very low GHG emissions scenario (SSP1-1.9) . . . and 0.63–1.01 m under the very high GHG emissions scenario (SSP5-8.5)… Global mean sea level rise above the likely range—approaching 2 m by 2100 and 5 m by 2150 under a very high GHG emissions scenario (SSP5-8.5)

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46 IPCC, Working Group I, "Chapter 9: Ocean, Cryosphere and Sea Level Change", *Sixth Assessment Report: The Physical Science Basis* (2021), p. 1227.

47 *Id*.

48 *See* IPCC, "Scientific Assessment", *Climate Change* (1990).

49 IPCC, "Chapter 4: Sea Level Rise and Implications for Low-Lying Islands, Coasts and Communities", *Special Report on the Ocean and Cryosphere in a Changing Climate* (2019), p. 323. Here, "anthropogenic forcing" is GHG emission resulting from anthropogenic activities including fossil fuel burning and land use changes. IPCC, Working Group II, "Annex II: Glossary", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 2903.

50 Heating water causes it to expand slightly, which is normally not measurable in everyday quantities of water. However, slight thermal expansion of vast amounts of ocean water causes measurable changes in ocean volume.

51 Land-supported ice includes glaciers and snow. Glaciers are large sheets of ice and snow on land. Ice sheets are a type of glacier covering a large landmass. Sea ice that is already floating on the sea surface does not contribute to SLR, because water levels do not rise when floating ice melts.

52 IPCC, Working Group II, "Chapter 3: Oceans and Coastal Ecosystems and Their Services", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 477.

53 *Id*., p. 21.

> (*low confidence*)—cannot be ruled out due to deep uncertainty in ice-sheet processes.[54]

29. This means that, although most scenarios project sea-level rise to be less than or equal to one meter by 2100, changes in ice sheets (land-supported ice) are challenging to predict exactly, and collapses of glaciers could double sea-level rise by 2100. In addition, sea-level rise is making extreme high-water events happen more often: "[E]xtreme sea level events that occurred once per century in the recent past are projected to occur at least annually at more than half of all tide gauge locations by 2100 (*high confidence*)."[55]

30. While 98% of the ocean surface has experienced significant sea-level rise during the period of satellite observations, multiannual variations in SLR have been observed in the Pacific and Atlantic Oceans[56]. Cyclic wind and heat flux changes resulting from atmosphere-ocean phenomena have altered sea level regionally, and these effects are now quantifiable with modern sea-level observing technologies. In the Pacific, the Pacific Decadal Oscillation, the El Niño Southern Oscillation, the North Pacific Gyre Oscillation, and Indian Ocean Dipole drove these variations, while in the Atlantic Ocean, the North Atlantic Oscillation and the Atlantic Meridional Overturning Circulation were responsible[57].

31. In sum, sea-level rise is irreversible, and long-term outcomes will depend on emissions choices now:

> [S]ea level is committed to rise for centuries to millennia due to continuing deep-ocean warming and ice-sheet melt and will remain elevated for thousands of years (*high confidence*). Over the next 2000 years, global mean sea level will rise by about 2 to 3 m if warming is limited to 1.5°C, 2 to 6 m if limited to 2°C and 19 to 22 m with 5°C of warming, and it will continue to rise over subsequent millennia (*low confidence*).[58]

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54 *Id*.

55 *Id*., p. 25.

56 *Id*., "Chapter 9: Ocean, Cryosphere and Sea Level Change", p. 1289.

57 *Id*., pp. 1289-1290.

58 IPCC, Working Group I, "Summary for Policymakers", *Sixth Assessment Report: The Physical Science Basis* (2021), p. 21.

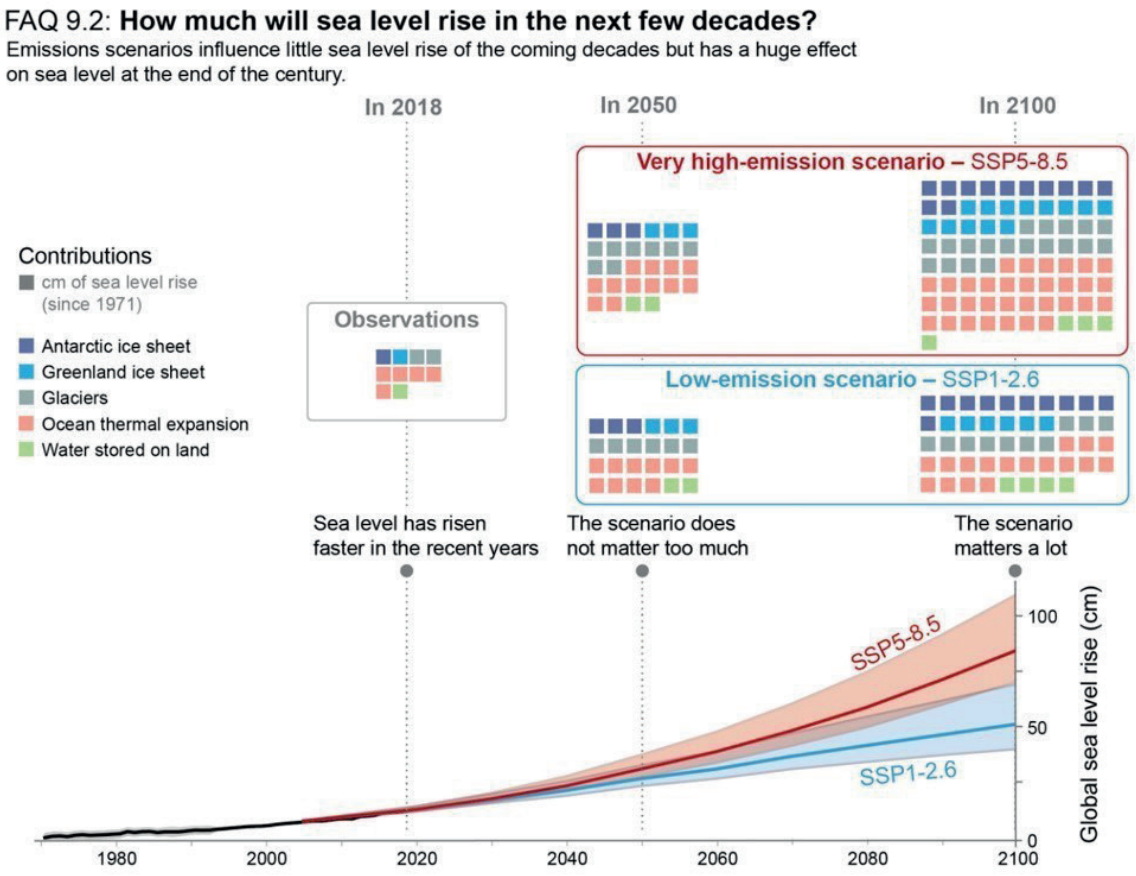


Figure 8: IPCC assessment of projected sea-level rise to 2100, with indication of which sources contribute most (colored boxes). SSP1-2.6 (blue) represents a low-emissions trajectory, whereas SSP 5-8.5 (red) represents a very high emission trajectory. In 2050, SLR projections do not vary greatly depending on emissions scenario, but by 2100, projections diverge greatly[59].

iii. Weather Changes

32. Coastal areas in particular face heightened risks from severe weather caused by warming of the atmosphere and the ocean. Extreme heat, heavy precipitation and rainfall flooding, severe windstorms, and tropical cyclones are becoming more likely everywhere, and in coastal areas these combine with SLR to further increase the risk of extreme high-water events (see Section III.A.1.ii above) and erosion. Furthermore, land use and climate change inland are altering water and sediment input by rivers to the coast, especially during extreme weather events. The IPCC assessed: "Human-caused climate change has driven detectable changes in the global water cycle since the mid-20th century (*high confidence*), and it is projected to cause substantial further changes at both global and regional scales (*high confidence*)."[60]

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59 *Id*., "Chapter 9: Ocean, Cryosphere and Sea Level Change", p. 1319, FAQ 9.2, Figure 1.

60 *Id*., "Technical Summary", p. 85.

33. Overall, climate warming has increased moisture transport into the atmosphere, "which intensifies wet seasons and events (*high confidence*)", and increases in humidity over land and ocean have a detectable human influence (*medium confidence*)[61]. Predicting where and when future extremes will occur remains challenging due to the dependence of extremes on atmospheric circulation[62]. Relatedly, there is *limited evidence* that anthropogenic effects have intensified tropical cyclones, but there is *high confidence* that they have increased precipitation in tropical cyclones[63]. In the future, the "proportion of tropical cyclones that are intense is expected to increase (*high confidence*), but the total global number of tropical cyclones is expected to decrease or remain unchanged (*medium confidence*)"[64].

iv. Loss of Sea Ice

34. Sea ice melting alters the physical environment of polar oceans, contributing to warming in the Arctic, especially by changing the surface ocean's reflectivity (albedo)[65] in the boreal (Northern Hemisphere) summer. The IPCC assessed that the observed extent of "late-summer sea ice loss is *likely* unprecedented for at least 1000 years" and that "human influence was *very likely* the main driver of observed reductions in Arctic sea ice since the 1970s"[66]. In addition, the "Arctic surface is projected to warm more than the global average over the 21st century, with annual-average Arctic warming of about 3°C (SSP1-2.6), 10°C (SSP3-7.0) and 12°C in (SSP5-8.5) by 2081–2100 relative to 1995–2014" due to polar amplification—a phenomenon of greater climate change near poles as a result of surface-albedo feedbacks, other temperature feedbacks, and increased poleward atmospheric and oceanic heat transport[67]. The magnitude of polar amplification in the Arctic remains uncertain due to the complexity of these feedbacks and their interactions with other Earth system processes[68]. Polar amplification occurs in the Southern Hemisphere as well, but less warming is expected in the Antarctic than the Arctic due to differences in ocean heat transport and possibly wind and ice sheet effects[69].

35. Sea ice loss is expected to continue. The IPCC assessed, the "Arctic is *likely* to be practically sea ice-free in September at least once before 2050 under the five illustrative scenarios considered in this report, with more frequent occurrences for higher warming levels"[70]. In this statement, "practically" refers to a projected "monthly average sea ice area of less than 1 million km^2, which is about 15% of the average September sea ice area observed in 1979–1988"[71]. In addition, "[a]dditional warming is projected to further amplify

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61 *Id*., pp. 85–86.

62 *Id*., p. 85.

63 *Id*., p. 108.

64 *Id*., p. 70.

65 The loss of light-colored, reflective sea ice and the gain of dark-colored open water increases the absorption of solar energy in high-latitude areas.

66 *Id*., "Technical Summary", p. 76.

67 *Id*., "Chapter 4: Future Global Climate: Scenario-Based Projections and Near-term Information", p. 596.

68 *Id.*

69 *Id*., p. 597.

70 *Id*., "Summary for Policymakers", p. 16.

71 *Id*., p. 16.

permafrost thawing and loss of seasonal snow cover, of land ice and of Arctic sea ice (*high confidence*)"[72].

v. Ocean Stratification

36. Seawater density generally increases gradually with depth, as increasingly cold, high-pressure conditions compress this salty water. In specific locations, surface water becomes cold and salty enough to move deeper into the ocean, helping drive deep-ocean circulation through the ocean basins. But surface ocean warming due to climate change is decreasing upper-ocean density by warming the water, and this discourages exchange of upper ocean water with deeper layers.

37. The IPCC assessed that it is *virtually certain* that "upper ocean stratification (0-200m) has increased globally since at least 1970"[73]. Stratification decreases the vertical exchange of recycled nutrients from the deep ocean back to the upper ocean that help nourish phytoplankton blooms, and it decreases the penetration of dissolved oxygen and carbon dioxide into the deep ocean. The IPCC further assessed that "it is *virtually certain* that the global mean upper ocean will continue to stratify in the 21st century"[74], and "[p]rojected declines in upper-ocean nutrient concentrations, likely associated with increases in stratification, will reduce carbon export flux to the mesopelagic and deep-sea ecosystems (*medium confidence*)"[75]. These changes could substantially alter the productivity of ocean ecosystems and the way the ocean stores carbon dioxide in deep water.

vi. Ocean Circulation

38. Heat-driven stratification, changes in ocean salinity, and changing wind stress are altering ocean circulation and will continue to in the future. Already there is *medium confidence* that "[w]estern boundary currents and subtropical gyres have shifted poleward since 1993", and "there is *high confidence* that many ocean currents will change in the 21st century in response to changes in wind stress"[76]. There is *high confidence* that "[a]ll of the four main eastern boundary upwelling systems are projected to weaken at low latitudes and intensify at high latitudes in the 21st century"[77]. This will undoubtedly alter marine ecosystems, especially in upwelling zones, which currently host significant fisheries in every ocean basin.

39. The Atlantic Meridional Overturning Circulation (the "AMOC"), which moves surface water deep into the ocean and helps redistribute heat around the planet, is projected to slow down (*very likely* confidence) over the 21st century. Limited data and high natural variance in the AMOC prevent researchers from developing quantitative projections of AMOC's behavior now, but IPCC authors assess that an "AMOC decline over the 21st

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72 *Id*., p. 16.

73 *Id*., "Technical Summary", p. 74.

74 *Id*., "Chapter 9: Ocean, Cryosphere and Sea Level Change", p. 1227.

75 IPCC, Working Group II, "Chapter 3: Oceans and Coastal Ecosystems and Their Services", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 382.

76 IPCC, Working Group I, "Technical Summary", *Sixth Assessment Report: The Physical Science Basis* (2021), p. 74.

77 *Id*.

century is *very likely* for all SSP scenarios"[78]. A few studies have examined low-likelihood, high-warming scenarios in which ice sheets collapse and abrupt ocean circulation changes (like collapse of AMOC) occur. These studies indicate: "[T]here is *medium confidence* that the [AMOC] will not experience an abrupt collapse before 2100, if it were to occur, it would *very likely* cause abrupt shifts in regional weather patterns and water cycle. The probability of these low-likelihood outcomes increases with higher global warming levels."[79] In short, low-likelihood, high-risk events including collapse of AMOC cannot be ruled out, but gradual slowdown of this key ocean current should be expected.

vii. Ocean Acidification from CO_2 Absorption

40. The ocean has helped modulate some amount of planetary warming by taking up approximately 26 percent of all atmospheric anthropogenic CO_2, at a rate of 2.9 ± 0.4 Gt C yr^{-1} during the decade 2012–2021[80], but ocean uptake of anthropogenic CO_2 also causes ocean acidification. The IPCC defines ocean acidification as:

> A reduction in the pH of the ocean, accompanied by other chemical changes (primarily in the levels of carbonate and bicarbonate ions), over an extended period, typically decades or longer, which is caused primarily by uptake of carbon dioxide (CO_2) from the atmosphere, but can also be caused by other chemical additions or subtractions from the ocean. Anthropogenic OA refers to the component of pH reduction that is caused by human activity.[81]

41. The effects of ocean acidification on marine organisms depend on their responses to several interconnected chemical changes related to increases in dissolved concentrations of CO_2. Ocean acidification is most apparent in surface seawater[82].

42. The IPCC has assessed that it is *virtually certain* that human influence is the main driver of the surface open ocean acidification observed over the last 40 years, and that ocean acidification is *virtually certain* to continue to increase in the 21st century[83]. Moreover, contemporary ecosystems and human civilizations have not faced these conditions before: "There is *very high confidence* that present-day surface pH values are unprecedented for at least 26,000 years and current rates of pH change are unprecedented since at least that time. Over the past 2–3 decades, a pH decline in the ocean interior has been observed in all ocean basins (*high confidence*)."[84]

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78 *Id*.

79 *Id*., p. 72.

80 P. Friedlingstein et al., "Global Carbon Budget 2022", 14 *Earth System Science Data*, Vol. 14, p. 4811 (2022) at 4814.

81 IPCC, Working Group I, "Annex VII: Glossary", *Sixth Assessment Report: The Physical Science Basis* (2021), p. 2241.

82 *See* S. Doney et al., "The Impacts of Ocean Acidification on Marine Ecosystems and Reliant Human Communities", *Annual Review of Environment and Resources*, Vol. 45, p. 83 (2020).

83 IPCC, Working Group I, "Technical Summary", *Sixth Assessment Report: The Physical Science Basis* (2021), p. 74.

84 *Id*., p. 76.

43. The IPCC has assessed that the "[l]and and ocean have taken up a near-constant proportion (globally about 56% yr^{-1}) of CO_2 emissions from human activities over the past six decades, with regional differences (*high confidence*)"[85]. but warming is gradually altering this process. Warming decreases CO_2 solubility and increases ocean stratification, which both decrease upper-ocean CO_2 uptake. Ocean warming also alters heat gradients that drive winds and storms, changing the mixing of the upper ocean and affecting the large-scale circulation that governs the storage and release of dissolved CO_2 in the deep ocean[86]. The IPCC notes, however, that as the land and ocean take up more CO_2: "[T]hey become less effective, that is, the proportion of emissions taken up by land and ocean decrease with increasing cumulative CO_2 emissions. This is projected to result in a higher proportion of emitted CO_2 remaining in the atmosphere (*high confidence*)."[87] Future medium- and high-emissions scenarios indicate slower proportional growth of the ocean carbon reservoir after 2050, but how biological activity will change and the overall behavior of the ocean carbon reservoir are not well resolved[88]. In short, the ocean's ability to take up CO_2 is decreasing over time, but it is not clear whether there is a definitive limit to the ocean's carbon uptake function.

viii. Ocean Deoxygenation

44. Oxygen solubility, circulation, and mixing have always interacted with biological respiration to set oxygen levels in the ocean's interior, but warming is changing these relationships and causing ocean deoxygenation, or oxygen loss. The IPCC assessed: "There is high confidence that oxygen levels have dropped in many regions since the mid 20th century."[89] About 15 percent of the observed decrease is attributed to warming-induced solubility change, while the rest is attributed to stratification[90]. Deoxygenation can be worsened by inputs (e.g., anthropogenically released nitrogen, fertilizers, or biomass) to coastal zones that fuel microbial activity, by changes in local circulation, and by increases in seasonal stratification, and the IPCC assessed that there is high agreement and robust evidence that more severe hypoxia is associated with these processes[91]. Places like the Gulf of Mexico and the East China Sea experience substantial inputs of terrestrial organic matter and nutrients that fuel microbial respiration and cause widespread low-oxygen (or hypoxic) events. These events also contribute to ocean acidification especially in coastal and tropical habitats because microbial respiration also releases CO_2[92]. The IPCC projects that "ocean deoxygenation is projected to continue to increase with ocean warming (*high confidence*)"[93].

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85 *Id*., "Summary for Policymakers", p. 4.

86 *Id*., "Chapter 5: Global Carbon and Other Biogeochemical Cycles and Feedbacks", pp. 728–729.

87 *Id*., "Summary for Policymakers", p. 20.

88 *Id*., "Chapter 5: Global Carbon and Other Biogeochemical Cycles and Feedbacks", *Sixth Assessment Report: The Physical Science Basis* (2021), pp. 745–746

89 IPCC, Working Group I, "Technical Summary", *Sixth Assessment Report: The Physical Science Basis* (2021), p. 74.

90 *Id*., "Chapter 5: Global Carbon and Other Biogeochemical Cycles and Feedback", p. 714.

91 *Id*., p. 722.

92 IPCC, Working Group II, "Chapter 3: Oceans and Coastal Ecosystems and Their Services", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 401.

93 IPCC, Working Group I, "Chapter 5: Global Carbon and Other Biogeochemical Cycles and Feedbacks", *Sixth Assessment Report: The Physical Science Basis* (2021), p. 677.

2. Biotic Outcomes

i. Individual Effects on Marine Organisms

45. Marine heating, acidification, and oxygen loss affect many marine organisms individually, as well as collectively. Temperature is a main controller of biological reactions, and each species has an optimal temperature range to which it is physiologically adapted. Warming or cooling beyond that optimal range will place an organism under heat stress, reducing growth and reproduction, which it can endure for a time, but extreme warming or cooling will ultimately kill an organism[94]. Acidification affects a variety of biological processes, with some processes responding to CO_2 concentration changes (e.g., photosynthesis) and others responding to pH changes (e.g., calcification, the creation of calcium carbonate shells, skeletons, and body parts)[95]. Ocean acidification's many documented effects on marine species and their varying severity means that it is not possible to develop universal rules describing impacts and thresholds. Oxygen concentrations affect energy metabolism of most marine species and microbial transformations of major elements, including nitrogen. The IPCC assessed that hypoxic conditions (i.e., oxygen concentrations below about 2 mg L^{-1}) frequently cause marine organisms to migrate or die and community composition to change substantially (*very high confidence*)[96].

46. Although laboratory studies commonly examine organisms' responses to changes in one or two variables, several drivers normally change at once in the environment. Biological responses to drivers can add up or multiply each other, or even offset one another. As a result, organisms' responses in nature can be challenging to predict. For example, warming and increasing CO_2 concentrations increase the growth and photosynthesis of many marine primary producers (e.g., seagrasses, macroalgae, phytoplankton). For other species, ocean acidification causes harm that can be either partially offset (e.g., in coccolithophores, a hard-shelled plankton) or worsened (e.g., in coralline algae) by warming[97]. Frequently, abundant nutrient supply and/or light supply affect both temperature and acidification responses of species; this is seen in coccolithophores and harmful algal bloom species[98].

47. Individual organisms under physiological stress from suboptimal conditions will either move toward better conditions, adapt, or die when conditions exceed their stress tolerance. Highly mobile individuals with high oxygen needs (e.g., open ocean predatory fish like tuna) can move towards favorable conditions, but immobile individuals (e.g., sedimentary microbes or bivalve shellfish whose growth is slowed by ocean acidification) cannot (Figure 9). The IPCC assessed: "By altering physiological responses, projected changes in ocean warming will modify growth, migration, distribution, competition, survival and reproduction (*very high confidence*)."[99] Ecosystem-scale changes are observed globally.

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94 For a detailed explanation of this concept, see IPCC, Working Group II, "Technical Summary", *Fifth Assessment Report: Impacts, Adaptation, and Vulnerability* (2014).

95 S. Doney et al., The Impacts of Ocean Acidification on Marine Ecosystems and Reliant Human Communities, *Annual Review of Environment and Resources*, Vol. 45, p. 83 (2020) at 84–85.

96 IPCC, Working Group II, "Chapter 3: Oceans and Coastal Ecosystems and Their Services", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 401.

97 *Id*., p. 404.

98 *Id*.

99 *Id*., p. 400 (citations omitted).

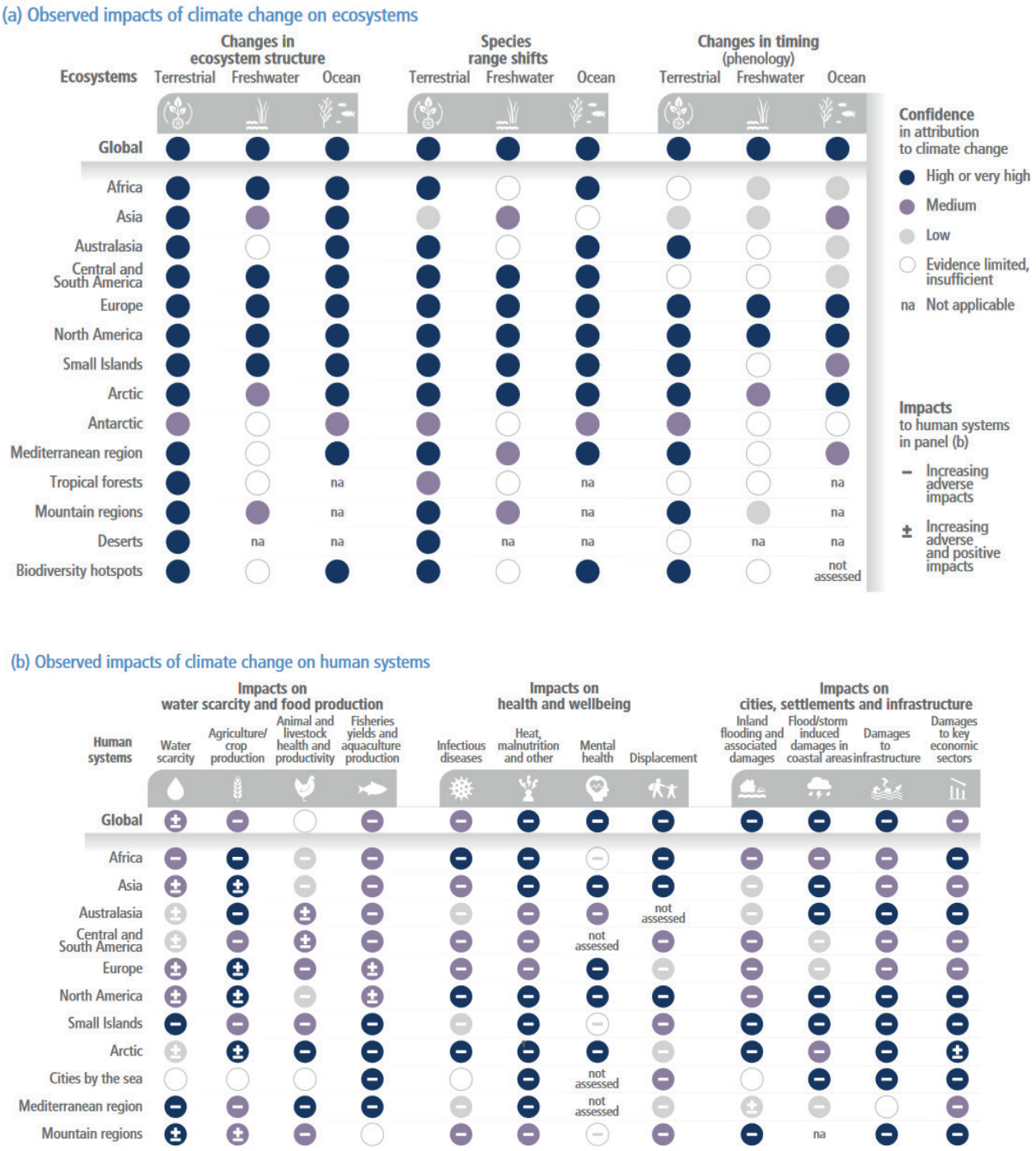


Figure 9: Summary table of the observed global and regional impacts of climate on ecosystems and human systems. Both land- and ocean-related impacts are listed. There is high confidence in the role of climate on affecting these systems (panel a), and impacts are overwhelmingly mixed to negative (panel b)[100].

[100] IPCC, Working Group II, "Technical Summary", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 46.

48. In several instances, individual climate-associated drivers have dominated observed outcomes in nature. For instance, Great Barrier Reef bleaching from 2016 to 2020 is attributed to ocean warming[101]. Also, multiple years of juvenile Pacific oyster losses from aquaculture facilities in the Pacific Northwest of the United States in the mid-2000s are attributed to ocean acidification[102]. In semi-enclosed seas like the Mediterranean Sea, the Red Sea, and the Persian Gulf, marine heatwaves have increased in frequency and intensity, causing widespread coral reef impacts, which are worsened by runoff from land that encourages oxygen depletion[103]. In each situation, outcomes are dominated by one climate driver even though other climate drivers and non-climate drivers (e.g., human-driven physical disturbances and pollution) are present in the area.

ii. Population Effects

49. Most organisms can adapt to some amount of environmental change. Organisms adapt through transgenerational selection, in which survivors pass their characteristics to their offspring (e.g., tolerance of higher temperatures), or through developmental acclimation, in which organisms growing in particular conditions can tolerate them better than organisms that grow elsewhere. Over many generations, distinct adapted populations can develop in locations with unique conditions. Temperature- or acidity-adapted shellfish, corals, and other species have been documented[104]. As with individual organisms, populations have a finite ability to adapt. The IPCC assessed that population-scale adaptation is "unlikely to provide a long-term solution for species undergoing sustained directional environmental change (e.g., global warming) (*medium confidence*)" because of the continued need for adaptation in conditions that are changing at an accelerating pace[105]. Evolutionary adaptation can happen rapidly (over one to two years) among organisms that reproduce quickly, such as microbes[106], but it takes much longer (e.g., centuries) for longer-lived organisms like predatory fish and marine mammals. High-stress environmental conditions are more likely to accelerate the decline of populations and increase their risk of extinction than to accelerate the adaptation of populations[107].

iii. Biodiversity Changes

50. Observations show that cold-adapted species are being replaced by warm-adapted species as waters warm, and this has been "attributed to ocean warming (*medium to high confidence*) in communities as diverse as kelp, invertebrates, plankton and fish"[108]. The overall effect also reduces tropical biodiversity

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101 *Id*., "Chapter 11: Australasia", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 1584; *see also id*., "Chapter 3: Oceans and Coastal Ecosystems and Their Services", p. 412; *id*., "Chapter 11: Australasia: Supplementary Material", pp. 11SM-7 to 11SM-9.

102 *See* S. Doo et al., "The Challenges of Detecting and Attributing Ocean Acidification Impacts on Marine Ecosystems", *ICES Journal of Marine Science*, Vol. 77, p. 2411 (2020).

103 IPCC, Working Group II, "Chapter 3: Oceans and Coastal Ecosystems and Their Services", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 426.

104 *Id*., p. 407.

105 *Id.*

106 *Id*., p. 408.

107 *Id*.

108 *Id*., p. 438.

globally. Studies of the paleorecord[109] show that warming climates in prehistory, even with low ocean-warming rates, also caused poleward range shifts of reef corals and other marine species, which "decreased tropical marine biodiversity compared with middle latitudes (*high confidence*). Future projections of species richness indicate continued losses of global biodiversity in tropical locations, with biodiversity gains in subtropical and especially subpolar to polar waters[110].

iv. Seasonal Changes

51. Ocean warming is also changing seasonal phenomena such as phytoplankton blooms (including harmful algal blooms), as well as zooplankton abundance, migration, spawning, and breeding behaviors (Figure 9)[111]. Computer models project that observed seasonal changes in spring phytoplankton blooms will continue, and the effect will be more pronounced for higher GHG emissions scenarios. For example, the IPCC assessed that very large areas of the ocean surface will experience substantial changes in the start of the phytoplankton growth period by 2100: "[B]y 2100, 18.8 ± 19.0% (mean ± *very likely* range) and 38.9 ± 9.4% of the ocean surface will very likely undergo a change of 20 d or more (advance or delay) in the start of the phytoplankton growth period under SSP1-2.6 and SSP5-8.5, respectively."[112]

52. Different parts of marine food webs are responding at different rates (*very high confidence*), raising the possibility that predators and prey will no longer encounter each other at critical moments, leading to population-level changes, such as in reproduction[113]. The IPCC assessed: "There is *medium* to *high* agreement that these changes pose significant uncertainties and risks to fisheries, aquaculture and other coastal activities."[114]

v. Ecosystem Effects

53. Given the variety of possible responses to climate change by individuals and populations, it is challenging to predict future characteristics of entire marine ecosystems[115] accurately under different climate scenarios. However, there is an emerging understanding that average global biomass of marine animals is expected to decline due to climate change. The IPCC assessed: "On a global scale, ecosystem models project a −5.7 ± 4.1% (*very likely range*) to −15.5 ± 8.5% decline in marine animal biomass with warming under SSP1-2.6 and

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109 The *paleorecord* includes data from rock layers, ocean and lake sediments, fossils, ice cores, and tree rings. These data sources provide information about temperature, moisture, atmospheric composition, and other Earth system characteristics for periods when written records were not kept.

110 *Id*., "Chapter 3: Oceans and Coastal Ecosystems and Their Services", p. 442, figure 3.18.

111 *Id*., p. 436.

112 *Id*., p. 437 (citations omitted).

113 *Id*., p. 436.

114 *Id*., p. 437.

115 Marine ecosystems are commonly defined as aquatic ecosystems, contiguous with the ocean, with high levels of dissolved salt. They can be described by their geographic location (e.g., high latitude, South Pacific), their water depth (e.g., continental shelf, deep-sea), their association with shoreline features (e.g., sandy beaches, bays, sea ice), or their notable biological communities (e.g., coral reef, hydrothermal vents). Marine ecosystems tend to have loosely defined boundaries, include a wide variety of organisms, and have developed over a long period of time preceding strong human influence. *See* J. Frederick Grassle, "Marine Ecosystems", *Encyclopedia of Biodiversity*, Vol. 5, p. 45 (2013).

SSP5-8.5, respectively, by 2080–2099 relative to 1995–2014, albeit with significant regional variation in both trends and uncertainties (*medium confidence*).”[116]

54. All marine ecosystems are susceptible to climate-induced harm. In systems without much natural temperature variability (e.g., polar systems, tropical systems, deep sea systems), the IPCC assessed that organisms “are often more sensitive to warming than those from thermally variable environments (e.g., estuaries) (*very high confidence*)”[117]. Coastal ecosystems often experience both climate- and non-climate drivers that heighten their overall risk (Figure 10). Even in remote deep-sea systems where non-climate drivers are few, numerous climate drivers are present (Figure 11).

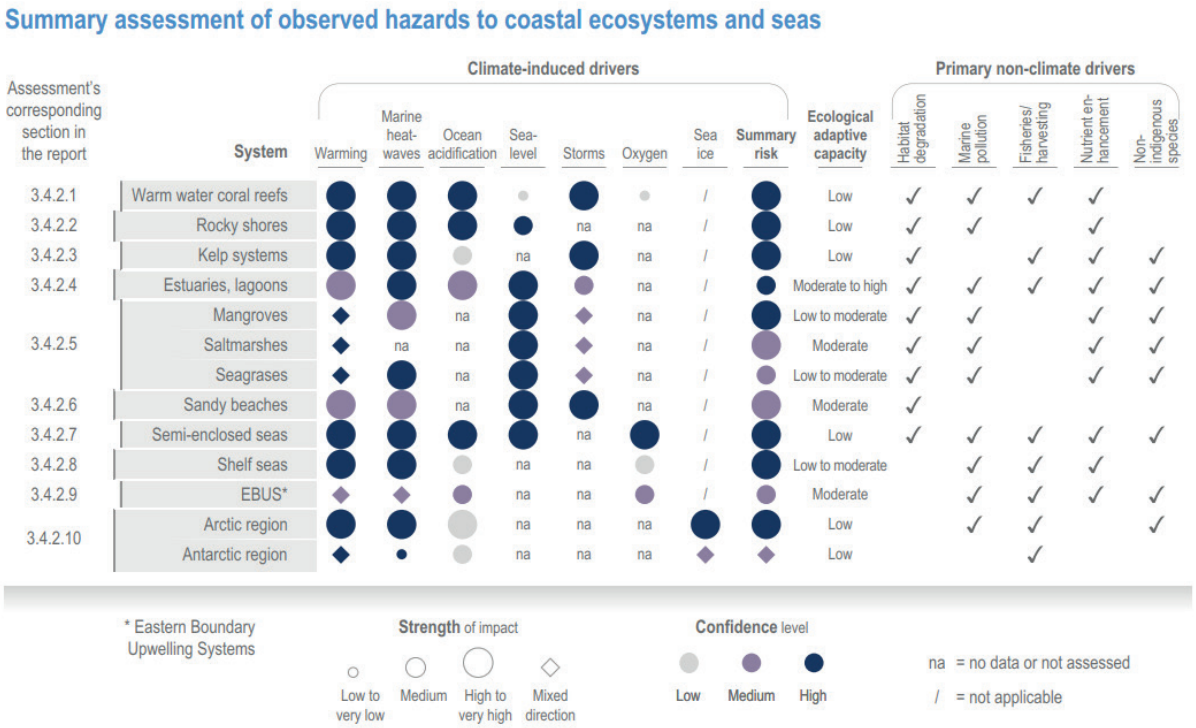


Figure 10: Summary of IPCC assessment of which climate-induced drivers pose hazards to which marine systems. Large, dark blue circles indicate high confidence of a high (negative) impact by a hazard. Sometimes, outcomes are mixed, with both positive and negative effects recorded (diamonds)[118].

116 IPCC, Working Group II, “Chapter 3: Oceans and Coastal Ecosystems and Their Services”, *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 409.

117 *Id*., p. 400.

118 *Id*., p. 412, Figure 3.12.

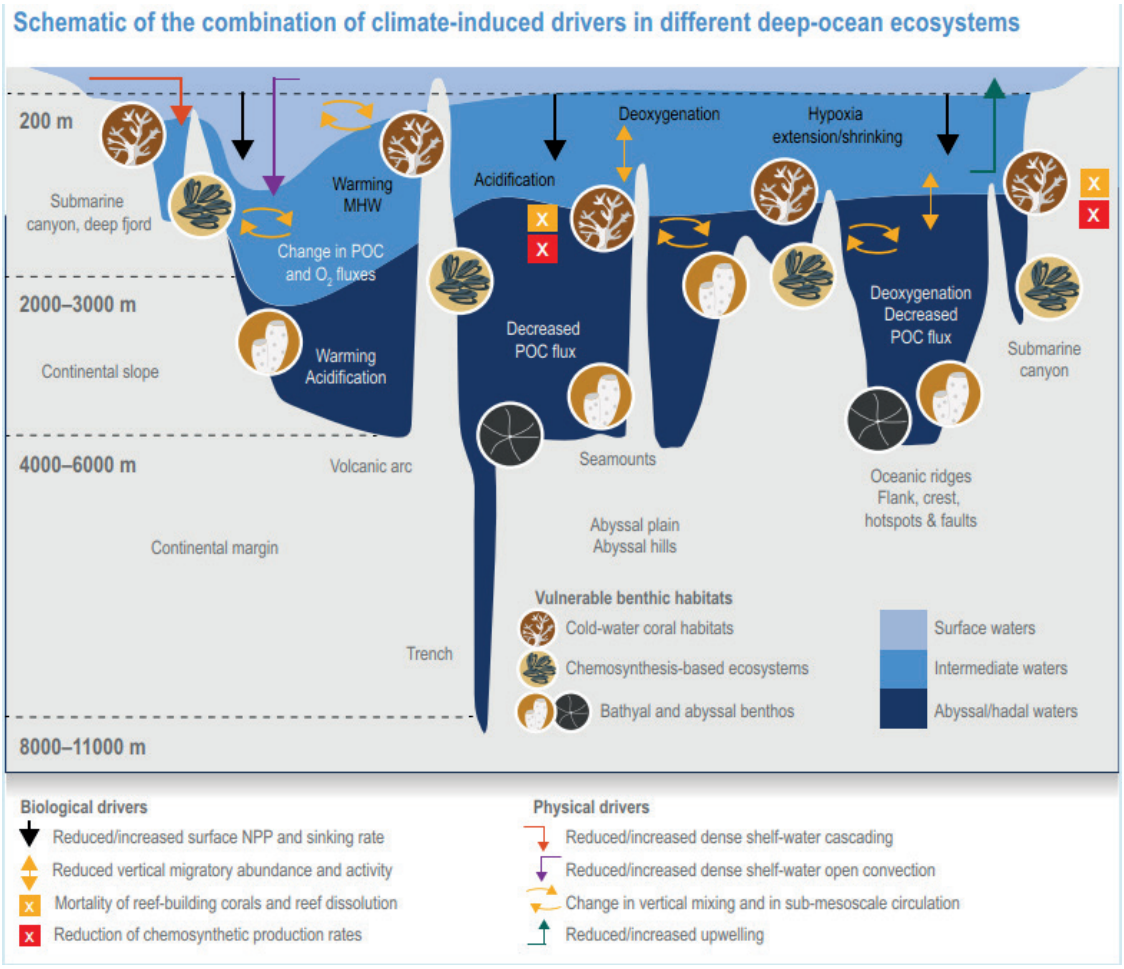


Figure 11: The variety of physical drivers (fine colored arrows) and the ensuing biological changes, which are also themselves drivers of change (thick arrows and colored Xs) in the deep ocean, which contains an array of different habitats[119].

B. Outcomes for Human Systems

55. The IPCC assessed with *high confidence* that "[c]limate-driven impacts on ocean and coastal environments have caused measurable changes in specific industries, economic losses, emotional harm and altered cultural and recreational activities around the world", and that these changes will continue, modulated by people's overall vulnerability (Figure 14)[120]. Vulnerability is "strongly influenced by local context and development pathways (*very high confidence*)"[121]. Adaptations by human communities combined with ambitious, rapid GHG emissions cuts can "meaningfully reduce impacts (*high confidence*)", but "[a]vailable adaptation options are unable to offset climate-change impacts on marine ecosystems and the services they provide (*high confidence*)"[122].

119 *Id*., p. 455, Figure Box 3.3.1.

120 *Id*., p. 381–383.

121 *Id*., p. 383.

122 *Id*., p. 383.

56. In this Section, I set out six of these social outcomes of climate change effects on the marine environment. The expert report in these proceedings of my IPCC colleague Shobha Maharaj, D.Phil., sets out these effects with respect to small islands in particular.

1. Submergence and Destruction of Coastal Sites

57. Sea-level rise threatens the existence of many coastal settlements, particularly in island nations and seaside cities[123]. The IPCC assessed that the "low-lying coastal zone is currently home to around 896 million people (nearly 11% of the 2020 global population), projected to reach more than one billion by 2050 across all five SSPs"[124]. Fast-growing populations in coastal zones of Africa, Southeast Asia, and small islands will further increase the exposure of people and economic assets to coastal hazards[125]. Projections suggest that billions of people and vast wealth are at risk: in one possible future scenario, "2.5–9% of the global population and 12–20% of the global gross domestic product is projected to be exposed to coastal flooding by 2100"[126]. Figure 19 sets out these risks. Furthermore, "[r]isks from sea level rise for coastal ecosystems and people are very likely to increase tenfold well before 2100 without adaptation and mitigation action as agreed by Parties to the Paris Agreement (*very high confidence*)"[127].

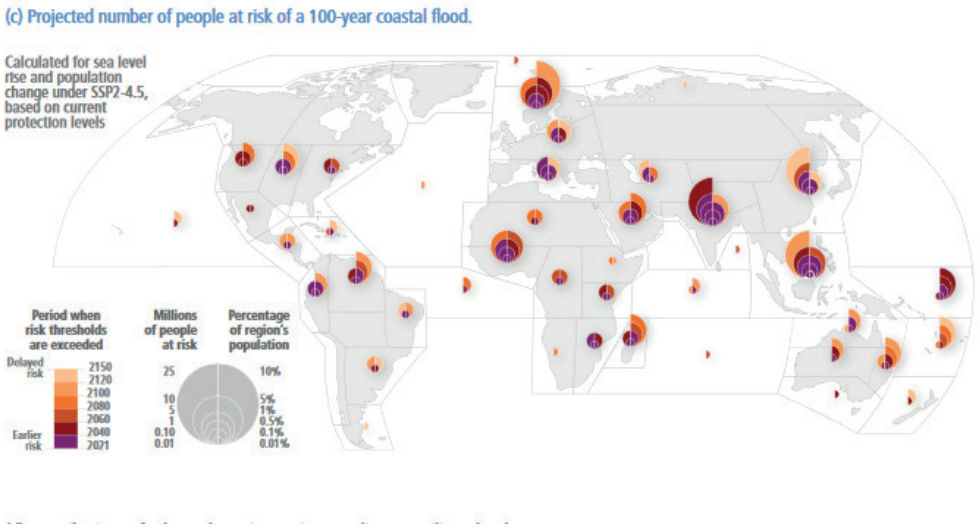


Figure 15: Projected number of people at risk under SSP2-4.5, one of the lower emissions scenarios (see Section II.D above). Colors indicate the immediacy of risks (purple colors indicate present risks), while circle size indicates the number of people at risk[128].

58. The type, extent, and timeline of adaptation to sea-level rise that communities must undertake depend on the speed and ambition of global GHG emissions mitigation efforts.

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123 NASA has developed an interactive tool to display local outcomes of sea-level rise projections that uses data the IPCC assessed in the sixth cycle: https://sealevel.nasa.gov/ipcc-ar6-sea-level-projection-tool.

124 IPCC, "Synthesis Report", *Sixth Assessment Synthesis Report* (2023), p. 46.

125 IPCC, Working Group II, "Chapter 3: Oceans and Coastal Ecosystems and Their Services", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 477.

126 *Id*.

127 *Id*., p. 382.

128 *Id*., "Technical Summary", p. 81.

Communities are responding to sea-level rise via protection, accommodation, advance, and planned relocation (Figure 20, panel b)[129], but they are all incomplete solutions to what matters to people. People's homelands and histories are at risk: "The vulnerability of communities in small islands, especially those relying on coral reef systems for livelihoods, may exceed adaptation limits well before 2100 even for a low GHG emission pathway (*high confidence*)."[130] Even if coastal areas remain habitable, "[s]ea level rise and storm-driven coastal erosion endanger coastal archaeological and heritage sites around the world (*very high confidence*)"[131]. Sea-level rise endangers coastal UNESCO world heritage sites, such as those in the Great Barrier Reef in Australia; the Sundarbans, in India and Bangladesh; Komodo National Park in Indonesia; Ichkeul National Park in Tunisia[132]; the Kasbah of Algiers in Algeria[133]; the city of Venice and its lagoon along the Mediterranean Sea[134]; Easter Island, Chile; Dover, England; Hoi An, Vietnam; the Galapagos Islands, Ecuador; Orkney, Scotland; and Cartagena, Colombia[135]. The IPCC synthesis report stated: "As the scale and pace of sea level rise accelerates beyond 2050, long-term adjustments may in some locations be beyond the limits of current adaptation options and for some small islands and low-lying coasts could be an existential risk."[136]

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129 IPCC, "Synthesis Report", *Sixth Assessment Synthesis Report* (2023), p. 73.

130 IPCC, Working Group II, "Chapter 15: Small Islands", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 2046.

131 *Id*., "Chapter 3: Oceans and Coastal Ecosystems and Their Services", p. 467.

132 UNESCO World Heritage Centre, Case Studies on Climate Change and World Heritage (2007), https://whc.unesco.org/en/activities/473.

133 *See* M. Vousdoukas et al., "African Heritage Sites Threatened as Sea-Level Rise Accelerates", *Nature Climate Change*, Vol. 12, p. 256 (2022).

134 L. Reimann et al., "Mediterranean UNESCO World Heritage at Risk from Coastal Flooding and Erosion Due to Sea-level Rise", *Nature Communications*, Vol. 19, p. 1 (2018) at 8.

135 UNESCO World Heritage Centre, World Heritage and Tourism in a Changing Climate, https://whc.unesco.org/en/tourism-climate-change/.

136 IPCC, "Synthesis Report", *Sixth Assessment Synthesis Report* (2023), p. 46.

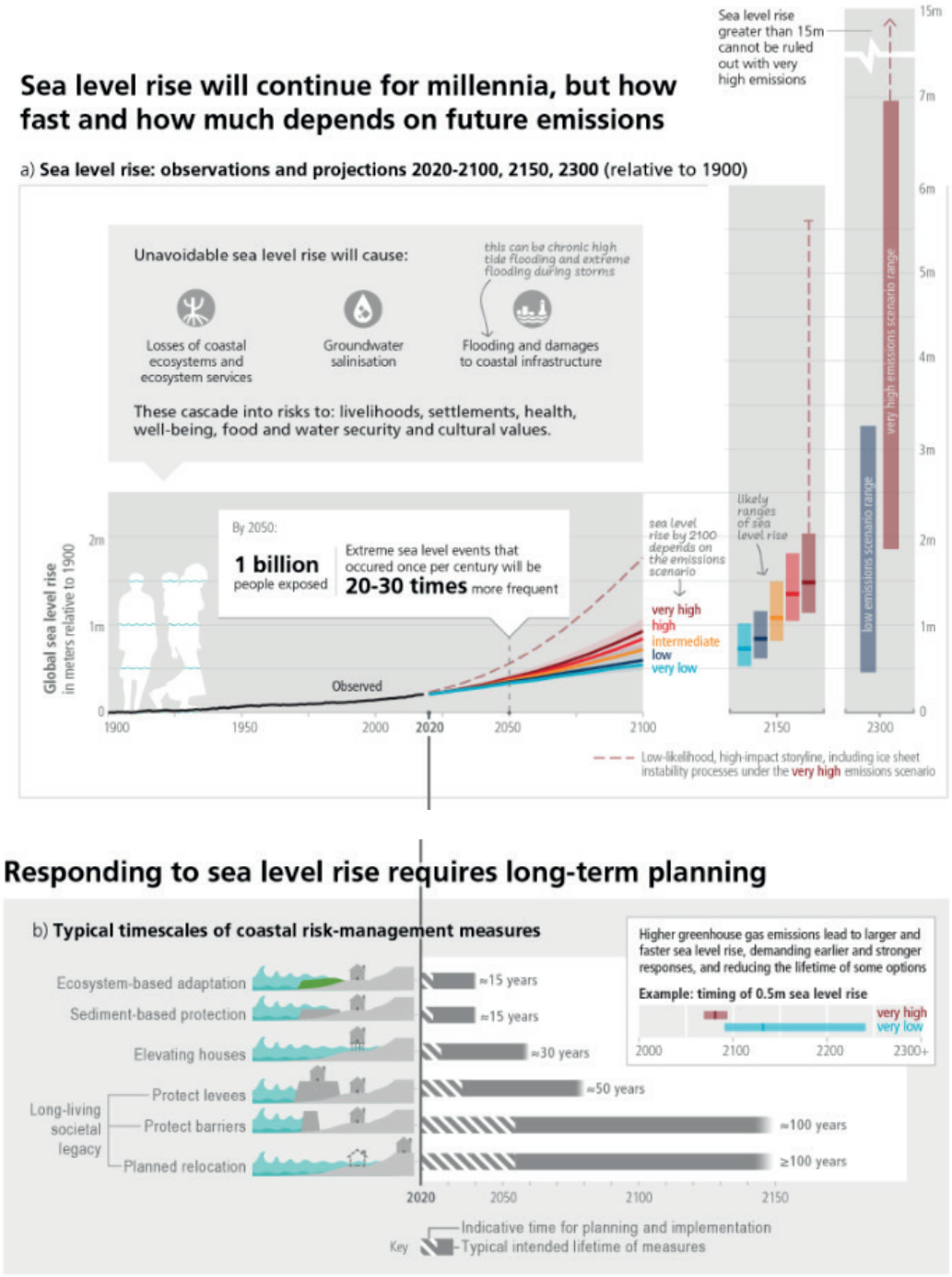


Figure 16: Planning for sea-level rise involves a mix of (top panel, a) accepting an unavoidable outcome that will have widespread impacts on people, natural systems, and built systems underpinning societies, yet whose future magnitude and development over time are difficult to pin down with certainty, and (bottom panel, b) making the best possible sustained investments that will appropriately address this outcome locally and for appropriate timespans[137].

[137] IPCC, "Synthesis Report", *Sixth Assessment Synthesis Report* (2023), p. 45 (excerpted from Figure 3.4).

2. Severe Storms

59. Sea-level rise, storm surge, and heavy rainfall increase compound flood risks (*high confidence*), causing severe impacts and increasing overall risks to ecosystems, infrastructure, food, and people's health and livelihoods (*high confidence*)[138]. These risks are especially acute for people in low-lying coastal regions, which are especially vulnerable (see Section II.A.1.ii above). The IPCC has concluded that, between 2010 and 2020, "human mortality from floods, droughts and storms was 15 times higher in highly vulnerable regions, compared to regions with very low vulnerability (*high confidence*)"[139]. The cost of preventing or recovering from storm damage is increasingly prohibitive, and insurance (especially in small islands) sometimes does not cover storm damage or is impossible to obtain or pay for[140]. Natural systems, such as coastal ecosystems (e.g., mangroves, seagrasses, saltmarshes, coral reefs) are often used to help protect against storm damage while also offering other benefits to human communities (e.g., economic opportunities, habitat to support other ecosystems), but they become less effective as temperatures and sea-level rise[141]. Because severe storms are projected to carry more moisture (see Section III.A.1.iii above), sea-level rise is increasing (see Section III.A.1.ii above), and coastal zone populations are projected to increase, there is *high confidence* that the risk from compound flood events is increasing[142].

3. Livelihood Changes

60. Risks to fisheries from climate change particularly endanger "[m]arine-dependent communities, including Indigenous Peoples and local peoples, [who] will be at increased risk of losing cultural heritage and traditional seafood-sourced nutrition (*medium confidence*)"[143]. On global average, poleward movement of fish stocks is causing geographic and strategic changes in commercial, small-scale, artisanal, and recreational fishing activities[144]. Extreme events like marine heatwaves, harmful algal blooms, and marine pathogen outbreaks—which could be exacerbated by climate—have caused millions of dollars of losses to fishermen and aquaculture operators, and disrupted subsistence and recreational fisheries important for Indigenous Peoples and local communities[145]. There is *high confidence* that fishers who are able to broaden catch diversity, travel poleward, and change gear and strategies can insulate themselves from climate-associated fishing disruptions[146]; this mainly includes wealthy commercial fishers and/or multinational companies. Small-scale, recreational, artisanal, and subsistence fishers are less able to adapt to climate-driven fishery changes[147]. Because women are proportionally more involved in smaller-scale fisheries[148], disruptions to this

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138 IPCC, Working Group II, "Summary for Policymakers", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 18.

139 *Id*., p. 12.

140 *Id*., "Chapter 15: Small Islands", p. 2089.

141 *Id*., "Chapter 3: Oceans and Coastal Ecosystems and Their Services", p. 459.

142 *Id*., "Summary for Policymakers", p. 18.

143 *Id*., "Chapter 3: Oceans and Coastal Ecosystems and Their Services", p. 383.

144 *Id*., p. 381–382.

145 *Id*., p. 469.

146 *Id*.

147 *Id*.

148 *Id*.

sector heighten community risk of not only food supply disruption, livelihood loss, and wealth inequality, but also gender inequality.

61. The vulnerability of coastal communities to losses or disruptions in marine activities depends very strongly on a complex interplay of environmental and social factors (Figures 16, 17)[149]. Wealth and national or international government support (e.g., advantages more often held by maritime transportation, blue energy, large-scale fisheries, and ecotourism sectors) decrease vulnerability and increase communities' ability to adapt[150].

149 *Id*.

150 Although the massive Caribbean blooms of Sargassum macroalgae recorded in 2022-2023 have not been definitively linked to climate change, these blooms have harmed tourism, fishing, ecosystem health, energy and freshwater systems, and public health in the region's island nations. Several nations do not have the financial ability to manage this challenge. *See* "Record Amount of Seaweed Is Choking Shores in the Caribbean", *AP News* (3 August 2022).

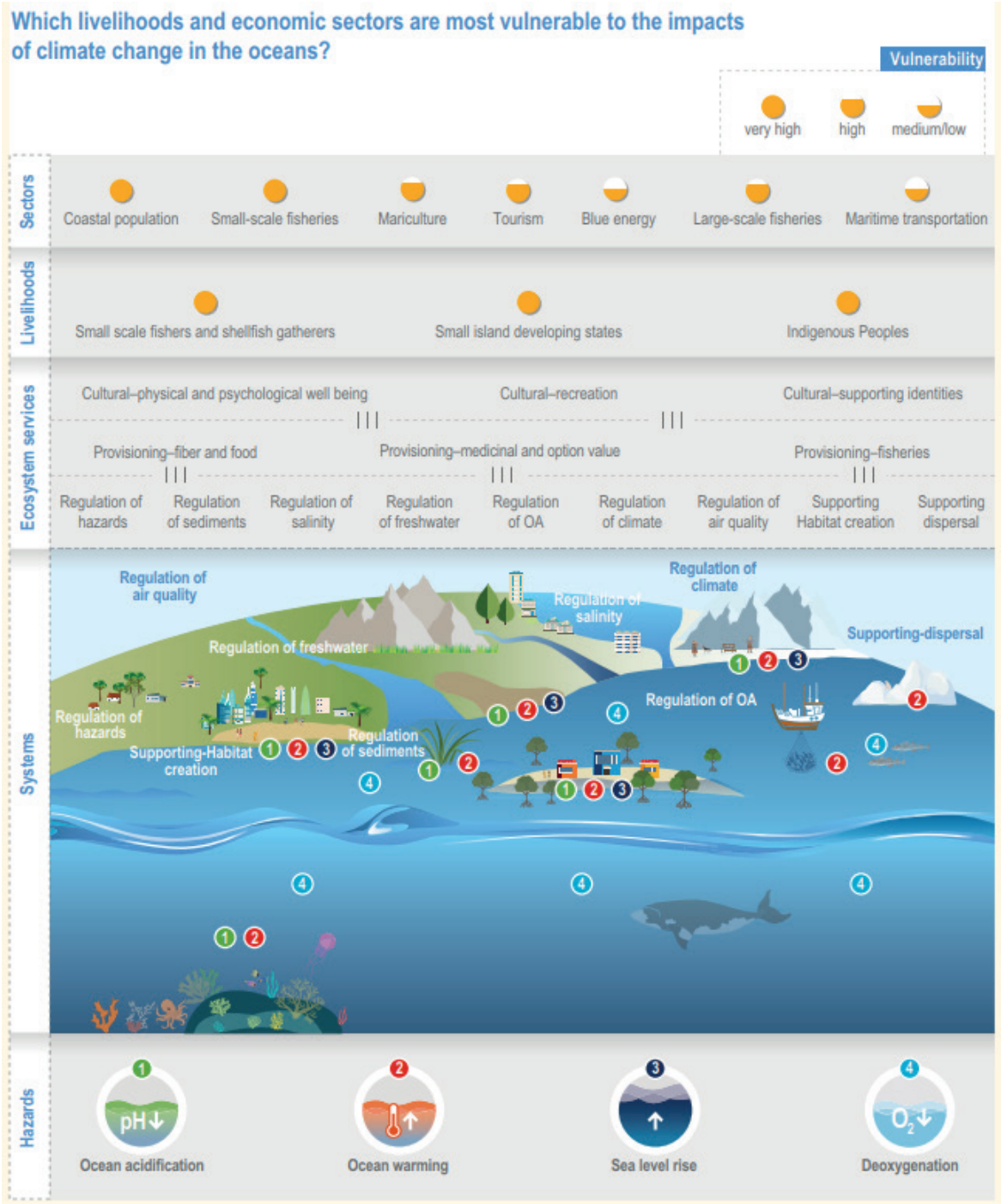


Figure 17: Vulnerability of different livelihoods and economic sectors to the impacts of climate change in the oceans depends partially on the ways in which climate impacts alter the ecosystem services that sustain those activities but partially on additional non-ocean social factors. Historically marginalized peoples and those with lower economic or social advantages tend to have higher vulnerability[151].

[151] IPCC, Working Group II, "Chapter 3: Oceans and Coastal Ecosystems and Their Services", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 470.

4. Freshwater Supply Changes

62. As sea level rises, salt water is encroaching further into estuaries and impinging upon groundwater and coastal aquifers (Figure 18), and this "is endangering human health and agricultural yields (*very high confidence*)."[152] Salinization varies depending on local combinations of sea-level rise, storm-related flooding, and non-climate drivers including freshwater withdrawal and land-use changes (*very high confidence*)[153]. There is *high confidence* that "[s]alinisation will continue to endanger coastal water and soil quality in the future", but there is *medium confidence* that "impacts to human health and agriculture will depend heavily on regional variations in environment and human behaviour"[154].

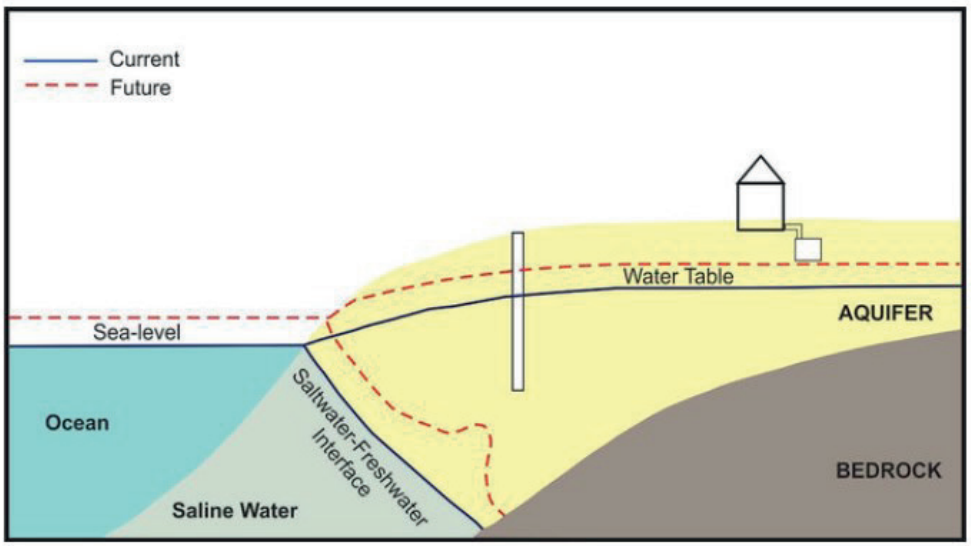


Figure 18: Schematic showing how sea-level rise (dotted line) can alter the relationship of freshwater aquifers to water wells (vertical white pipe) and septic systems (box attached to house), increasing the risk of drinking water salinization or sewage overflow[155].

5. Human Health

63. Numerous ocean-related climate impacts pose increasing threats to human physical and mental health, especially to people living in coastal areas and highly dependent on marine resources. As discussed in Sections III.A.1.ii–iii above, climate-enhanced flood and storm events directly threaten people's lives and disrupt healthcare for people with chronic conditions[156]. Decreased access to food from the sea can decrease food security or sovereignty for ocean-dependent people, as discussed in Section III.B.3 above. Increasingly saline drinking water or soils (see Section III.B.4 above) also endangers people's health. In

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152 *Id*., p. 461.

153 *Id*., p. 462.

154 *Id.*

155 U. Jamaluddin et al., "Threats Faced by Groundwater: A Preliminary Study in Kuala Selangor", 62 *Bulletin of the Geological Society of Malaysia*, Vol. 62, p. 62 (2016) at 67.

156 IPCC, Working Group II, "Chapter 7: Health, Wellbeing and the Changing Structure of Communities", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), pp. 1044–1088.

addition, climate change is changing people's exposure to toxins, contaminants, and pathogens, and endangering people's mental health.

64. There is *very high confidence* that climate- and non-climate drivers work together to mobilize toxins and contaminants in ways harmful to human and marine species health, and there is *high confidence* that climate change is altering these processes[157]. Climate change appears to alter bioaccumulation of pharmaceuticals in mollusks, methylmercury in oceanic fishes, and persistent organic pollutants[158]. Humans ingest these contaminants with seafood, and fishing pressure can alter bioaccumulation and human exposure[159]. Warming and acidification may also increase risks from toxin-producing harmful algal blooms. Coastal flooding also increases people's risk of coming into contact with floodwaters carrying aquatic pathogens (e.g., infectious bacteria, microbial toxins, viruses)[160]. Pathogenic aquatic bacteria like *Vibrio* species can decrease the quality or survival of aquacultured shellfish and sicken humans directly; conditions favoring *Vibrio* growth are increasing globally[161]. Overall, there is *high confidence* that projected increases in temperature, extreme and variable rainfall conditions, coastal flooding, and SLR will increase the risk of frequent and severe exposure to aquatic human pathogen outbreaks, aquatic toxins, and contaminants in ocean and coastal areas, and this will continue to harm human health and cause economic losses[162].

65. Severe climate impacts and the threat of future harm from climate have harmed people's mental health[163]. The IPCC assessed: "Approximately 20–30% of those who live through a hurricane develop depression and/or [post-traumatic stress disorder] within the first few months following the event, with similar rates for people who have experienced flooding."[164] There is *low confidence* (due to limited evidence) that anxiety about the risks of, and potential impacts of, climate change in the absence of climate impacts can affect mental health[165]. This has been recorded in small island nations: studies in the Solomon Islands and Tuvalu found that experiences of climate change and worry about the future had negative impacts on people's well-being[166].

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157 *Id*., "Chapter 3: Oceans and Coastal Ecosystems and Their Services", p. 462.

158 *Id*.

159 *Id*.

160 *Id.*

161 *Id*.

162 *Id*.

163 *Id*., "Chapter 7: Health, Wellbeing and the Changing Structure of Communities", p. 1076.

164 *Id*. (citations omitted).

165 *Id*., p. 1078.

166 *Id*.; *see also* Working Group II, IPCC, "Chapter 15: Small Islands", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 2064–2066.

6. Displacement and Migration

66. Climate impacts on oceans and coasts are causing humans to relocate activities either temporarily or permanently, contributing to displacement[167] and migration[168]. The IPCC assessed:

> The most common climatic drivers for migration and displacement are drought, tropical storms and hurricanes, heavy rains and floods (*high confidence*). Extreme climate events act as both direct drivers (e.g., destruction of homes by tropical cyclones) and indirect drivers (e.g., rural income losses during prolonged droughts) of involuntary migration and displacement (*very high confidence*).[169]

Although Africa and Asia have the largest absolute number of people displaced by extreme weather, "small island states in the Caribbean and South Pacific are disproportionately affected relative to their small population size (*high confidence*)."[170] Displacement related to climate change has overall negative impacts on people in all regions assessed and generates and perpetuates vulnerability[171].

67. Smaller, more incremental relocation of communities and human activities are resulting from ocean-related climate impacts. Poleward movement of natural resources, like fisheries, are reshaping and relocating not only fishing but also activities that support fishing and other use of natural resources (see Section III.B.3 above). Sea-level rise is increasing the costs and risks for coastal settlements[172]. Technological, governance, and ecosystem-based adaptations are currently supporting many of these smaller shifts, but adaptations often have site-specific limits related to degrees of warming and sea-level rise[173]. It is reasonable to anticipate that continued climate-driven, incremental relocation of coastal resources and marine-related activities will influence movement of people, given the varying vulnerability of different groups to ocean-based climate change (Figures 16, 17) and the different adaptation limits they face.

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167 IPCC defines internal displacement of humans as "[t]he involuntary movement, individually or collectively, of persons from their country or community, notably for reasons of armed conflict, civil unrest, or natural or human-made disasters." *Id*., "Annex II: Glossary", p. 2898 (citations omitted).

168 The IPCC defines migration of humans as "[m]ovement of a person or a group of persons, either across an international border, or within a state. It is a population movement, encompassing any kind of movement of people, whatever its length, composition and causes; it includes migration of refugees, displaced persons, economic migrants and persons moving for other purposes, including family reunification." *Id*., p. 2915 (citation omitted).

169 *Id*., "Technical Summary", p. 52.

170 *Id*.

171 *Id*.; *see also id*., "Summary for Policymakers", pp. 12–13.

172 *See id*., "Chapter 3: Oceans and Coastal Ecosystems and Their Services", p. 478–479; *see also id*., "Chapter 15: Small Islands", *id*., p. 2098.

173 *See id*., "Chapter 3: Oceans and Coastal Ecosystems and Their Services", pp. 478–479.

IV. Risks, Mitigation, and Adaptation

68. In this Section, I turn to mitigation of and adaptation to climate change. After defining several key terms, I discuss the IPCC's assessment of key systemic risks of climate change (Subsection A), how mitigation and adaptation must occur simultaneously to achieve this goal (Subsection B), and the insufficient global progress made so far on mitigation and adaptation relative to the 1.5ºC temperature threshold (Subsection C).

69. Mitigation and adaptation are fundamental concepts in the IPCC's assessments. The IPCC defines mitigation of climate change as "[a] human intervention to reduce emissions or enhance the sinks of greenhouse gases", and mitigation measures as "technologies, processes or practices that contribute to mitigation, for example renewable energy technologies, waste minimisation processes and public transport commuting practices"[174]. The IPCC defines adaptation in human systems as "the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities"[175]. The IPCC defines adaptation in natural systems as "the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment"[176].

A. Systemic Risks of Warming Above 1.5ºC

70. The IPCC has identified several systemic risks associated with increasing temperatures. In particular, the IPCC has identified 1.5ºC as a key temperature threshold above which the likelihood and magnitude of catastrophic harm due to climate change increase significantly. The IPCC has identified "tipping points" driven by climate change that will fundamentally alter a natural system and make recovery from that amount of warming difficult if not impossible. Relatedly, the IPCC has made several key findings regarding the reversibility and irreversibility of climate impacts. I summarize those findings here.

1. Reduction of Risks by Limiting Warming to 1.5°C

71. The IPCC has assessed: "Risks and projected adverse impacts and related losses and damages from climate change will escalate with every increment of global warming (*very high confidence*). They are higher for global warming of 1.5°C than at present, and even higher at 2°C (*high confidence*)."[177]

72. The most recent IPCC Assessment Report also assesses that risks will become high to very high at lower levels of warming than in previous assessment reports (*high confidence*) due to new evidence about impacts, exposure, and vulnerability of ecosystems and people; improved understanding of mechanisms; and new knowledge of limits[178].

73. The IPCC assessed that all types of risks "are projected to become increasingly severe with every increment of global warming (*very high confidence*)"[179]. In simple language, this

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174 IPCC, Working Group II, "Annex II: Glossary", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 2915.

175 *Id*., p. 2898.

176 *Id*., p. 2898.

177 IPCC, "Summary for Policymakers", *Sixth Assessment Synthesis Report* (2023), p. 15.

178 *Id*., "Longer Report", p. 36.

179 *Id.*

means that every degree of additional warming beyond where the planet is today increases risks (Figure 12). With average global sea surface temperature only 0.88°C above the preindustrial average, tropical coral reef systems are well-known to be at very high risk from climate change already, and multiple coastal ecosystems also face moderate risk (Figure 13)[180]. The IPCC Synthesis Report indicates that at 1.5°C warming, coral reefs would decline by 70-90%, whereas at 2.0°C warming, coral reefs would decline by more than 99%[181]. Risks to other marine ecosystems will rise at generally slower rates than those for warm water coral reefs, but added warming above 1.5°C in particular will place warm water corals at very high risk; kelp forests at moderate to high risk; salt marshes, seagrass meadows, sandy beaches, rocky shores, epipelagic systems, and seamount, canyon, and slope deep systems at moderate risk; and estuaries, eastern boundary upwelling systems, at undetectable to moderate risk (indicated by the colors between the bands labeled "present day" and "temperature by 2100 at RCP2.6" in Figure 13). Limiting warming to 1.5°C limits risks to marine systems.

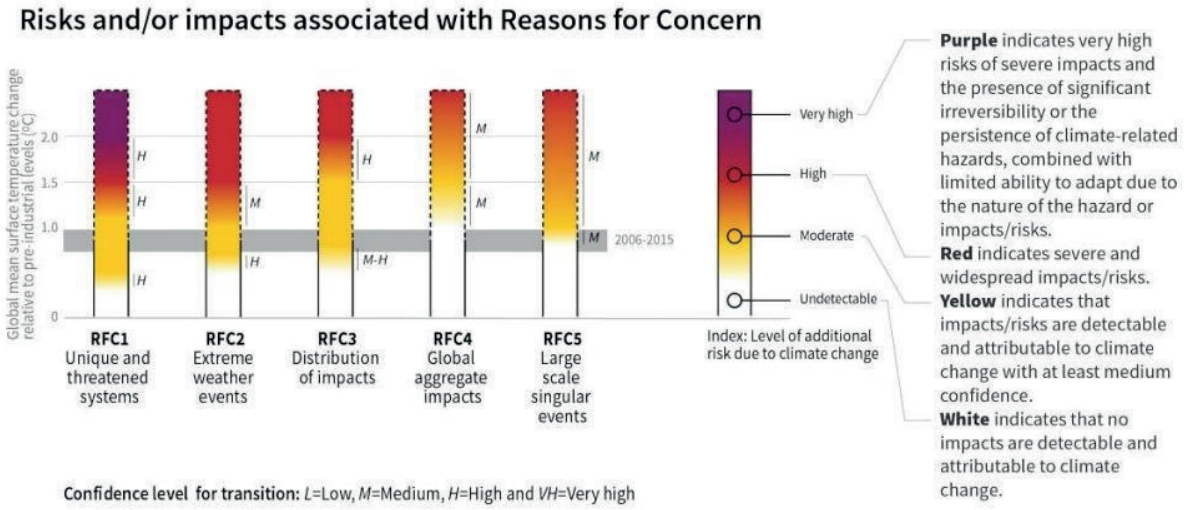


Figure 12: IPCC reports frequently use these "burning ember" plots to illustrate the observed impacts of climate hazards (broad gray bar labeled "2006–2015") and the projected impacts under additional degrees of warming. Colors indicate increasing severity and irreversibility of impacts, and in this plot, "H" and "M" indicate high and medium confidence in the assessed hazard. "Reasons for concern" ("RFCs") include unique and threatened systems. These are natural and human systems restricted to particular geographies, like coral reefs or Arctic Indigenous peoples. Extreme weather events include heatwaves, drought, and flooding. Distribution of impacts include those that disproportionately impact highly exposed groups. Global aggregate impacts refer to widespread economic or biodiversity harm. Large-scale singular events include high-risk changes like loss of unique ice sheets. Each of these RFCs faces moderate to high risk due to climate change at 1.5°C global warming, with risks continuing to increase beyond 1.5°C[182].

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180 Because average global planetary surface temperature is always greater than average global sea surface temperature, the temperature scales and impacts are slightly different between Figures 12 and 13.

181 *Id.*

182 IPCC, "Chapter 3: Impacts of 1.5°C Global Warming on Natural and Human Systems", *Special Report: Global Warming of 1.5°C* (2018), p. 254, Figure 3.21.

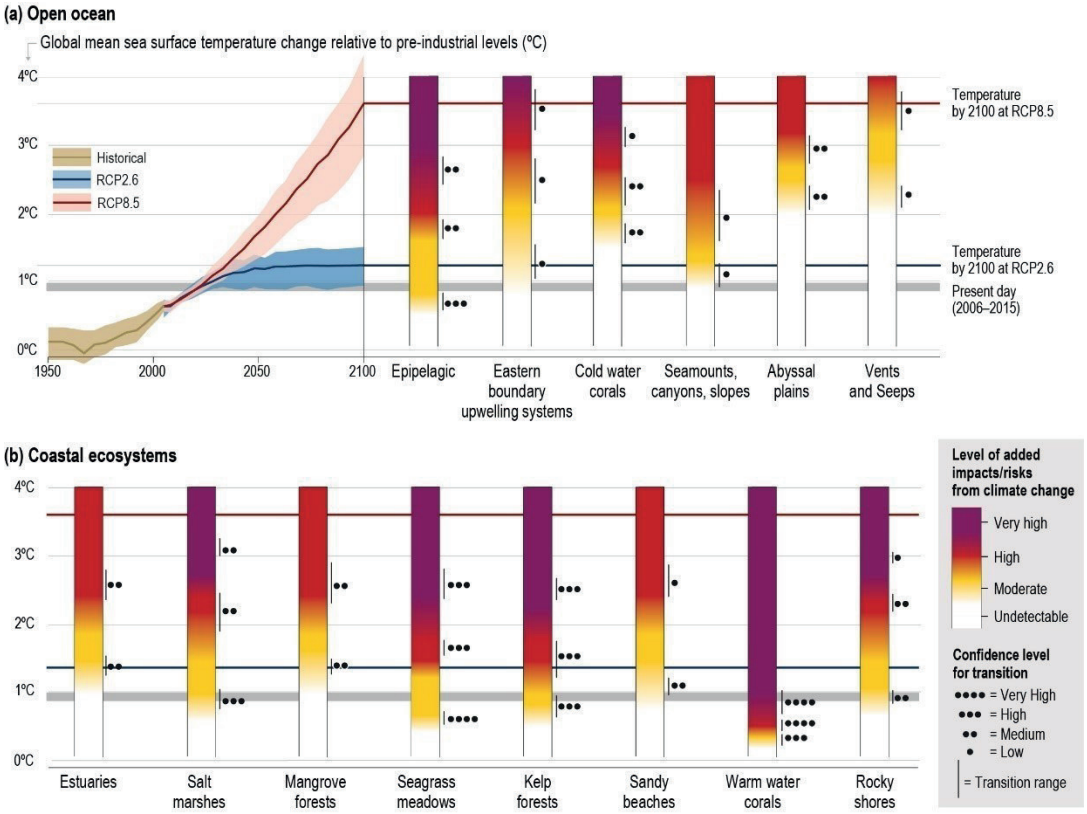


Figure 13: Climate risks to both open ocean systems (panel a) and selected coastal ecosystems for which data are most abundant (panel b), increase with added warming. Observed recent impacts and average ocean warming (+0.88°C above preindustrial sea surface temperature) are indicated by the broad gray horizontal bars. Climate-associated risks are indicated by color, and dots indicate the level of confidence in the risk transitions (see Section I.C above for a discussion of how confidence is assessed). For example, warm water corals are already at very high risk (purple) from climate change at today's 1.1°C warming, and face continued high risk upon warming[183].

74. The IPCC assessed: "Climate-related risks to health, livelihoods, food security, water supply, human security, and economic growth are projected to increase with global warming of 1.5°C and increase further with 2°C."[184] There is *very high confidence* that heat-related morbidity and mortality risks are lower at 1.5°C than 2°C[185]. Increased risks from specific vector-borne diseases including malaria and dengue fever accompany temperature increases from 1.5°C to 2°C[186]. There is *medium* to *high confidence* in decreased nutritional quality of certain cereal crops, overall food abundance, and success of livestock at 2.0°C compared to 1.5°C[187]. There is *medium confidence* that limiting warming to 1.5°C could decrease the world population exposed to climate change-induced water stress by 50%[188]. Harmful

183 *Id*., "Chapter 5: Changing Ocean, Marine Ecosystems, and Dependent Communities", p. 501 (Figure 5.1).

184 *Id*., "Summary for Policymakers", p. 9.

185 *Id*.

186 *Id*.

187 *Id*.

188 *Id*.

economic growth impacts from warming past 1.5°C will disproportionately affect countries in the tropics and the Southern Hemisphere subtropics, and overall economic growth impacts are lower at 1.5°C compared to 2°C[189]. Climate-related risks accumulate and compound each other, and from 1.5C to 2C, "risks across energy, food, and water sectors could overlap spatially and temporally, creating new and exacerbating current hazards, exposures, and vulnerabilities that could affect increasing numbers of people and regions."[190] Many climate-linked risks to people and social systems (Figure 13) directly or indirectly result from climate impacts to ocean and coastal systems (see Section V below).

2. Warming-Related Tipping Points

75. Extreme or cumulative climate impacts are causing some ecosystems to reach "tipping points" where they undergo abrupt or rapid changes that make the ecosystem fundamentally different and that make it extremely difficult and unlikely for the ecosystem to return to the earlier stable state. For example, tropical coral reefs killed by marine heating can be overgrown by algae, which create an entirely new habitat that supports different marine communities[191]. The IPCC assessed that "ocean tipping points are being surpassed more frequently as the climate changes; scientists have estimated that abrupt shifts in communities of marine species occurred over 14% of the ocean in 2015, up from 0.25% of the ocean in the 1980s"[192]. Ecosystems that emerge after tipping points offer different opportunities and experiences to people than before, thereby heightening vulnerability for specific groups and economic sectors (Figure 14).

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189 *Id*., p. 10.

190 *Id*.

191 For more on coral reef tipping points and the challenge of drawing general conclusions about reef futures after catastrophic damage, see S. Holbrook et al., "Coral Reef Resilience, Tipping Points, and the Strength of Herbivory", *Scientific Reports*, Vol. 6, p. 1 (2016).

192 IPCC, Working Group II, "Chapter 3: Oceans and Coastal Ecosystems and Their Services", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 448.

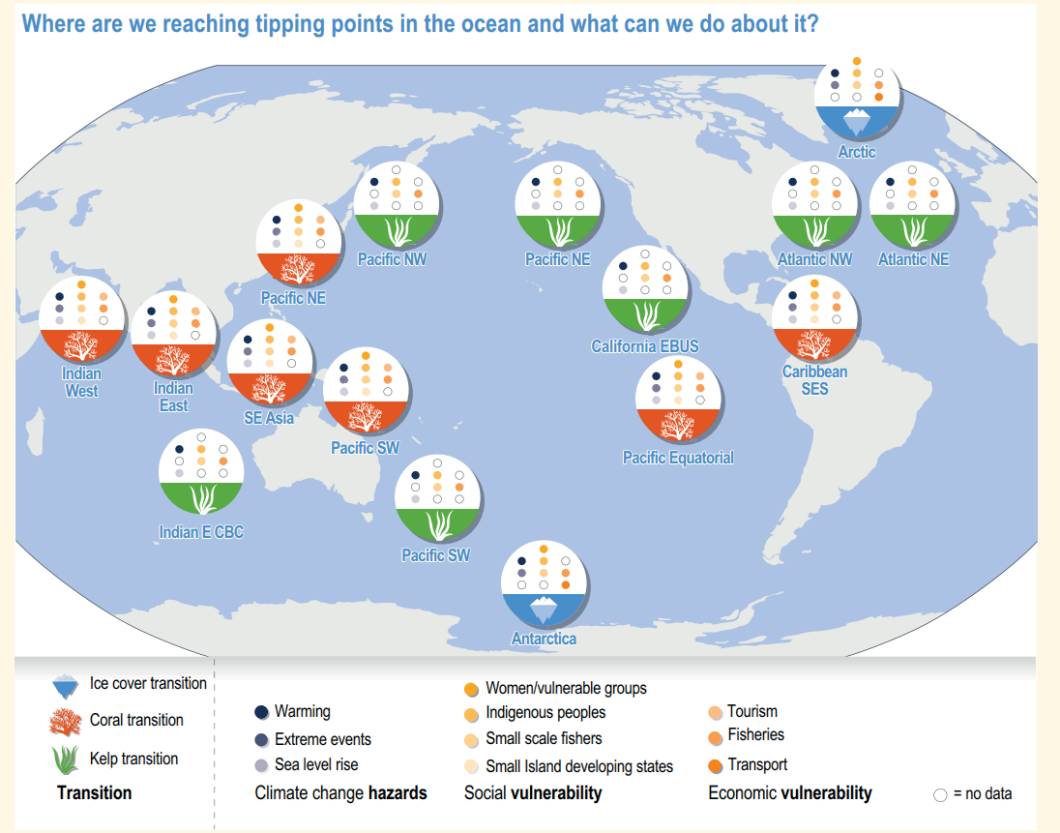


Figure 14: Examples of ocean-based tipping points that have been reached around the world. Once an ecosystem transition occurs (colored icons) due to climate hazards (blue circles), social and economic vulnerabilities increase (orange circles)[193].

3. Reversibility and Irreversibility of Climate Impacts

76. Some future climate scenarios that ultimately achieve 1.5°C or 2°C by 2100 involve a period of temperatures beyond these levels ("overshoot") because GHG emissions will not halt immediately and because human-released CO_2 from the past will remain in the atmosphere unless it is removed[194]. The impacts of overshoot are just beginning to be studied, but it is clear that overshoot effects in the ocean depend on whether a climate impact is reversible. For example, the IPCC assessed: "Model results indicate that sea surface temperatures (*high confidence*), Arctic sea ice (*high confidence*), surface ocean acidification (*very high confidence*) and surface ocean deoxygenation (*very high confidence*) are reversible within years to decades if net emissions reach zero or below."[195]

77. Sea-level rise, in contrast, is irreversible due to the long time to regrow ice sheets after temperatures have dropped back to preindustrial levels and due to the long-lasting

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193 *Id.*, p. 447.

194 IPCC, Working Group III, "Chapter 3: Mitigation Pathways Compatible with Long-Term Goals", *Sixth Assessment Report: Mitigation of Climate Change* (2022), p. 298 ("Only a small number of published pathways limit global warming to 1.5°C without overshoot over the course of the 21st century."). This IPCC chapter offers more detail on CO_2 emissions choices and their specific warming outcomes.

195 IPCC, Working Group II, "Chapter 3: Ocean and Coastal Ecosystems and Their Services", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 453.

nature of ocean heat content changes, which would last beyond 2100[196]. In addition, deep ocean changes related to heat content, acidification, and deoxygenation are irreversible for multiple centuries[197] given the slow overturn of the ocean's interior. But the ecological changes, especially any species losses, could be irreversible into the 22nd century or beyond[198].

B. Need for Simultaneous Mitigation and Adaptation to Meaningfully Reduce Warming-Related Impacts

78. The latest IPCC assessment reports are clear that both adaptation to climate change and mitigation must happen at the same time to meaningfully reduce climate-related impacts. The combination of adaptation and ambitious, rapid GHG emissions cuts can achieve those results, but there is *high confidence* that available adaptation options—on their own—are unable to offset climate-change impacts on marine ecosystems and the services they provide (Section IV)[199]. The IPCC assessed that "adaptation options that are feasible and effective today will become constrained and less effective with increasing global warming" because adaptation options have limits that will become increasingly difficult to avoid (*high confidence*)[200].

79. For instance, some amount of sea-level rise is locked in and communities are adapting as well as they can, but many communities such as those on small islands will experience "hard limits" to adaptation such as when all available high ground is occupied or culturally significant sites are lost (Section III.B.1). For coastal ecosystems, sea-level rise accelerated by continued warming will incrementally decrease the likely effectiveness of nature-based solutions like mangrove restoration[201]. For small island communities, accelerating sea-level rise will decrease the effectiveness and feasibility of all solutions (Figure 16), and even low emission pathways may pose "existential risks"[202]. Overall, mitigation insufficient to limit global warming to 1.5°C will decrease the number and effectiveness of feasible ocean and marine-based adaptations[203]. One type of action cannot replace the other.

C. Insufficient Progress Toward Effective Mitigation and Adaptation Relative to the 1.5°C Threshold

80. In 2022, the IPCC noted: "Reduction of non-climate stressors and adaptation to climate impacts has advanced slowly and unevenly under existing agreements and established

196 IPCC, Working Group I, "Chapter 4: Future Global Climate: Scenario-Based Projections and Near-Term Information", *Sixth Assessment Report: The Physical Science Basis* (2021), p. 617.

197 IPCC, Working Group II, "Chapter 3: Oceans and Coastal Ecosystems and Their Services", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 453.

198 *Id*.

199 *Id*., p. 383.

200 IPCC, "Summary for Policymakers", *Sixth Assessment Synthesis Report* (2023), p. 20.

201 IPCC, Working Group II, "Summary for Policymakers", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 485, Figure 3.25(c).

202 IPCC, "Summary for Policymakers", *Sixth Assessment Synthesis Report* (2023), p. 46.

203 *Id.*, pp. 21–22.

bodies (*medium evidence, high agreement*)."[204] Nationally determined contributions ("NDCs") and adaptation communications detail the adaptation and mitigation plans of Parties to the UNFCCC's Paris Agreement. NDCs have increasingly included marine considerations and adaptation measures: "In 2017, only 9% of coastal nations' NDCs lacked marine considerations. By 2020, more than 50 nations presented blue carbon strategies intended to contribute to both mitigation and adaptation, and 29% of parties proposed restoring and protecting marine habitats for adaptation."[205]

81. As concluded at a workshop co-sponsored by the IPCC and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services ("IPBES") in 2020, biodiversity and climate change "share common drivers through human activities", climate change "adversely affect[s] biodiversity", and "changes in biodiversity affect the climate system"[206]. Consequently, focusing only on climate mitigation or adaptation can be harmful, just as focusing only on biodiversity can provide sub-optimal results. The IPCC and IPBES also concluded that land- and ocean-based ecosystem protections co-benefit climate action and biodiversity objectives; addressing climate, biodiversity, and human society as coupled systems is key to effectively addressing each ecological crisis; and transformative governance can help create climate and biodiversity-resilient pathways[207].

82. The first global stocktake under the Paris Agreement, carried out in 2023, indicated that global emissions cuts are happening slower than necessary to achieve a 1.5°C future. However, COP28 outcomes include increased ambition for mitigation and adaptation, as well as for supporting both types of climate action more strongly and equitably via finance[208].

V. Conclusion

83. IPCC assessments have established that human impacts have undeniably altered the climate system, and wide-ranging impacts have resulted around the world in all natural systems. The severity of climate-driven impacts on ocean systems and ocean-dependent people varies because of natural and social system characteristics, but on global average, human communities have been measurably harmed by impacts of climate change on ocean systems, which frequently affect food supplies, freshwater availability, human health and well-being, and property.

84. People's experiences of ocean-related climate risks strongly depend on their vulnerability, and vulnerability also dictates the number, type, and effectiveness of responses available to people. Certain ocean ecosystems, like warm-water coral reefs and high-latitude polar systems, are at especially high risk of transformation to new states because of climate change, and this will drastically revise the relationships people have with these systems. Overlapping ocean-based climate drivers create compound risks for natural and social

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204 IPCC, Working Group II, "Chapter 3: Oceans and Coastal Ecosystems and Their Services: Supplementary Material", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 3SM-40.

205 *Id*. (citations omitted).

206 IPCC and Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, Workshop Report on Biodiversity and Climate Change (4 June 2021), p. 15.

207 *Id*., pp. 14–23.

208 *See* COP28, Outcome of the First Global Stocktake, decision -/CMA.5 (Advance Unedited Version) (13 December 2023), ¶ 4.

systems. Compounding risks include not just natural systems but also human systems, and challenges will grow very rapidly with every degree of warming.

85. International policies and agreements are beginning to address the need for climate action strongly connected with biodiversity conservation and human development, but achievements to date fall short of what is necessary to achieve effective resilience against climate change and its effects.

The opinions I have expressed represent my true and complete professional opinions on the matters to which they refer. I affirm that the written statement is true, correct, and materially complete.

(*Signed*)

Sarah Cooley, Ph.D.

Appendix to Annex 1

CURRICULUM VITAE OF SARAH COOLEY, PH.D.

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EDUCATION

Undergraduate:	Haverford College	Chemistry	B.S., 1999
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Postdoctoral:	Woods Hole Oceanographic Inst.	Marine Chemistry	2007-2010

PROFESSIONAL EXPERIENCE

2024-present: Climate Science Senior Director, Ocean Conservancy, Washington, DC.
2020-2023: Climate Science Director, Ocean Conservancy, Washington, DC.
2016-2020: Ocean Acidification Program Director, Ocean Conservancy, Washington, DC.
2014-2016: Science Outreach Manager, Ocean Conservancy, Washington, DC.
2010-2014: Research Associate III, Woods Hole Oceanographic Institution, Woods Hole, MA.
2007-2010: Postdoctoral Investigator, Woods Hole Oceanographic Institution, Woods Hole, MA.
2007-2009: Technical Editor, American Meteorological Society, Boston, MA.
2006-2019: Freelance technical editor focusing on pre-submission academic manuscripts.
2000-2006: Graduate Research Assistant, University of Georgia, Athens, GA.

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Cooley SR, Doney SC. 2009. Anticipating ocean acidification's economic consequences for commercial fisheries. *Environmental Research Letters*, 4. (Nominee, ERL 5th Anniversary Best Article Prize)

AWARDS

2011: Nominee, Best Article Prize for 5th Anniversary of Environmental Research Letters
2010: Kavli Fellow
2002-2005: NASA Earth System Science Fellow
2000-2006: University of Georgia Presidential Graduate Fellow
1999: Scripps Institution of Oceanography Summer Undergraduate Research Fellow
1999: Haverford College, Chemistry Department Honors
1998: National Science Foundation Research Experience for Undergraduates Fellow

SELECTED PROFESSIONAL SERVICE

Witness, House Committee on Space Science and Technology, Subcommittee on Environment hearing: "Sea Change: Impact of Climate Change on our Oceans and Coasts" February 27, 2019.

Coordinating Lead Author, Ch. 3, Working Group II, Intergovernmental Panel on Climate Change's 6th Assessment Report (2019-2022)

Chapter Author, Ch. 10, 5th National Climate Assessment (2021-2024)

Annex 2

Expert Report of Shobha Maharaj, D.Phil. (Oxon.), on Impacts of Climate Change on Small Island States (22 March 2024)

INTERNATIONAL COURT OF JUSTICE

OBLIGATIONS OF STATES IN RESPECT OF CLIMATE CHANGE
(REQUEST FOR ADVISORY OPINION)

EXPERT REPORT OF SHOBHA MAHARAJ, D.PHIL. (OXON.), ON IMPACTS OF CLIMATE CHANGE ON SMALL ISLAND STATES

22 MARCH 2024

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Appendix

I. Introduction, Assignment, and Expertise

1. The best available scientific evidence, reflected in the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (the "IPCC"), shows that small islands are increasingly affected by impacts on the oceans resulting from excess greenhouse gas emissions. These impacts are already detectable across both natural and human systems, and they are expected to amplify the vulnerability of island peoples.

2. I am an environmental biologist with over 15 years of experience investigating climate change impacts, particularly on small islands and across global biodiversity hotspots. I participated in Working Group II (Impacts, Adaptation, and Vulnerability)'s contribution to the IPCC's Sixth Assessment Report in various ways. Most significantly, I was a Lead Author of Chapter 15 (Small Islands). In addition, I was a Contributing Author of Chapter 16 (Key Risks Across Sectors and Regions), a Lead Author of Cross-Chapter Paper 1 (Biodiversity Hotspots (Land, Coasts, and Oceans)), an Author of the Summary for Policymakers, and a Contributing Author to the Technical Summary.

3. I currently serve as Science Director at Terraformation, a Hawaii-based company dedicated to scaling native, biodiverse reforestation globally. I hold a Bachelor of Science in Zoology and Botany and a Master of Philosophy in Environmental Biology from the University of West Indies at St. Augustine, in my native Trinidad and Tobago. In 2012, I received my Doctorate of Philosophy from the University of Oxford, where I researched the impacts of climate change upon biodiversity within Caribbean small islands. As part of this research, I led a team of foresters in an ambitious vegetative survey across Trinidad and Tobago, gathering data on the flora of both islands to predict climate impacts on island forests. I have also contributed to seminal reports on climate change in addition to the Sixth Assessment Report, including as a Lead Author of the joint report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services ("IPBES") and the IPCC on Biodiversity and Climate Change, and as a Coordinating Lead Author on the Climate Resilience chapter of the ongoing Grenada National Ecosystem Assessment 2023 Report. I have attached my *curriculum vitae* as an Appendix.

4. I have been retained by the Commission of Small Island States on Climate Change and International Law (the "Commission") to provide expert testimony in these proceedings on the impacts of climate change on small island states. I have prepared this report for the Commission *pro bono*. I have no relationship with the Commission, its Member States, its legal advisors, or the members of the Court other than my engagements in these two proceedings. To the best of my knowledge, the statements contained in this report are true, correct, and materially complete.

5. In this report, following this Introduction, I set out my methodology within the constraints of available data (Section II), the impacts of climate change on small islands (Section III), the necessity of adaptation and mitigation for small islands to reduce climate risks and barriers to adaptation caused by increased warming and data limitations (Section IV), the financial barriers to adaptation and the cost of climate change (Section V), and my overall conclusions (Section VI).

II. Methodology and Gaps in Available Data

6. In this report, I refer to the latest IPCC assessments and other related high-quality scientific reporting on IPCC assessments to describe the impacts of climate change on small islands. The IPCC developed guidance detailing how to convey confidence in findings and how to quantitatively measure uncertainty consistently across all IPCC products[1]. Qualitative expressions of confidence in the IPCC Report range from "very low", "low", "medium", "high", to "very high", and are based on the robustness of the scientific evidence[2]. Specifically, degrees of certainty are assigned based on the type, amount, quality, and consistency of evidence, as well as the degree of agreement within the evidence as they assess a given subject. In this report, I reference confidence intervals drawing directly from the relevant passages of the IPCC reports.

7. Small islands are scattered around the world and therefore can be quite different to each other across a variety of parameters. This heterogeneity of small islands made it difficult for the IPCC authors to make generalized statements across the islands within the scope of Chapter 15 of Working Group II's contribution to the Sixth Assessment Report.

8. This high heterogeneity, combined with the small island commonality of limited resources has also, over the years, given rise to chronic data gaps, which are major barriers towards the development of robust assessments and projections. This has resulted in a paucity of research and publications on a variety of climate-related subject matters. There is, for example, limited scientific literature on observed climate impacts and attribution, especially within human systems—with more information on climate impacts available for ecosystems. As such, there is often *high confidence* in evidence attributing climate impacts on marine, coastal, and terrestrial ecosystems but only *medium confidence* with respect to casualties, losses and damages, settlements and infrastructure loss, economics, loss of livelihoods, health, migration, and cultural/heritage loss[3]. This medium confidence in attribution often arises because of sparse research being conducted in these areas due to limited data.

9. When it comes to projections, there is a chronic paucity of adequately downscaled Regional Climate Model ("RCM") data (sub-5 km^2) premised on the IPCC's most recent suite of scenarios—especially Shared Socioeconomic Pathways ("SSPs"), which describe varying scenarios of projected socioeconomic changes up to 2100. Such future data are not widely available to primary modelling communities across especially developing small island nations (*high agreement*)[4].

10. This paucity of adequately downscaled RCM data in particular, contributes to a chronic lack of high resolution "oceanographic (e.g., tidal), meteorological, . . . topographic and bathymetric data, as well as future sea level and wave climate projections for most islands"[5]. This constrains the development of future projections and, therefore, improved understanding of future coastal flooding, erosion, and rates of saline intrusion into aquifers

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1 *See* IPCC, Guidance Note for Lead Authors of the IPCC Fifth Assessment Report on Consistent Treatment of Uncertainties, document IPCC-XXXII/INF.9 (2010).

2 IPCC, Working Group II, "Technical Summary", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 41.

3 *See id*., "Chapter 15: Small Islands", pp. 2074–2075.

4 *See id*., "Cross-Chapter Paper 1: Biodiversity Hotspots", p. 2150.

5 *Id*., "Chapter 15: Small Islands", p. 2094.

and future climatic variation across the complex topography and coastlines that comprise many small islands (*high agreement*)[6].

11. Other examples of critical data paucities include, but are not limited to, poor representation in global gridded population and elevation data—making it difficult to make detailed estimates of small islands' exposure to sea-level rise; data and established processes to identify and assess losses and damages at 1.5°C, especially from tropical cyclones and increasing sea-level rise; a lack of adequate monitoring and tracking of climate-related financing and metrics; and robust evidence attributing the various forms of migration on or from small islands directly to anthropogenic climate change[7].

12. The absence of such data and simulations continue to impair both local and regional assessments and projections, which, in turn, continues to delay development of robust adaptation strategies for small islands. This, continues to negatively impact both the adaptation and resilience capacities of especially developing small island nations, and in parallel, increases their vulnerability to changing climate conditions.

13. The IPCC accounts for the paucity of data and the long-time horizon on which these risks operate by assigning, where appropriate, lower confidence levels to these risks. But this can be misleading by giving the false impression that, for any given climate hazard, small islands are not being impacted, or by diluting the magnitude and intensity of impact. To address this issue, the IPCC makes clear that "absence of risk diagrams does not imply absence of risks within a region" (see Figure 1 below). This is especially true for small islands where, although many risks have materialized or are materializing into observable impacts, other risks—such as permanent and/or complete submergence of some islands due to sea-level rise—likely will not materialize in absolute terms, until the end of this century at the earliest.

6 *See id*., pp. 2047, 2094.

7 *See id*., p. 2047.



Figure 1: Burning embers diagrams could not be constructed for the Small Islands (and some other developing) regions due to a paucity of adequately downscaled climate projection data. This does not mean, however, an absence of risks to small islands[8].

III. Climate-Change Impacts on Small Islands

14. In this Section III, I outline the impacts of climate change on small islands by describing the unique characteristics of the different types of islands (Subsection A), discussing the amplified risks they face due to climate change (Subsection B), outlining key climate change impacts on humans and the ecosystems on which they depend (Subsection C), and highlighting the increased risks of these impacts at or above 1.5ºC (Subsection D).

[8] IPCC, Working Group II, "Summary for Policymakers", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 17.

A. Small Island Context and Island Types

15. Small islands can be classified into five different types: continental islands, volcanic islands, reef islands (also known as atolls), raised limestone islands, and composite islands. Each island type is subject to distinct vulnerabilities due to climate change, considering such factors as geography, geology, natural resources, and surrounding marine flora and fauna.

16. *First*, continental islands (e.g., New Caledonia group of islands, Trinidad and Tobago) are so called because they are made up of over 80 percent continental rock, or rock connected to one of Earth's seven continents. Continental islands are usually, though not always, adjacent to a large landmass and are typically larger in area than other small islands. They can have a diverse topography, including either or both high and low altitudes. Because the ocean floor that surrounds them tends to be shallower than other island types, they are at risk of high storm surges. Continental islands generally have a rich diversity of soils and vegetation and thus often have more resources than smaller, more isolated islands. Because of their general proximity to the mainland, inhabitants of continental islands tend to migrate more frequently to and from the island.

17. *Second*, volcanic islands (e.g., Galápagos Islands, Samoa, Saint Lucia) are made primarily of igneous rock formed by active or formerly active volcanoes. They typically have high altitudes and are far from larger landmasses. Limited coral reefs may surround them. Generally, their soils are fertile and often receive high rainfall, making them prone to landslides and flash floods. Human settlements tend to be around the coastline, though inhabitants may sometimes be able to move up-slope.

18. *Third*, reef islands or atolls (e.g., Tuvalu, Palau) are primarily made of brittle rock, such as limestone or other lightly compacted sedimentary (calcareous) rock. They are typically low and flat with well-developed coral reefs. They tend to have poor soils and limited surface water. Human settlements are subject to coastal inundation by large tides (e.g., king tides) and storms. Reef islands often employ hard sea defences such as sea walls and sometimes turn to land reclamation to accommodate their growing populations given the lack of access to continental land.

19. *Fourth*, raised limestone islands (e.g., Nauru, Niue), similar to reef islands, are made up of at least 80 percent loose sedimentary (calcareous) rock. They occur where tectonic plates have pushed that rock upwards, meaning they can have high or low altitudes. They often have steep slopes with flat tops, lack surface water, and have poor soils. Inhabitants may sometimes be able to move upslope or inland from the coast.

20. *Finally*, composite islands (e.g., Southern Cook Islands) comprise both volcanic rock and limestone, with neither being greater than 80 percent of island's total makeup. They are typically formed by alternating volcanic eruptions and tectonic uplift, which results in diverse topography and elevations. These islands also tend to lack surface water, but their physical makeup tends to result in rich soils and vegetation.

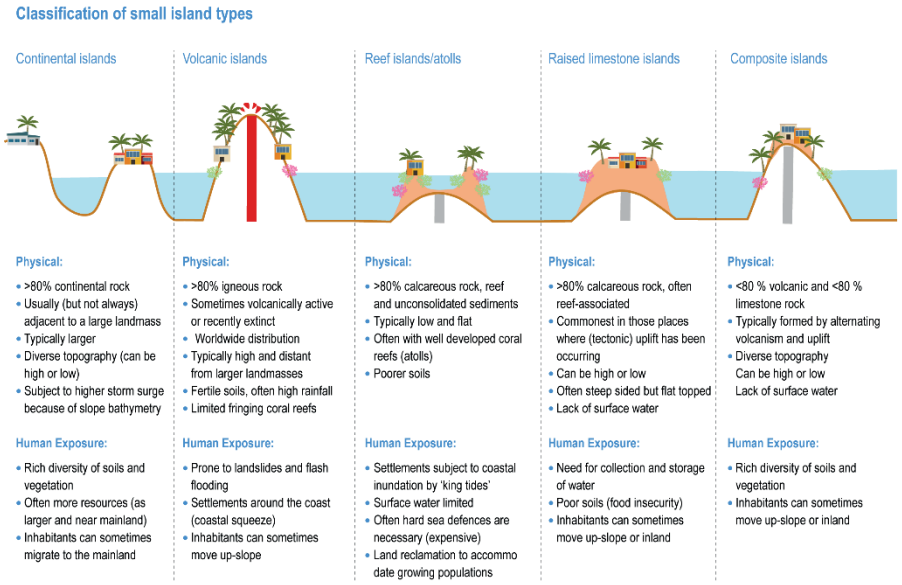


Figure 2: Classification of small island types[9].

B. Particular Risks for Small Islands

21. Small islands face increasing risks stemming from climate change and in particular from the increasing warming of oceans and ocean acidification via uptake of anthropogenic carbon dioxide. The IPCC has *very high confidence* in the growing impacts of multiple stressors in the forms of physical phenomena, such as sea-level rise, tropical cyclones, storm surges, droughts, and other changes in precipitation patterns that are already detectable across both natural and human systems[10]. Compound events—significant events resulting from a combination of processes (e.g. sea-level rise, tectonic movement, coral reef destruction, and a tsunami, leading to catastrophic destruction and loss of life)—pose especially high risks to small islands.

22. As global temperatures increase, these impacts continue to worsen, placing small islands at increasingly higher risk to changing climate conditions. In the Sixth Assessment Report, risks are considered as starting to transition from high to very high levels above 1.2˚C warming (present day), with a median value of 1.5˚C[11]. These thresholds are particularly based on the already occurring ecosystem degradation in coral reefs, which have been projected "to decline by a further 70–90% at 1.5˚C (*very high confidence*)"[12]. There is also *high confidence* that above 1.5˚C warming, there will be reduced habitability of small islands due to combined impacts from several key risks ("KRs")[13]. The Sixth Assessment Report defines a key risk as a potentially severe risk, which can either be already severe or projected to become severe in the future, due to changes in associated climate-related hazards and/or

9 *Id*., "Chapter 15: Small Islands", p. 2051.

10 *See id*., pp. 2045, 2052.

11 *See id*., "Chapter 16: Key Risks Across Sectors and Regions", p. 2417.

12 IPCC, "Summary for Policymakers", *Special Report: Global Warming of 1.5℃* (2018), p. 8.

13 *See* IPCC, Working Group II, "Chapter 16: Key Risks Across Sectors and Regions", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 2488.

the exposure and/or vulnerability of natural and human systems to these hazards; and/or the adverse consequences of adaptation or mitigation responses to the risk[14].

23. The IPCC highlights nine key risks to small islands (see Figure 3 below), which are expected to either be caused and/or amplified by slow-onset climate and ocean changes, and changes in extreme events. These include:

(a) Loss of marine and coastal biodiversity and ecosystem services (*high confidence*);

(b) Submergence of reef islands (*low confidence*);

(c) Loss of terrestrial biodiversity and ecosystem services (*high confidence*);

(d) Water insecurity (*medium/high confidence*);

(e) Destruction of settlements and infrastructure (*high confidence*);

(f) Degradation of human health and well-being (*low confidence*);

(g) Economic decline and livelihood failure (*high confidence*);

(h) Loss of cultural resources and heritage (*low confidence*); and

(i) Reduced habitability of some small islands (*high confidence*)[15].

24. The final key risk—reduced habitability—is the overarching key risk, which, even under a global temperature scenario of 1.5°C, will likely be caused by the accumulation and amplification of risk through cascading effects from ecosystems and ecosystem services to human systems[16].

[14] *See id*., pp. 2418, 2502.

[15] *Id*., "Chapter 15: Small Islands", pp. 2069, 2073.

[16] *Id*., p. 2074.

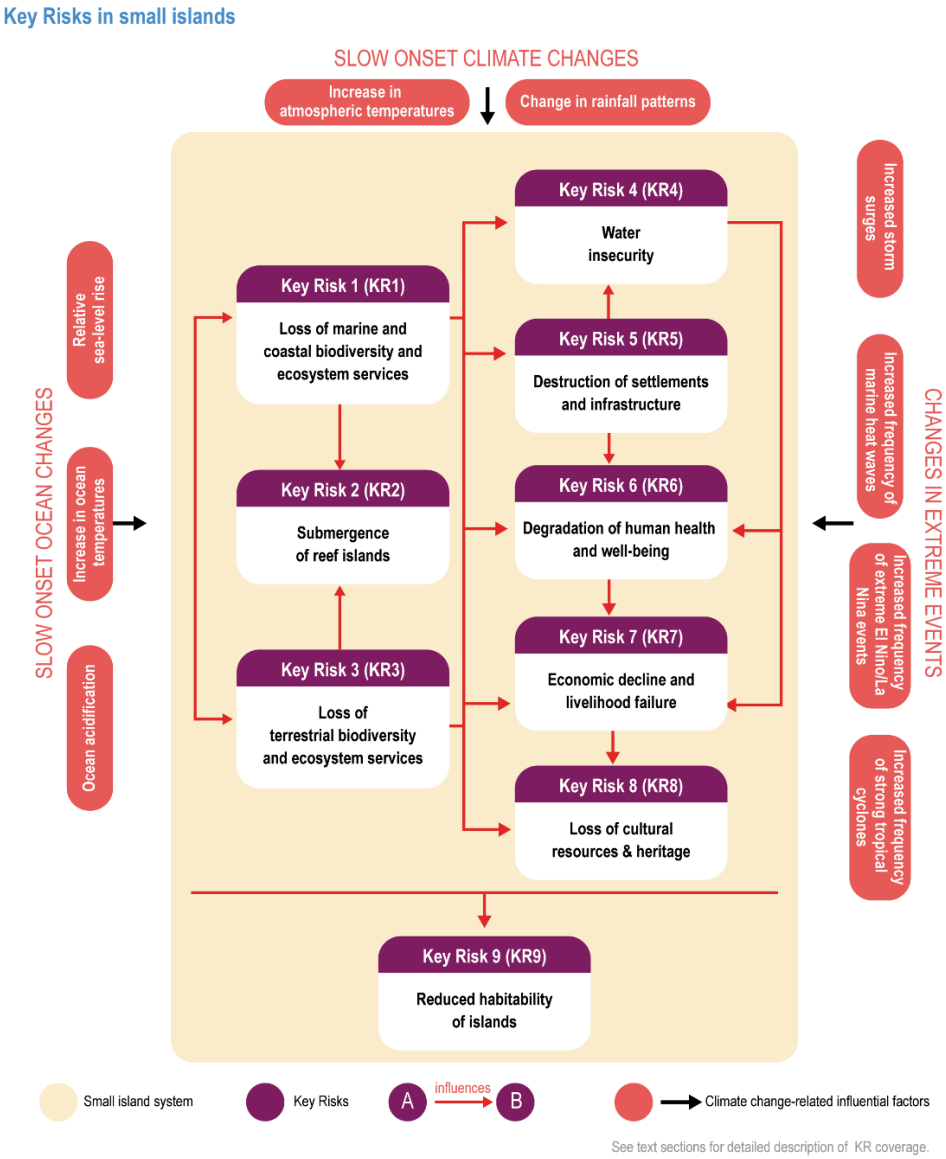


Figure 3: Key Risks faced by small islands[17].

C. Observed and Projected Impacts from Climate Change

25. The IPCC has *high confidence* that, as the risks to small islands continue to intensify, communities and settlements across them will continue to experience damage to and loss of life, infrastructure, property, and livelihoods as their food and water security, energy supplies, health and well-being, culture, and economies are negatively impacted[18]. Some of these impacts are already being felt. In this Subsection, I will detail the key impacts of climate change on small islands. These include impacts from (*1*) rising mean and high atmospheric temperatures, (*2*) sea-level rise, (*3*) more frequent and/or intense extreme climate events, (*4*) disruption and decline of ecosystems and loss of biodiversity, (*5*) submergence and destruction of coastal settlements and infrastructure, (*6*) destruction of livelihoods, (*7*) water

17 *Id.*

18 *Id.*, pp. 2045–2046.

insecurity, (*8*) food insecurity, (*9*) impacts on human health, (*10*) loss of culture and heritage and (*11*) reduced habitability and migration.

1. Rising Mean and High Atmospheric Temperatures

26. There is unequivocal evidence that human activities, particularly through the emissions of greenhouse gases (GHGs) have caused global warming, with widespread and often rapid changes already occurring in the atmosphere, ocean and land[19]. There is *high confidence* that both historical and ongoing global GHG emissions have and continue to increase on an *unequal basis*—between and within countries as well as among individuals due to unsustainable patterns of production and consumption across multiple sectors[20]. For example, during 2019, in contrast to the global average per capita net human-induced GHG emissions of 6.9 tCO_2-eq (range: 2.6 tCO_2-eq to 19 tCO_2-eq), the contribution of small island developing States 16 percent lower at 4.6 tCO2-eq (excluding emissions from land use, land use change, and forestry)[21].

27. Global surface temperatures have increased at a rate that is unprecedented in at least two thousand years (see Figure 4 below). Indeed, high level observed evidence confirms unprecedented high and increasing atmospheric temperatures, with Global Surface Temperature (GST) increasing more rapidly since 1970 than any other 50-year period over at least the last 2000 years. Such unprecedented increasing rates of change are well illustrated by GST, which, over the last two decades (2001–2020) was 0.99˚C [0.84 to 1.10˚C] higher than 1850–1900 versus GST for the period 2011–2020 at approximately 1.1°C [0.95 to 1.20°C] above the period 1850–1900[22]. There is also *high confidence* that atmospheric CO_2 concentrations in 2019 (410 parts per million) were higher than at any time over at least the last two million years, while concentrations of GHGs with more potent global warming potentials (than CO_2) such as nitrous oxide (332 parts per million) and of methane (1866 parts per million) were higher than any time over at least 800,000 years ago (*very high confidence*)[23].

28. Increased warming is already affecting both weather and climate extremes in every region of the world, many of which are home to small islands. The IPCC has recorded observed increases (with strengthened attribution to human influence) in heatwaves, tropical cyclones, droughts and heavy precipitation in large parts of the globe (see Figure 6 below)[24]. This has already led to adverse impacts including associated losses and damages to both nature and human populations—with small island nations and other vulnerable communities

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19 IPCC, Working Group I, "Summary for Policymakers", *Sixth Assessment Report: The Physical Science Basis* (2021), p. 4.

20 IPCC, "Summary for Policymakers", *Sixth Assessment Synthesis Report* (2023), p. 4.

21 *Id*., at p. 5.

22 The IPCC uses 1850–1900 as a reference period for approximating pre-industrial global surface temperature—often in conjunction with three future reference periods covering the near-term (2021–2040), mid-term (2041–2060) and long-term (2081–2100).

23 IPCC, "Summary for Policymakers", *Sixth Assessment Synthesis Report* (2023), p. 4.

24 *Id*., p. 5.

who have historically contributed the least to GHG emissions being increasingly disproportionately affected (*high confidence*) (see Figure 7 below)[25].

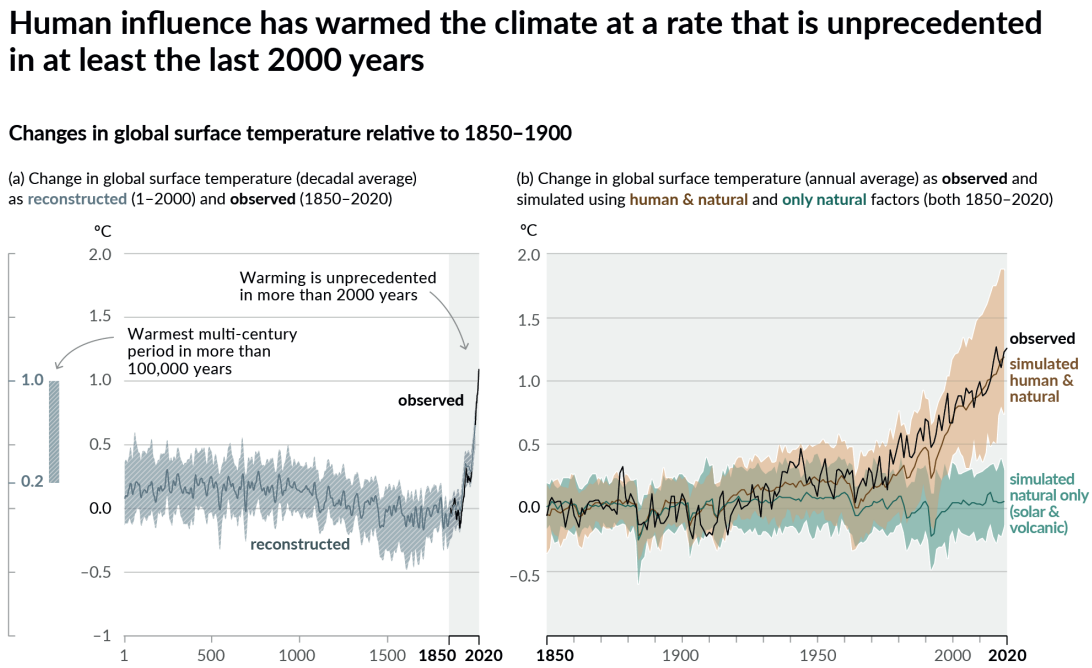


Figure 4: History of global temperature change and causes of recent warming[26].

29. In nearly all future GHG emissions scenarios considered by the IPCC in its recent reporting cycle, global warming will continue to increase in the near term (2021–2040)[27] due to increases cumulative CO_2 emissions—with every region in the world, ***many of which are home to small islands***, projected to face further increases in climate hazards (*medium to high confidence*—depending on the region and hazard), as well as increasing multiple risks to humans and ecosystems (*very high confidence*) (see Figure 5 below)[28].

[25] *Id*., pp. 5–6.

[26] IPCC, Working Group I, "Summary for Policymakers", *Sixth Assessment Report: The Physical Science Basis* (2021), p. 6.

[27] *See e.g*., IPCC, "Summary for Policymakers", *Sixth Assessment Synthesis Report* (2023), p. 4 ("Global net anthropogenic GHG emissions have been estimated to be 59±6.6 GtCO2-eq9 in 2019, about 12% (6.5 GtCO2-eq) higher than in 2010 and 54% (21 GtCO2-eq) higher than in 1990 . . . .").

[28] *Id*., p. 15.

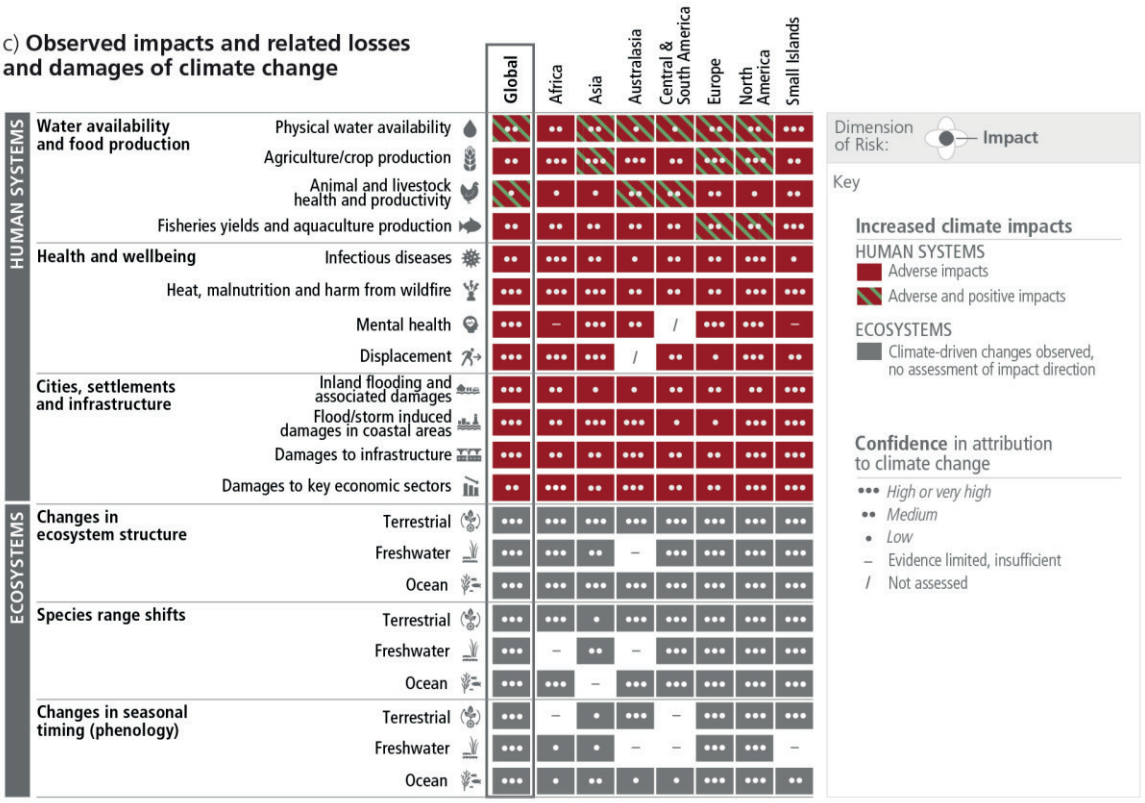


Figure 5: Observed impacts and related losses and damages of climate change[29].

[29] *Id*., "Longer Report", Figure 2.3.2.

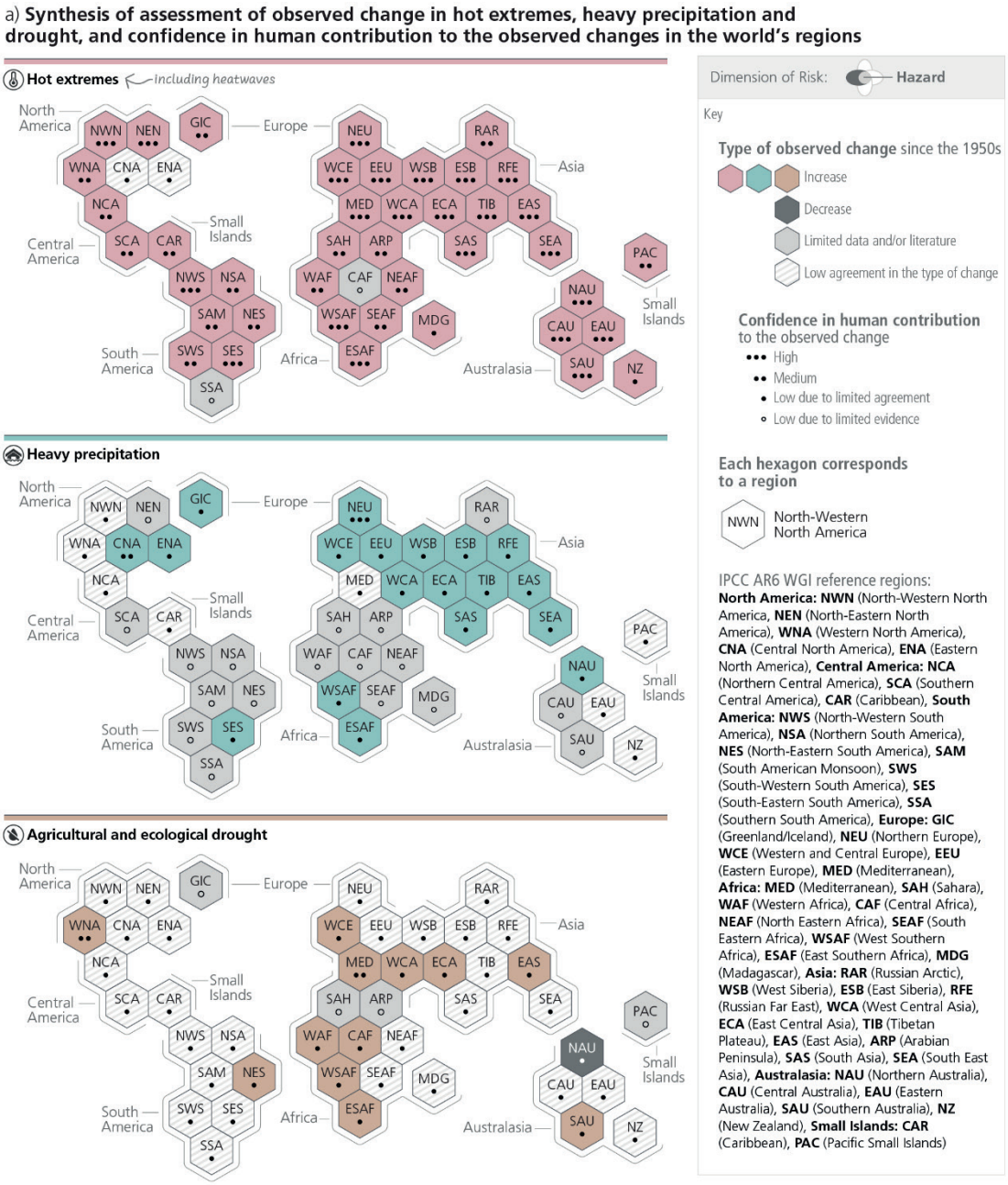


Figure 6: Observed changes in hot extremes, heavy precipitation, and droughts[30].

30 *Id.*, Figure 2.3.

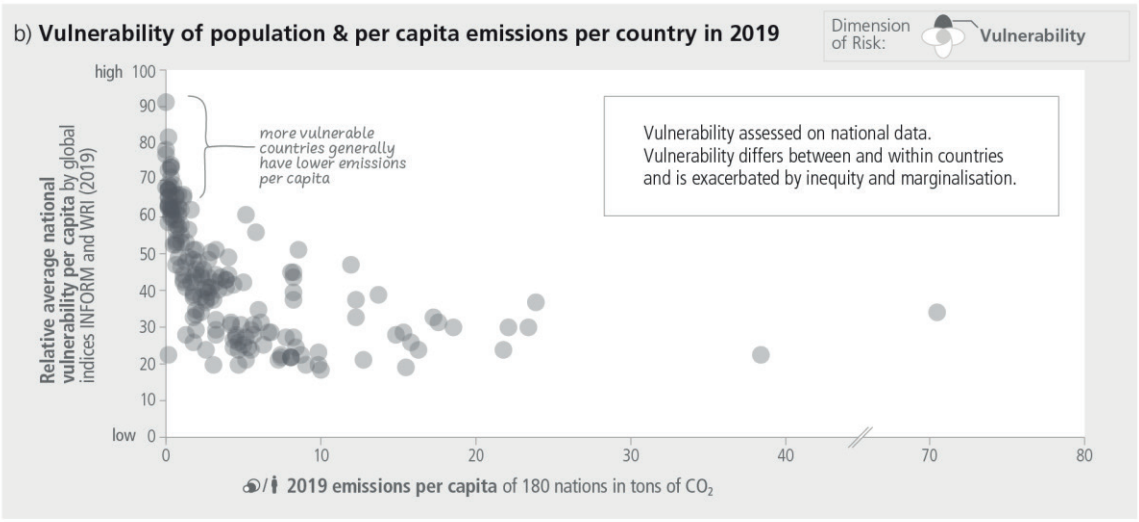


Figure 7: Vulnerability of populations and per capita emissions[31].

30. Continued global warming will adversely impact all major climate system components, and the already occurring adverse impacts on small islands are projected to increase. Future warming across small island regions will continue—with average temperature increases expected to range from 0.5°C (mid-intensity scenario) to 2.0°C (high-intensity scenario) by the 2050's and 1.0°C (mid-intensity scenario) to 4.0°C (high intensity scenario) by the 2090s[32]. Adverse phenomena stemming from such increases include (but are not limited to) increasing aridity, incidence and duration of drought, freshwater stress, intensity of tropical cyclones, incidence of flooding, changes to seasonality, and even decreased GHG emission absorption capacities of natural land and ocean carbon sinks *(high confidence*). The vulnerability of small islands will increase as these phenomena, together with other climatic and non-climatic drivers interact to create compounding overall risk with cascading impacts across multiple sectors, driving increasingly complex and more difficult to manage climate risks (*medium confidence, high agreement*).

2. Sea-Level Rise

31. The IPCC confirms that sea-level rise "poses an existential threat for some Small Islands and some low-lying coasts (*medium confidence*)"[33]. There is robust scientific evidence that many low-lying coastal areas at all latitudes, including small islands, will experience impacts from sea-level rise and extreme sea level events such as storm surges, coastal erosion, and coastal flooding with increasing frequency over the coming decades[34].

32. Different island types—for instance, atoll islands versus higher elevation islands—will be affected differently by sea-level rise and extreme sea-level events. For example, both

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31 *Id*., Figure 2.3.2.

32 IPCC, Working Group II, "Chapter 15: Small Islands", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 2054.

33 *Id*., *Summary for Policymakers*, p. 15.

34 *Id*., "Chapter 15: Small Islands", p. 2048.

past events and modelling projections of storm surges suggest high variation of risk along island coasts due to differences in topography, exposure, and bathymetry (*high confidence*)[35].

33. Observations already confirm that wave-driven flooding from sea-level rise events are impacting infrastructure, freshwater availability, health and wellbeing, and economies across many small islands[36]. The IPCC has concluded with *high confidence* that such flooding is projected to rapidly increase despite the highly contrasting exposure profiles of islands in different ocean sub-regions[37]. The IPCC has found that five-to-ten additional centimetres of sea-level rise (expected for approximately between 2030 and 2050) will double flooding frequency in much of the Indian Ocean and Tropical Pacific[38]. It is *likely* that some atoll islands within the Pacific, which already experience major floods, will become subject to annual wave-driven flooding over their entire surface from the 2060s or 2070s to the 2090s under a high future warming scenario, unless natural adaptation to sea-level rise occurs through vertical growth (*limited evidence*, *low agreement*)[39]. Other evidence suggests that sea-level rise will exponentially increase flooding in both the Caribbean and Hawaii, with almost every centimetre of sea-level rise doubling the probability of flooding[40].

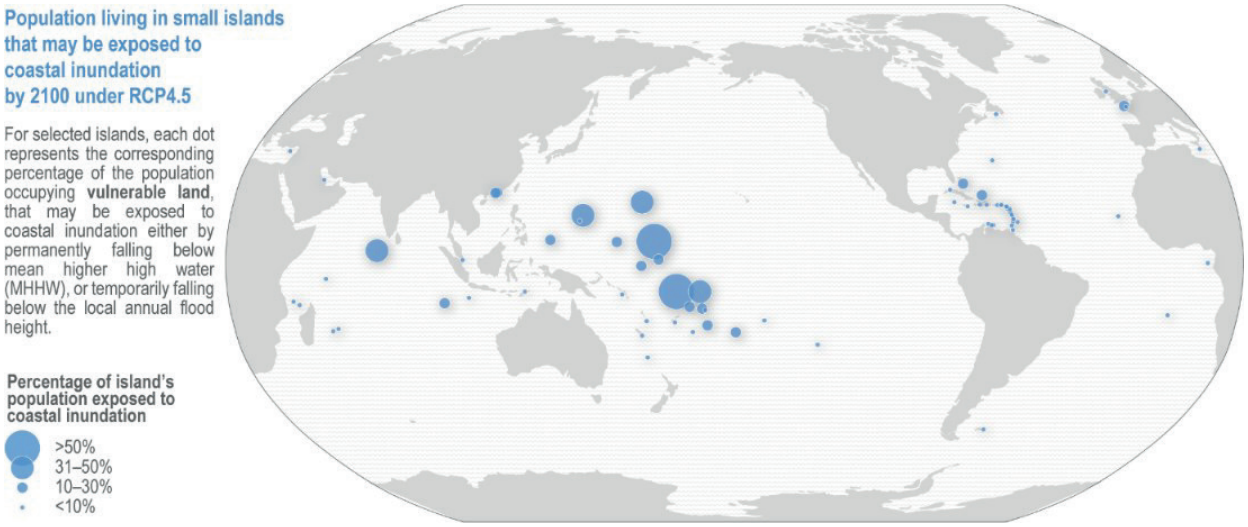


Figure 8: Small island populations exposed to coastal inundation under a mid-future warming scenario[41].

34. Further, there is *high confidence* that the geomorphology of reef islands as well as coastal systems on high islands will be affected by accelerating sea-level rise and increased wave height[42]. The responses of these systems are expected to be highly dependent on changes in boundary conditions—such as, but not limited to, impacts of ocean warming and acidification on present ecosystems, exposure to extreme events, and bathymetry—as well as

35 *Id*., p. 2053.

36 *Id*., pp. 2053–2055.

37 *Id*., p. 2055.

38 *Id*.

39 *Id*., pp. 2046, 2055.

40 *Id*., pp. 2045, 2053–2055.

41 *Id*., p. 2053. Position on the map is based on the capital city or largest town.

42 *Id*., p. 2056.

the degree to which the natural dynamics of these systems are disturbed by human activities. In general, however, even reef islands and beach systems that are not impacted by human activities are projected to migrate lagoonward and landward—and *will* experience increased erosion and changes in volume, configuration, and elevation[43]. There is also *high confidence* that small reef islands and narrow coastal systems that are disturbed by human activities will increasingly be at risk of disappearance from sea-level rise and/or enhanced sediment loss due to extreme events and/or human activities, as has already been reported in some islands, such as Puerto Rico and Takuu, Papua New Guinea[44].

3. More Frequent and/or Intense Extreme Climate Events

35. With every increment of global warming, regional changes in extreme climate events are becoming more widespread and pronounced[45]. Ongoing global warming is already leading to observed increased frequencies and/or intensification of extreme events such as tropical cyclones (TCs), flooding, and droughts across multiple small islands.

i. Tropical Cyclones

36. Over the past 40 years there has been a significant increase in tropical cyclone intensity and intensification rates at a global scale—which has manifested as the occurrence of an increasing number of intense tropical cyclones—including Categories 4 and 5 tropical cyclones within the Pacific and Atlantic regions[46]. During 2017, 22 among 29 Caribbean islands were impacted by at least one Category 4 or 5 tropical cyclone[47]. The IPCC has concluded that extreme weather events such as these are much more likely due to climate change[48].

37. These events have threatened and destroyed human lives; health and wellbeing; infrastructure; livelihoods, such as coast-focused tourism; and other economic assets across many of these islands. For example, in 2015, Tropical Cyclone Pam devastated Vanuatu causing losses and damages to that country's agriculture sector equivalent to 64.1 percent of its gross domestic product[49]. Similarly, during 2017, Tropical Cyclone Maria destroyed almost all of Dominica's infrastructure with losses amounting to more than 225 percent of its annual gross domestic product[50].

38. Increasing temperatures have been projected to increase the intensity of TCs for almost all small island regions but with changes in frequency of occurrence being region-

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43 *Id*.

44 *Id*.

45 IPCC, "Summary for Policymakers", Sixth Assessment Synthesis Report (2023), p. 13; *id*., "*Longer Report*", p. 37.

46 IPCC, Working Group II, "Chapter 15: Small Islands", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 2045.

47 *Id*.

48 *See* IPCC, "Chapter 6: Extremes, Abrupt Changes and Managing Risks", *Special Report on the Ocean and Cryosphere* (2019), pp. 591–593.

49 IPCC, Working Group II, "Chapter 15: Small Islands", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 2045.

50 *Id*., pp. 2064, 2066.

dependent[51]. For example, increasing TC frequency is expected in parts of the North Indian Ocean, Northwest Pacific, Central North Pacific and East Atlantic; while decreasing TC frequency has been projected for the South Indian Ocean, South-west and low latitude Pacific, North-east Pacific and the Caribbean[52].

39. Tropical small islands are also impacted by large ocean waves from extratropical cyclones that occur thousands of kilometres away in the mid- and high latitudes. These have been reported on small islands across the Pacific (e.g., Micronesia, the Solomon Islands, Fiji, Kiribati to name a few) and often cause considerable damage, including coastal erosion and the flooding of settlements, and infrastructure[53]. Similarly, Caribbean islands are impacted by northerly swells, which often cause significant seasonal damage to marine ecosystems, beaches, and coastal infrastructure. Finally, extensive flooding on small islands has also been caused by successive tropical depressions, which generate successive bouts of heavy rain, for example, as occurred in the Solomon Islands during 2014 and in Fiji during 2012[54].

40. There is also *high confidence* that increasing shoreline retreat and beach loss across many islands in the Caribbean region (e.g., Grenada, Saint Kitts, Nevis, Anguilla), the Indian (e.g., Comoros, Anjouan) and Pacific Oceans (e.g., Tubuai, French Polynesia) are mainly due to tropical cyclone and extratropical cyclone waves and human disturbance[55].

ii. Floods

41. Tropical cyclones are expected to remain the main driver of flooding across small islands in the Tropical Pacific and the Caribbean Sea[56]. This flooding is often the result of a combination of several factors. For example, the widespread flooding that occurred in Tuvalu and Kiribati during 2015 was due to the strong swells generated by a distant Tropical Cyclone Pam and the long duration of this tropical cyclone—in combination with exceptionally high sea levels within that region[57]. Additionally, during tropical cyclones, major flooding events often occur on tropical high islands due to cumulative effects from the exacerbation of storm surge and river flooding impacts by human-induced alterations to natural processes within urban areas. For example, as occurred in a harbour area that was favourable to water accumulation when Tropical Cyclone Bejisa hit Reunion Island, France, in 2014[58].

42. A significant and rapid increase in the frequency, duration, extent and consequences of coastal flooding has been projected for small islands due also to the superimposition of changes in wave climate upon increasing SLR (*high confidence*)[59]. Such increase is expected to happen regardless of the highly contrasting exposure profiles of small islands (*high*

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51 *Id*., pp. 2054–2055.

52 *Id*.

53 *Id*., p. 2070.

54 *Id*., p. 2053.

55 *Id*., p. 2056.

56 *Id*., pp. 2045–2046.

57 *Id*., p. 2053.

58 *Id*.

59 *Id*., p. 2045.

confidence)[60]. Increasing SLR is expected to increase the frequency of flooding of small islands in the Indian Ocean and Tropical Pacific. Some Pacific atoll islands, which are already experiencing major flooding events, are expected to undergo annual wave-driven flooding across their *entire surface* (2060s to 2090s) under an intense warming scenario; while exponential increases in flooding have been projected in the Caribbean and Hawaii—with the probability of flooding doubling with nearly every centimetre of SLR increase[61].

iii. Droughts

43. Increasing trends in drought conditions have been recorded within the Caribbean and Pacific regions[62]. For example, between 2014 and 2016, the island of Puerto Rico experienced 80 consecutive weeks of moderate drought, 48 weeks of severe drought and 33 weeks of extreme drought conditions[63]. Drought conditions can place considerable stress on populations within resource strapped small islands—as was the case with Vanuatu during the 2015–2016 El Niño-related drought which led to the reliance on small amounts of contaminated water remaining at the bottom of household tanks[64].

44. Additionally, projected changes in aridity across some small island regions such as the Caribbean will impose freshwater stress on many islands (*high confidence*)—where it is expected that under a middle-of-the-road future socioeconomic scenario (SSP2), a 1°C temperature increase (from 1.7°C to 2.7°C) could lead to a 60 percent increase in the number of people experiencing severe water resources stress from 2043 to 2071[65].

45. With every additional increment of global warming, climate system perturbations will continue to become larger. This will lead to increasingly complex and more difficult to manage climate risks for small island nations and other vulnerable communities—as multiple climatic and non-climatic drivers interact to create compounding overall risk with cascading impacts across multiple sectors. For example, compound hazards have already become more frequent in all the world's regions, with widespread consequences. Regional increases in aridity, temperature and drought have given rise to increased frequency and intensity of fires[66]. The interaction of these fires with changes in land use, especially deforestation in conjunction with changing climate conditions is directly and adversely impacting the food security, livelihoods, human health, forest structure and ecosystem functioning upon which dependent human populations rely[67].

4. Disruption and Decline of Ecosystems and Loss of Biodiversity

46. There is *high confidence* that for small islands "[p]rojected climate and ocean-related changes will significantly affect marine and terrestrial ecosystems and ecosystem services,

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60 *Id*., p. 2055.

61 *Id*., pp. 2045, 2055.

62 Although observed, drought trends in the western Pacific are not statistically significant. *See id*.

63 *Id*., p. 2045.

64 *Id*.

65 IPCC, Working Group II, "Chapter 15: Small Islands", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 2065.

66 *Id*., "Technical Summary", p. 44.

67 *Id*.

which will in turn have cascading impacts across both natural and human systems"[68]. The IPCC has identified the loss of terrestrial, marine, and coastal biodiversity and ecosystem services as key risks in small islands (see Figure 3 above).

i. Terrestrial Impacts

47. Despite islands comprising an estimated two percent of the world's total land area, they host a quarter of all existing land species on this planet[69]. As such, the conservation of terrestrial biodiversity on small islands is critical to preventing further decreases in global biodiversity levels.

48. Many of these island species are endemics—i.e., they occur only on one or a small group of neighbouring islands and nowhere else in the world. Island endemic species typically have limited abilities to adapt to changing environmental conditions and are increasingly directly and indirectly threatened by climate change phenomena such as SLR, increasing extreme climate events and increasing establishment and survival of invasive alien species. Synergies between these climate phenomena and other human impacts (e.g., natural habitat destruction and pollution), coupled with often intense competition from human activities for limited geographic space and other resources on small islands—are expected to increase the vulnerability of terrestrial island species and ecosystems. Increased loss of these island species expected to not only adversely impact global biodiversity levels but also impair the resilience capacities of naturally fragile terrestrial island ecosystems and the services they provide to human populations living on islands (*high confidence*)[70].

49. Changing climate conditions are already leading to localized species extinctions and species die-offs due to temperature extremes[71]. Multiple island species are moving greater distances to access suitable climate conditions and by association, seasonal food and suitable breeding conditions—which in turn, is impacting ecosystem health, ecology and altering community composition and dynamics[72]. Examples include increased pathogen attacks on Mediterranean tree species; increased risk of fire (within increasingly arid, fire-prone areas) due to succulent plants being replaced by less fire-resistant vegetation; and changes to migratory routes[73]. SLR is leading to habitat loss, either directly due to submergence or indirectly due to impacts, such as soil erosion, salinity intrusion, and salinization of coastal wetlands (*medium to high confidence*)[74]. Studies have suggested that insular biodiversity hotspots such as islands in the Caribbean, the Philippines, Sundaland, and East Melanesia will suffer terrestrial habitat loss due to sea-level rise, with some Caribbean islands projected to lose between 8.7 and 49.2 percent of terrestrial habitat[75]. Marine flooding is expected to destroy habitats on atoll islands for range-restricted coastal or single-island endemic species,

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68 *Id*., "Chapter 15: Small Islands", p. 2045.

69 *Id*.

70 *Id*., p. 2060; *id*., "Cross-Chapter Paper 1: Biodiversity Hotspots", pp. 2150–2151.

71 *Id*., *Chapter 15: Small Islands*, p. 2060.

72 *Id*.

73 *Id*.

74 *Id*.

75 *Id*.

many of which the International Union for Conservation of Nature (the "IUCN") lists as at least "threatened"[76].

50. Future impacts of changing climate conditions within the already limited geographic space on small islands are expected to, even under the most optimistic climate change scenarios, result in reductions in areas of suitable survival conditions for island species, with some evidence suggesting that a 3˚C in global temperature rise could expose 100 percent of endemic island species to a risk of extinction—leading to disproportionate losses in global biodiversity (*medium to high confidence*)[77]. When combined with likely increased natural habitat loss due to future relocation of SLR-displaced coastal human populations (and associated intensive agriculture and urban centres) inland, the loss and damage to island species, ecosystems and the services they provide to human populations is expected to dramatically increase—especially on islands with large coastal populations and urban centres. Such impacts are significant given the large proportion of global species that is hosted on islands and the high dependency of human populations on ecosystem services within small islands[78].

ii. Marine Impacts

51. Ecosystem and biodiversity impacts are not limited to land species. There is *high confidence* that climate change impacts, in conjunction with human disturbances, will continue to denude coastal and marine ecosystems and the services they provide in many small islands[79]. Intact coral reefs, seagrass meadows, and mangroves, for example, supply a range of ecosystem services, which are essential for maintaining habitability on small islands. These include, but are not limited to, regulating services (e.g., coastal protection, filtration of pollutants, and carbon storage), provisioning services (e.g., fisheries, timber, aquaculture), and cultural services, all of which combine to support community resilience (*high confidence*)[80]. When coastal and marine ecosystems are lost or even degraded, the benefits they provide are also lost (*medium confidence*), and in small islands, the risk of loss of such ecosystem services is high—and many of these cannot be easily replaced (*medium confidence*)[81]. This is already creating serious consequences for vulnerable communities within small islands[82]. I offer three examples here.

52. *First*, intact coral reefs, seagrass, and mangroves, have been shown to reduce wave height by 70, 31, and 36 percent, respectively (see Figure 9 below)[83]. A global study across many small islands in the Indian, Atlantic, and Pacific oceans found that coral reefs reduce, on average, wave energy by 97 percent and wave height by 84 percent[84]. The coastal protection from such wave attenuation plays an essential role in protecting human lives,

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76 *Id*.

77 *Id*., pp. 2060–2061.

78 *Id*.

79 *Id*., p. 2058.

80 *Id*.

81 *Id*., "Chapter 17: Decision-Making Options for Managing Risk", pp. 2578–2580.

82 *Id*., "Chapter 15: Small Islands", p. 2058.

83 *Id*.

84 *Id*.

livelihoods, and infrastructure (*high confidence*)—and is key for enhancing climate resilience in small islands[85].

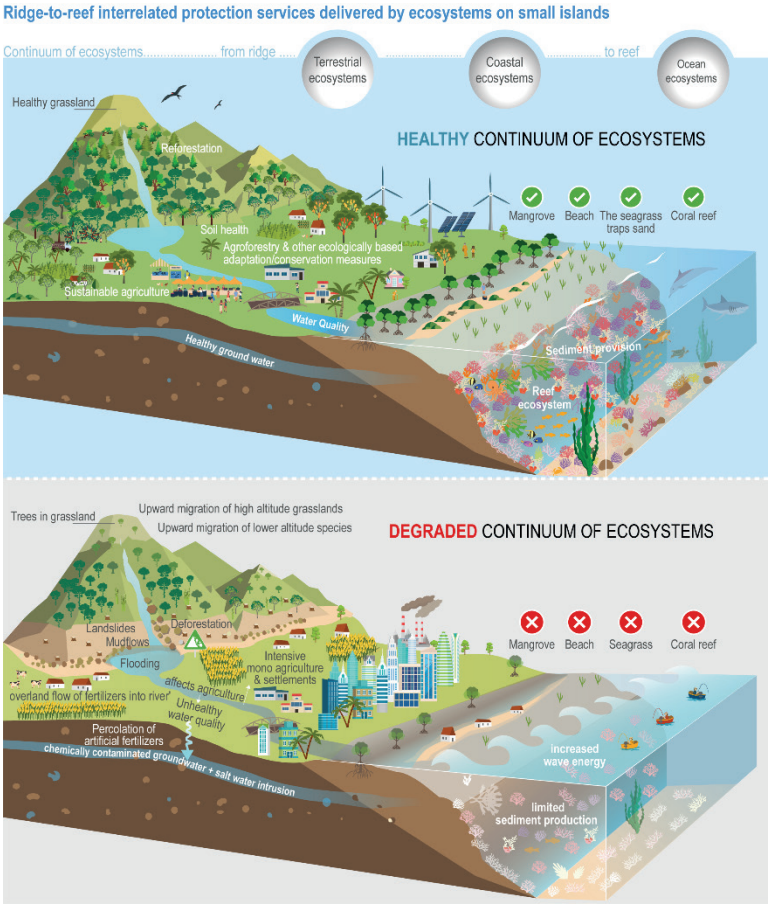


Figure 9: Protection services delivered by ecosystems on small islands[86].

53. *Second*, evidence from Caribbean islands such as Saint-Martin indicates that the preservation of dense belts of indigenous coastal vegetation can be effective in buffering wave damage by tropical cyclones, significantly reducing the extent of marine inundation and shoreline retreat compared to deforested areas[87]. Even the removal of a few trees around the fringes of Micronesian mangrove ecosystems, has resulted in accelerated coastal erosion[88].

54. *Finally*, the protection of intact coral reefs on small islands within the Caribbean (e.g., Grenada, Bahamas, Cayman Islands) has averted significant damages, when expressed as a percentage of the GDPs of these countries[89].

55. I address in turn threats to each of coral reefs, seagrasses, and mangroves.

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85 *See id*.

86 *Id*., p. 2059.

87 *Id*., p. 2058.

88 *Id*.

89 *Id*.

(a) Coral Reefs

56. There is *high confidence* that "globally and in small islands tropical corals are presently at high risk"[90]. The most widespread and visible impact upon corals is coral bleaching—which is caused by elevated sea surface temperatures[91]—but it is not the only impact coral reefs face. Severe coral bleaching has been widely documented together with declines in coral abundance in many small islands, particularly those within the Indian and Pacific Oceans (e.g., Vanuatu, Comoros, Fiji, the Maldives, Palau, Seychelles, Chagos, Guam) (*high confidence*)[92]. During severe bleaching events, not only are substantial amounts of live coral cover lost, but there is also a decrease in growth potential, as reef erosion exceeds reef accretion. Additionally, since the 1980s, the median time between two severe bleaching events has progressively decreased and is now only six years apart; this is frequently associated with the warm phases of the El Niño Southern Oscillation (*high confidence*)[93]. However, projections under mid and high future warming scenarios based on both bleaching and ocean acidification suggest that some Pacific small islands (e.g., Nauru, Mariana Islands) will likely face conditions that cause severe bleaching events on an annual basis before 2040, and that "90% of the world reefs are projected to experience conditions that result in severe bleaching annually by 2055 (*medium confidence*)"[94].

57. Apart from bleaching, rising sea temperatures are also believed to increase the frequency of disease outbreaks impacting reef building. In fact, many of the protozoan, fungal, and bacterial diseases that affect stony corals have explicit links to temperature. For example, changes in sea surface temperature combined with marine heatwave events are thought to have contributed significantly to the spread of white-band disease across the Caribbean[95]. Additionally, projections are suggesting that, in the coming decades, disease will be as likely to cause coral mortality as bleaching events in many areas—and such effects are expected to occur earlier within Caribbean localities compared to those in the Indian and Pacific Oceans[96].

58. Further, projections are suggesting mid-century large-scale loss of coral reefs even under low future warming scenarios. Recent evidence has confirmed with *very high confidence* that tropical corals are currently at high risk, and if global warming exceeds 1.5°C, known coral reef restoration options may become ineffective[97]. And even if the Paris Agreement's goal of 1.5°C global warming is achieved, this "will result in the further loss of 70–90% of reef-building corals compared to today, with 99% of corals being lost under warming of 2°C or more above the pre-industrial period (*high confidence*)"[98].

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90 *Id*., p. 2045.

91 *Id*., "Chapter 3: Oceans and Coastal Ecosystems and Their Services", p. 416; *see also id*., "Chapter 15: Small Islands", pp. 2067, 2072.

92 *Id*., "Chapter 15: Small Islands", p. 2071.

93 *Id*., p. 2045.

94 *Id*., p. 2056.

95 *Id*., p. 2070.

96 *Id*.

97 *Id*., p. 2048.

98 *Id*.

(b) Seagrasses

59. There have also been significant declines in seagrass communities in many small islands across the Caribbean, as well as the Pacific and Indian Oceans[99]. While there is only *low confidence* associated with the *direct* attribution of such declines to climatic influences, experimental studies have shown increased mortality and leaf necrosis when seagrasses are exposed to higher-than-normal temperatures[100].

60. There is growing agreement that seagrass meadows that are currently growing in localities near the edge of their thermal tolerance are at risk as temperatures continue to increase[101]. This is especially apparent when combined with already established threats of physical disturbance and direct damage due to coastal erosion and declines in water quality among other threats stemming from rapidly increasing human populations. For example, there is *high confidence* that the seagrass meadows in the Mediterranean, which are already exhibiting signs of regression, may have been aggravated by climate change[102].

(c) Mangroves

61. Mangroves already face serious risks from human activities, such as deforestation and unsustainable coastal development[103]. There have been largescale die-offs of mangroves around many small islands, and increased risks are expected from climate change due to both sea-level rise and tropical cyclones[104]. Seaward edge retreat for mangrove forests, already observed on small islands (e.g., Bermuda, West Papua, Grand Cayman, at TikinaWai in Fiji), have been attributed to long-term sea-level rise or tectonic subsidence, the sinking of large parts of Earth's crust due to plate movement[105].

62. In theory, mangrove mortality due to inundation (from sea-level rise) could be mitigated if mangrove substrates are able to "keep up" with sea-level rise by accretion (*low agreement*)[106]. This may not be possible with sea-level rise exceeding six millimetres per year[107]. It is likely that this threshold will be surpassed in the next 30 years under high future warming scenarios, and, in general, significant losses have been projected under all future warming scenarios by mid-century (*medium confidence*)[108]. In addition, there is *high confidence* that there will be "substantially greater losses (of mangroves) by 2100" under most future warming scenarios[109].

63. There is also the risk of tropical cyclones, which can cause considerable and extensive damage to mangroves. Although there have been examples of recovery from tropical

99 *Id*., p. 2057.

100 *Id*.

101 *Id*.

102 *Id*.

103 *Id*., *see also id*., "Chapter 3: Oceans and Coastal Ecosystems and Their Services", pp. 464–466.

104 *Id*., "Chapter 15: Small Islands", p. 2057.

105 *Id*.

106 *Id*.

107 *Id*.

108 *Id*., *see also id*., "Chapter 3: Oceans and Coastal Ecosystems and Their Services", p. 423.

109 *Id*., "Chapter 3: Oceans and Coastal Ecosystems and Their Services", pp. 423–424.

cyclones (e.g., Bay Islands of Honduras following Hurricane Mitch in 1998), such recovery is not always the case, as it depends on a combination of factors such as hydrology, geomorphology, tidal range, and suspended sediments after the event[110].

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64. As corals, mangroves, and seagrasses decline, so too will fish and other dependent life-forms that directly impact livelihoods, such as ecotourism and fisheries. Factors such as shifting temperatures, and damage from sea-level rise and tropical cyclones, exacerbate these harms. As conditions become too hot near the Equator, many marine species are migrating poleward, tracking cooler conditions that allow them to survive. Climate velocity—a measure of the rate and direction at which isotherms are moving under changing climate conditions—is a useful predictor of how such species shifts are occurring as the Earth continues to warm[111].

65. The highest climate velocities have been observed within 15º of the Equator (and in the Arctic/sub-Arctic), where many small islands are located[112]. As such, the equatorial waters—particularly coastal waters (but also including offshore waters) within which many small islands are located—are heating up faster than other areas of the world, and therefore are already becoming a source from which marine species are shifting their ranges towards the subtropics. Additionally, many small islands are located within tropical marine biodiversity hotspots, and there is *medium confidence* that climate velocity is considerably (69 percent) greater within than outside these marine biodiversity hotspots[113].

66. The upshot of all this is that waters around many small islands are more prone to losing species due to their poleward migration. And while species are moving away from these tropical regions, there are no incoming species to replace those that are leaving. Therefore, there is *high confidence* that the waters around many small islands will continue to experience a loss of species with future climate change[114]. This will alter species composition, ecosystem structure, and function, potentially compounding already occurring disruption and degradation of ecosystem services[115].

67. This movement of species away from the waters surrounding islands within the tropics is also likely to impact, at least in part, the blue economies of these island nations. For example, projections suggest that many Pacific Island nations could "experience ≥ 50% declines in maximum fish catch potential by 2100 relative to 1980–2000" under both mild and high future warming scenarios[116].

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110 *Id*., "Chapter 15: Small Islands", p. 2057.

111 *Id*., "Chapter 3: Oceans and Coastal Ecosystems and Their Services", p. 392; *see also id*., "Cross-Chapter Paper 1: Biodiversity Hotspots", p. 2126.

112 *Id*., "Cross-Chapter Paper 1: Biodiversity Hotspots", p. 2126.

113 *Id*.

114 *Id*., p. 2150.

115 *Id*., "Chapter 16: Key Risks Across Sectors and Regions", p. 2431; *see also id*., "Chapter 2: Terrestrial and Freshwater Ecosystems and Their Services", p. 208.

116 *Id*., "Chapter 15: Small Islands", p. 2046.

68. Sea-level rise, tropical cyclones, and resulting hazards can compound the impacts associated with the loss of biodiversity. For example, storm surges also impact sandy beaches on small islands, which have both high socioeconomic and ecosystem services value. Erosion resulting from such impacts can impact many nests and eggs of seabirds, migratory birds, and turtles that nest just above the highwater mark on sandy beaches and dunes. Increased heat has also been shown to contribute to unbalanced sex ratios in turtle populations that nest on small island coastlines[117]. Apart from ecosystem disruption, livelihoods such as eco-tourism can be affected by these changes[118].

5. Submergence and Destruction of Coastal Settlements and Infrastructure

69. Following decades of high-density coastal urban development, the main settlements and population centres, related infrastructure, buildings, and other economic assets on small islands are now exposed to climate hazards and accompanying disruption of ecosystem services, making them increasingly vulnerable to the key risks discussed in Section III.B above (*high confidence*)[119].

70. Key to this increasing vulnerability is that, on many small islands, human populations are very often concentrated within the low-elevation coastal zone[120]. For example, 90 percent of Pacific Islanders (excluding Papua New Guinea) live within 5 kilometres of the coast, with over 60 percent of the population living within 1 kilometre of the coast on islands, such as Vanuatu and the Solomon Islands[121]. As such, within most Pacific islands, one-half or more of their infrastructure can be found within 500 metres of the coast, with more than 95 percent of this infrastructure located in the low-elevation coastal zone on islands, such as Tuvalu and Kiribati. Similarly, within the Caribbean, it has been estimated that approximately 22 million people live below 6 metres above sea level[122].

71. Impacts on such coastal settlements include frequent severe beach erosion due to stronger wave action, tropical cyclones, storm surges, and sea-level rise, which lead to landward retreat of many of these coastlines, increasingly threatening social and economic activities on these islands. With categories 4 and 5 tropical cyclones already severely impacting small island infrastructure and settlements, living conditions are deteriorating due to storm surges, which are already penetrating further inland relative to a few decades ago[123].

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117 *Id*., p. 2058.

118 *Id*.

119 *Id*., p. 2074.

120 *Id*., p. 2063.

121 *Id*., pp. 2063–2064.

122 *Id*., p. 2063.

123 IPCC, "Chapter 3: Impacts of 1.5°C of Global Warming on Natural and Human Systems", *Special Report: Global Warming of 1.5°C* (2018), pp. 222–223; *see also* IPCC, Working Group II, "Chapter 3: Oceans and Coastal Ecosystems and Their Services", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 477; *id*., "Chapter 15: Small Islands", p. 2064.

72. Projected future intensification of these extreme events is expected to cause even more damage to and loss of human lives, infrastructure and settlements[124]. Particularly exposed and vulnerable is the growing percentage of populations on these islands that live in informal settlements that occupy marginal lands. These unplanned settlements very often experience compounded flooding from both rapid-onset events, such as tropical cyclones and storm surges, as well as from slow-onset riverine and coastal flooding[125].

73. Additionally, projections suggest that sea-level rise will cause significant losses and damages to infrastructure, such as from inundation of almost all port and harbour facilities in the Caribbean[126]. Further, in Samoa, Jamaica, and Saint Lucia, sea-level rise and extreme sea levels are projected to be key threats to transport infrastructure at 1.5°C unless further adaptation is undertaken; it is also noteworthy that even higher-elevation islands like Fiji are considered at risk, as large amounts of infrastructure are also located near to the coast[127].

74. Yet long-lasting, viable adaptation options for small islands are limited and likely to decrease with changing climate. Hard shoreline structures like seawalls—which have been applied on many islands in the Caribbean, the Indian, and Pacific Oceans—are costly and require continuous repair and maintenance to remain viable[128]. Adaptation through accommodation in the small island context has not been considered as a widespread option due to prohibitive costs, and ecosystem-based adaptation, while having many benefits, is also faced with challenges and limits[129]. All three of these options are expected to become increasingly ineffective as the intensities of climate hazards like sea-level rise and tropical cyclones continue to increase. As noted in Section III.C.4.b above, the ecosystem-based adaptation benefits of coral reefs, seagrasses, and mangroves—such as their wave buffering capacities—are becoming less effective as they decline with increasing temperatures[130].

6. Destruction of Livelihoods

75. With high concentrations of small island populations along (often reef-fringed) coasts, a large component of livelihoods depends on nearshore marine activities as well as coastal agricultural systems[131]. Increasing impacts of climate hazards on these marine and coastal environments lead to degradation and loss of coral reefs, shoreline erosion, and flooding, and have already been implicated in the deterioration of livelihoods associated with tourism, fishing and coastal agriculture among others[132].

76. The economies of many small island nations are sustained by tourism, and as such, they have over the years, invested heavily in associated infrastructure and capacity

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124 IPCC, Working Group II, "Chapter 15: Small Islands", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 2064.

125 *Id*.

126 *Id*.

127 *Id*.

128 *Id*., pp. 2075–2076.

129 *Id*., pp. 2076, 2089.

130 *Id*., pp. 2077–2078.

131 *Id*., p. 2066.

132 *Id*., pp. 2066, 2096–2097.

building[133]. Some rural communities have become almost completely dependent on tourism, and limited resources would make it difficult to find other forms of livelihoods or revert to subsistence living[134]. Coast-focused tourism in particular is already being impacted by the coral bleaching and other biodiversity loss associated with rising sea-surface temperatures, as well as by beach erosion and damage from intensifying tropical cyclones and storm surges[135]. These impacts were compounded by travel disruptions and decreased demand during the COVID-19 pandemic, and there was an overall significant impact of the tourism sector of Caribbean islands—leading to reduced incomes that would have been used to enhance climate resilience on these islands[136].

77. Larger island jurisdictions, in efforts to diversify and transform their economies, are striving to develop locally produced or constituted material that employ members of the local population and to reduce their cost of living[137]. However, these commercial and manufacturing operations are often located on the lowest-lying locations and on reclaimed lands[138]. The inherent exposure of these operations to increasing sea-level rise is in line with the disproportionate vulnerability of infrastructure on small islands to climate change, and the livelihoods from such manufacturing and commercial operations will likely be impacted as temperatures increase[139].

78. Livelihoods based on food provision/production are also increasingly at risk on small islands. The decreasing fisheries mentioned in Section III.C.8 below have directly been linked with damage from increasingly intense tropical cyclones, as well as slow-onset changes, such as poleward migration of fisheries from the tropics to cooler waters due to more rapid heating of tropical marine environments compared to most other areas of the world[140]. Livelihoods based on both nearshore (e.g., declining coral reefs and mangroves) and offshore fishing are projected to become increasingly impacted by diminishing fish stocks[141].

79. Slow-onset stressors such as sea-level rise and extreme events like increasingly intense tropical cyclones, are impacting agricultural production and, hence, associated livelihoods on small islands[142]. Additionally, groundwater supplies on especially atoll islands are being contaminated by salt water intrusion due to sea-level rise, and this negatively impacts agriculture-based livelihoods on islands like Barbados that rely heavily on ground water for overall consumption, including agricultural production[143]. Small-island livelihoods are also being negatively impacted by tropical cyclones—which are already causing extensive losses and damages to the agriculture sector. Examples include losses and damages in Vanuatu in 2015 amounting to US$56.5 million (64.1 percent of GDP) from Tropical

133 *Id*., p. 2067.

134 *Id*.

135 *Id*.

136 *Id*.

137 *Id*.

138 *Id*.

139 *Id*.

140 *Id*., pp. 2065–2067.

141 *Id*.

142 *Id*., p. 2066.

143 *Id*., p. 2065.

Cyclone Pam, as well as losses and damages to the agriculture sector in Fiji valued at US$254.7 million from Tropical Cyclone Winston in 2016[144].

7. Water Insecurity

80. The exceptional vulnerability of small islands with respect to water security and associated potential limits to adaptation have been recognised and established for some time now, and the IPCC's Sixth Assessment Report confirms that domestic freshwater resources on small islands may be unable to recover from increased drought, sea-level rise and decreased precipitation by 2030, 2040, or 2060 under mid and high future warming scenarios[145].

81. There is *high confidence* that the freshwater shortages currently experienced by small islands are being brought on by numerous factors such as increasing temperatures, changing rainfall patterns/droughts, overwash events caused by sea-level rise and more intense storms, as well as increasing population pressure[146]. These factors, combined with limited water-related adaptation options due to the small islands' context, have already rendered small islands partially water insecure—with this water insecurity risk increasing in the near term and with warming above 1.5°C (*high confidence*)[147].

82. The combined effects of increasing tropical storm intensity and sea-level rise are impacting water security by saline intrusion into aquifers, threatening both coastal ecosystems and livelihood resilience[148]. On many small islands, particularly atoll islands, there is evidence that the compounding effects of sea-level rise with coastal flooding is impacting not only salinity levels but also water-table height and groundwater quality[149]. For example, research estimates a decrease in groundwater volume of 11 to 36 percent due to sea-level rise within some of the small atoll islands in the Maldives[150]. In general, the extent of salinization of fresh groundwater lens varies with the scale of the overwash from sea-level rise and tropical cyclones[151].

83. Projections suggest that the freshwater resources of some Pacific atoll islands could be significantly affected by sea-level rise of 0.40 metres, while in some Caribbean countries, similar impacts are anticipated for high future warming scenarios with 0.5 metres of sea-level rise by mid-century (2046 to 2065) and one metre by the end of century (2081 to 2100)[152]. Such conditions would not only increase salinity in estuaries and aquifers but also ground and surface water for drinking and irrigation across these regions (*high confidence*)[153]. Under a

144 *Id*., p. 2066.

145 *Id*., "Chapter 16: Key Risks Across Sectors and Regions", p. 2449.

146 *Id*., "Chapter 15: Small Islands", pp. 2058–2060, 2065

147 *Id*.; *see also id*., "Chapter 4: Water", p. 611.

148 *Id*., "Chapter 15: Small Islands", pp. 2058–2060.

149 *Id*., p. 2060.

150 *Id*., p. 2058.

151 *Id*.

152 *Id*., p. 2046.

153 *Id*., pp. 2046, 2060.

2°C warming threshold scenario, Small Island Developing States with high population growth rates are projected to experience the most severe freshwater stress by 2030[154].

8. Food Insecurity

84. On many small islands, the ability to access locally grown or harvested food is being affected by climate impacts such as extreme events, as well as slow-onset phenomena like increasing climate velocities and sea-level rise. Projections suggest that changing climate will impact agriculture and fisheries on small islands and could increase rates of malnutrition, as well as increase dependence on imported food[155]. It is expected that by 2050, local food accessibility could decrease by 3.2 percent within nations such as Fiji, the Solomon Islands, Papua New Guinea, the Philippines, and other small islands within the Western Pacific, with potentially 300,000 associated deaths[156].

85. The fisheries sectors on small islands provide food security, revenues, and other opportunities for economic development on small islands[157]. Many small island fisheries, however, are more vulnerable to changing climate impacts relative to coastal states or continental least-developed countries due to these nations increased reliance on fisheries, their limited adaptive capacities and high exposure to climate hazards. Yet, seafood remains a key component in achieving food security on many of these islands. For example, fish protein has been estimated to constitute approximately 40 to 80 percent of animal protein consumption in urban areas, as well as about 50 to 90 percent in rural areas within the Pacific[158]. Similar values have been reported for some Caribbean and Indian Ocean islands[159].

86. The disappearance of mangroves, corals, and seagrasses is already leading to the decline of nearshore/coastal fisheries, which can often be exacerbated by extreme events such as tropical cyclones and marine heatwaves (*high confidence*)[160]. Additionally, oceanic-scale shifts in the distribution of large pelagic fish (and their fisheries) such as tuna are already occurring and have been linked to ocean warming and other climatic phenomena (e.g., El Niño)[161]. These shifts are having and will have significant impacts upon revenue for some small-island nations that depend on fisheries licences—such as Tokelau (98 percent of national income) and Kiribati (66 percent of national income)[162].

87. These observations are in line with studies on future fishery productivity, which suggest a declining trend in yields due to local species extinctions and migrations, and ocean productivity reductions[163]. The Working Group II concluded that "nine of 17 Pacific Island entities (Cook Islands, Federated States of Micronesia, Guam, Kiribati, Marshall Islands, Niue, Papua New Guinea, Solomon Islands, and Tuvalu) could experience [greater than] 50%

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154 *Id*., pp. 2046, 2065.

155 *Id*., p. 2065.

156 *Id*.

157 *Id*.

158 *Id*., p. 2066.

159 *Id*., p. 2066.

160 *Id*., p. 2058.

161 *Id*., pp. 2066, 2099.

162 *Id*., pp. 2070, 2099.

163 *Id*., p. 2066.

declines in maximum catch potential by 2100 relative to 1980–2000" under both low and high future warming scenarios (*medium confidence*)[164]. In Wallis and Futuna, maximum catch potential was projected to increase slightly (around 10 percent) by 2050, later declining by the year 2100[165]. Similar projections have now been provided for all countries worldwide, including small islands in the Pacific, Caribbean, Atlantic, Mediterranean, and Indian Oceans[166].

88. Climate hazards to freshwater discussed above such as sea-level rise, overwash, and salinization are also impacting agriculture, especially coastal agricultural production on small islands. One such example is that of coastal agroforestry systems within some Pacific islands, which are vital contributors to national food security[167]. Many of these systems are now threatened by rapidly declining biodiversity resulting from climate impacts upon coastal and terrestrial ecosystems. This poses a major threat to both food and livelihoods security on these islands[168].

89. Additionally, apart from the repercussions of slow-onset phenomena such as sea-level rise and increasing coastal flooding, the impacts of tropical cyclones have often resulted in shock and near collapse of terrestrial food production on some islands—often requiring reconfiguration and near rebuilding of the sector. For example, Vanuatu's agriculture sector lost US$56.6 million—64.1 percent of its GDP—when Category 5 Tropical Cyclone Pam hit in 2015[169]. Current losses and damages within impacted agriculture sectors have resulted in many negative consequences, such as increases in consumption of imported processed food, which has negatively impacted diet and nutrition[170]. Finally, increasing intensity of tropical cyclones are expected to increase such already significant losses and damages[171].

9. Impacts on Human Health

90. There is slowly increasing documentation on the health and wellbeing of small island residents being impacted by changing climate such as extreme events and changes in ecological systems[172]. Extreme events, particularly including tropical cyclones, floods, and heatwaves have already caused human deaths, injuries, and infectious diseases[173]. Tropical cyclones can damage water and sanitation services causing infectious disease outbreaks (especially water-borne diseases), as was the case with a cholera outbreak that occurred in Haiti during the aftermath of Tropical Cyclone Matthew[174]. Risk of such impacts is set to increase as projections for many small island regions suggest increasingly intense tropical cyclones and associated flooding, as well as increases in the number of days of heavy rainfall

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164 *Id*.

165 *Id*.

166 *Id*. (citations omitted).

167 *Id*.

168 *Id*.

169 *Id*.

170 *Id*.

171 *Id*., p. 2064.

172 *Id*., pp. 2064–2065.

173 *Id*., pp. 2064, 2071.

174 *Id*., p. 2065.

for many small island regions by 2050[175]. Such increases in exposure may render heavily populated areas, especially those within flood-prone areas with poor sanitation particularly vulnerable to such disease outbreaks and other health issues[176].

91. Healthcare facilities like hospitals, community care centres, and clinics—many of which already suffer from resource constraints—are also vulnerable to climate impacts such as tropical cyclones, associated flooding, and to outbreaks of infectious diseases that overwhelm their capacity to provide critical services when such catastrophes occur[177]. It is further noteworthy that many major healthcare facilities on small islands are in coastal areas that tend to be more exposed to damage from tropical cyclones and flooding. For example, when Vanuatu was hit by Tropical Cyclone Pam in 2015, two hospitals, together with 19 healthcare centres, and 50 healthcare dispensaries were severely damaged across 22 islands[178].

92. The distribution of ciguatera fish poisoning is expected to spread to new areas due to increasing marine temperatures[179]. Ciguatera fish poisoning is a foodborne illness that is caused by dinoflagellate algae found on degraded coral reefs—which can contaminate reef fish and then transfer to humans who eat these fish[180]. Ciguatera fish poisoning is endemic to French Polynesia and the Cook Islands, and its incidence is associated with sea-surface temperature anomalies[181]. Today, ciguatera fish poisoning occurs mainly within the Caribbean and South Pacific but can be found wherever reef fish are consumed[182]. Projections suggest that increasing ocean temperatures will lead to shifts in the distribution of these dinoflagellates, which will likely stabilise or even slightly decrease ciguatera fish poisoning incidence within the Caribbean[183]. Projections also indicate that ciguatera fish poisoning occurrence is expected to increase in the Canary Islands due to the increasing topicalization of the waters that surround these islands due to increasing sea surface temperature[184].

93. Increasing temperatures have been projected to give rise to heat-related mortality, increase risks of occupational heat stress and to adversely impact the productivity levels of outdoor workers within small islands[185]. More individuals are also expected to become at risk to dengue fever by the 2030s as warmer conditions will increase both the geographic range and abundance of mosquitoes; for example, the dengue burden is expected to double in New Caledonia by 2100 due to increases in mean temperature[186]. Relatedly, islands within the tropics and sub-tropics are expected to face increased risks not only of dengue fever but also

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175 *Id*.

176 *Id*.

177 *Id*., p. 2088.

178 *Id*.

179 *Id*., pp. 2064–2065.

180 *Id*., p. 2064.

181 *Id*., p. 2065.

182 *Id*., p. 2064.

183 *Id*.

184 *Id*., p. 2065.

185 *Id*., p. 2064.

186 *Id*.

of other vector borne diseases such as the Zika virus and malaria[187]. Risk of the Zika virus can increase with El Niño events, the conditions of which increase mosquito biting rates, decrease mosquito mortality rates and shorten the required replication time of the virus within the mosquitoes[188]. Additionally, within the Caribbean, seasonal climatic conditions can lead to Saharan dust (transported across the Atlantic Ocean) becoming respirable—contributing to the incidence of asthma. Further, the exacerbation of the effects of air pollution and urbanisation by changing climatic conditions have been linked to an increase of allergic diseases in the Asia Pacific region[189].

94. There is also emerging evidence of climate change impacting the mental health of small-island populations (*limited evidence*)[190]. For example, Tuvaluans are experiencing distress from environmental impacts within their localities that are either caused by or exacerbated by changing climate conditions. Their distress is also caused by hearing about the potential future consequences of climate change[191].

10. Loss of Culture and Heritage

95. Culture and heritage play important roles in both individual and community decision-making processes when it comes to development of adaptation strategies on small islands. There is evidence that migration due to reduced habitability can have quite severe cultural implications as "community solidarity and cohesion linked to place-based identity are important aspects of adaptive capacity"[192].

96. There are tangible losses to culture and heritage, such as in the Caribbean Island of Carriacou where, due to coastal erosion, culturally and historically significant archaeological sites are being lost due to a combination of climate-ocean events exacerbated by sea-level rise and sand mining[193]. Other tangible cultural and heritage losses on small islands include buildings and UNESCO World Heritage sites, which may also impact the tourism sectors on these islands and therefore have significant impacts on some small islands with relatively narrow economies[194].

97. Domestic and international migration also bring unquantifiable cultural losses, which tend to be highly localised. For example, the prolonged displacement of the entire population of the Ragged Island in the Bahamas after Hurricane Irma in 2017 led to cultural losses from being displaced from ancestral homelands[195]. This threatened their sense of identity and sense of place and community cohesion, which were important drivers of this population's self-initiated rehabilitation efforts and eventual return[196]. Another example is the emotional and spiritual distress members of the village of Vunidogoloa in Fiji experienced when they were

187 *Id*.

188 *Id*.

189 *Id*.

190 *Id*., p. 2065.

191 *Id*.

192 *Id*., p. 2069.

193 *Id*.

194 *Id*.

195 *Id*.

196 *Id*.

relocated, as a single unit, away from the coast to another part of their ancestral lands[197]. This shift impacted their spiritual relationships, as the ocean is an important part of their village's culture[198].

11. Reduced Habitability and Migration

98. As mentioned in Section III.B above, reduced habitability of small islands—"the ability of these islands to support human life by providing protection from hazards which challenge human survival; by assuring adequate space, food and freshwater; and by providing economic opportunities, which contribute to health and well-being"[199]—is considered to be an overarching significant risk resulting from a combination of several key risks that will be faced by most small islands even under a global warming scenario of 1.5°C above pre-industrial levels (*high confidence*)[200]. As temperatures rise, most of these key risks are expected to be amplified by climate-induced ocean changes, including both slow-onset (e.g., even moderate sea-level rise) and rapid-onset (e.g., intensifying tropical cyclones) events, increasing the likelihood of reduced habitability of these islands[201].

99. This reduced habitability, particularly along coastal areas and on reef islands has been projected to decrease because of increasing human exposure to sea-related hazards stemming from the compounding impacts and cascading effects of increasing temperatures and intensifying tropical cyclones, extreme sea levels, increased wave impacts, and degradation of buffering ecosystems (*high confidence*)[202]. The way in which these climatic and non-climatic drivers of reduced habitability will accumulate, combine, and amplify different key risks will be context specific in each case, but there is *high confidence* that the vulnerability of these communities may exceed adaptation limits well before 2100—*even under low greenhouse gas emission pathways*[203].

100. This reduction of habitability on small islands is expected to cause increased migration along a continuum ranging from involuntary displacement on one end to voluntary and strategic movement and planned resettlement on the other end[204]. This is expected to result in the movement of populations out of exposed areas, as well as the depopulation of some islands; and the causes, forms and outcomes of this migration already are, and will continue to be, highly context specific. This risk is highest for atoll islands, with the possibility of some becoming uninhabitable during this century[205]. Migration due to decreased habitability from non-atoll islands is also expected, especially along their coastal areas[206].

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197 *Id*., "Chapter 4: Water", p. 596.

198 *Id*.

199 *Id*., "Chapter 15: Small Islands", p. 2073.

200 *Id*.

201 *Id*., p. 2046.

202 *Id*.

203 *Id*.

204 *Id*., p. 2073.

205 *Id*.

206 *Id*.

101. There is *high agreement* that, in the absence of appropriate adaptive responses, even moderate sea-level rise will severely amplify displacement and levels of forced migration on small islands[207]. Research also suggests that relatively small changes in mean sea level can give rise to significant increases in the frequency of extreme sea-level events, thereby increasing the risk of chronic coastal flooding[208]. This suggests that many areas across small islands may become uninhabitable before a state of permanent inundation occurs. Additionally, even in situations where settlements (and livelihoods) remain secure, habitability may be reduced due to increasing exposure to extreme events, such as tropical cyclones and storm surges, decreases in the availability of potable water, and increases in the incidence of disease outbreaks[209].

102. It has not been possible to estimate the current number of climate-related migrants on/from small islands due to a paucity of studies providing sufficiently robust evidence attributing the various forms of migration on/from small islands directly to anthropogenic climate change[210]. Despite this difficulty with attribution, however, there is evidence that, over time, extreme events, climate variability and broad environmental pressures have contributed to some degree of human mobility on small islands (*medium evidence*, *high agreement*)[211].

103. There is also currently *limited evidence and low agreement* on whether migration in its varying forms is an effective strategy for adapting to the localised impacts of changing climate—as outcomes are highly context specific[212]. When it comes to migration of small island populations (and many other places in the world), there is a clear preference to *in situ* adaptation options over resettlement. Further, due to high sociocultural and economic costs, relocation (both planned and autonomous) is an adaptation option of last resort when the thresholds of living with risks have been crossed[213].

104. There is *medium evidence and high agreement* that, on small islands, the degree of agency and choice a migrant has in the details of if, where, how, and when to move, are important determinants of success[214]. It is noteworthy that situations entailing involuntary displacement and/or low-agency migration (e.g., limited participation in migration planning or low financial resources of migrant) frequently increase vulnerability and result in unsuccessful outcomes and so can be *considered an impact of climate change* instead of an adaptation option[215].

105. Even in cases of domestic migration, it is expected that there will be challenges when resettlement occurs between significantly physical, social, and cultural environments. A good example is the tensions that were created between host communities and migrants over land

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207 *Id*., "Chapter 16: Key Risks Across Sectors and Regions", p. 2468.

208 *Id*., "Chapter 15: Small Islands", p. 2068.

209 *Id*.

210 *Id*., *see also id*., "Chapter 7: Health, Wellbeing and the Changing Structure of Communities", p. 1084.

211 *Id*., "Chapter 15: Small Islands", p. 2068.

212 *Id*., p. 2076.

213 *Id*.

214 *Id*., *see also id*., "Chapter 7: Health, Wellbeing and the Changing Structure of Communities", p. 1080.

215 *Id*., "Chapter 15: Small Islands", p. 2077; *see also id*., "Chapter 18: Climate Resilience Development Pathways", p. 2783.

and resource rights when the Gilbertese resettled in the Solomon Islands[216]. Additionally, their limited knowledge of the new environment (e.g., when communities that rely on marine environments and resources are resettled in non-coastal regions such as high island environments) combine to create new vulnerabilities. Further, even when international or domestic relocation is supported and planned—as was the case of Kiribati's "migration with dignity" strategy—many remain opposed to such indefinite or permanent migration because of strong cultural connections to their homeland and the uncertainty of what life would be like in the receiving communities[217].

D. Increased Risk at or Above 1.5°C

106. The IPCC has concluded with *high confidence* that "risks and projected adverse impacts and related losses and damages from climate change will escalate with every increment of global warming"[218]. But these risks are "higher for global warming of 1.5°C than at present, and even higher at 2°C (*high confidence*)"[219]. Small islands' human and natural systems are especially at risk of suffering from the most severe impacts of climate change at higher global warming levels ("GWL").

107. To limit GWL to 1.5°C, net negative[220] CO_2 emissions are required[221]. Pathways leading to GWL stabilization at 1.5°C, or even 2°C, require immediate, deep, rapid, and sustained reductions of GHG emissions in all sectors (*high confidence*)[222]. Many of these pathways also include overshoot—which entails exceeding a GWL limit of 1.5°C and then later returning to this limit (with the use of Carbon dioxide removal (CDR) technology). However, overshoot increases the risk of irreversible impacts[223], as explained in this Section.

1. Amplified Risks at Higher Warming Levels

108. Current (2011–2020) global surface temperature rise of 1.1°C above pre-industrial levels has already led to widespread adverse impacts and related losses and damages to both people and nature (*high confidence*), with small islands and other vulnerable communities who have contributed the least to this growing problem already being disproportionately affected at 1.1°C (*high confidence*)[224]. Even at low levels of warming, changing climate conditions are expected to disrupt the livelihoods of tens to hundreds of millions of additional

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216 *Id*., "Chapter 15: Small Islands", p. 2076.

217 *Id*.

218 IPCC, "Summary for Policymakers", *Sixth Assessment Synthesis Report* (2023), p. 15.

219 *Id*.

220 Net negative emissions, at a high level, refers to the scenario where the amount of GHG emissions being removed from the atmosphere is *greater than* the amount of GHGs emitted into the atmosphere—resulting in a negative balance.

221 Achieving and sustaining net negative global CO2 emissions would require annual rates of CDR to be *greater than* residual CO2 emissions in order to gradually reduce the warming level again (*high confidence*). However, increasing adverse impacts will occur during this warmer period of overshoot which will cause additional warming via feedback mechanisms (e.g. thawing of permafrost)—thereby further increasing releases of GHGs, making the return even more challenging (*medium confidence*). IPCC, "Summary for Policymakers", *Sixth Assessment Synthesis Report* (2023), p. 23.

222 *Id*., p. 20.

223 *Id*., p. 23.

224 IPCC, "Longer Report", *Sixth Assessment Synthesis Report* (2023), p. 6.

people globally—especially in regions such as small islands, which suffer from high exposure, climate sensitivity and vulnerability combined with low adaptation capabilities[225]. Within small islands, economic damage to climate-exposed sectors, such as tourism, fisheries, agriculture and forestry, are already occurring at the current GWL of 1.1°C due to adverse impacts stemming from increasingly compounding weather and climate extremes such as concurrent heatwaves and droughts, increasingly intense tropical cyclones and heavy precipitation (*high confidence*)[226].

109. With every increment of warming, the impacts and risks of climate change will become increasingly complex and more difficult to manage (see Figure 10 below). The interaction of climate-related risks and impacts with non-climatic risk drivers, such as biodiversity loss, will lead to compounding overall risk and risks cascading across regions and sectors[227]. For example, additional warming in the Caribbean by 0.2°C to 1.0°C is expected to result in a predominantly drier region than the present day with increased occurrence of drought—which will impair agricultural production, impact livestock management and directly reduce the range of crops that farmers will be able to grow in the future[228]. Further, a 1°C increase in temperature (1.7 to 2.7°C) within this region could increase the amount of people experiencing severe water resources stress by 60 percent (2043 to 2071)[229].

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225 IPCC, Working Group II, "Technical Summary", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 67.

226 IPCC, "Summary for Policymakers", *Sixth Assessment Synthesis Report* (2023), pp. 4–5; IPCC, Working Group II, "Chapter 15: Small Islands", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), pp. 2069–2070, 2099–3000.

227 PCC, Working Group II, "Technical Summary", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 47.

228 *Id*., "Chapter 15", p. 2046.

229 *Id*.

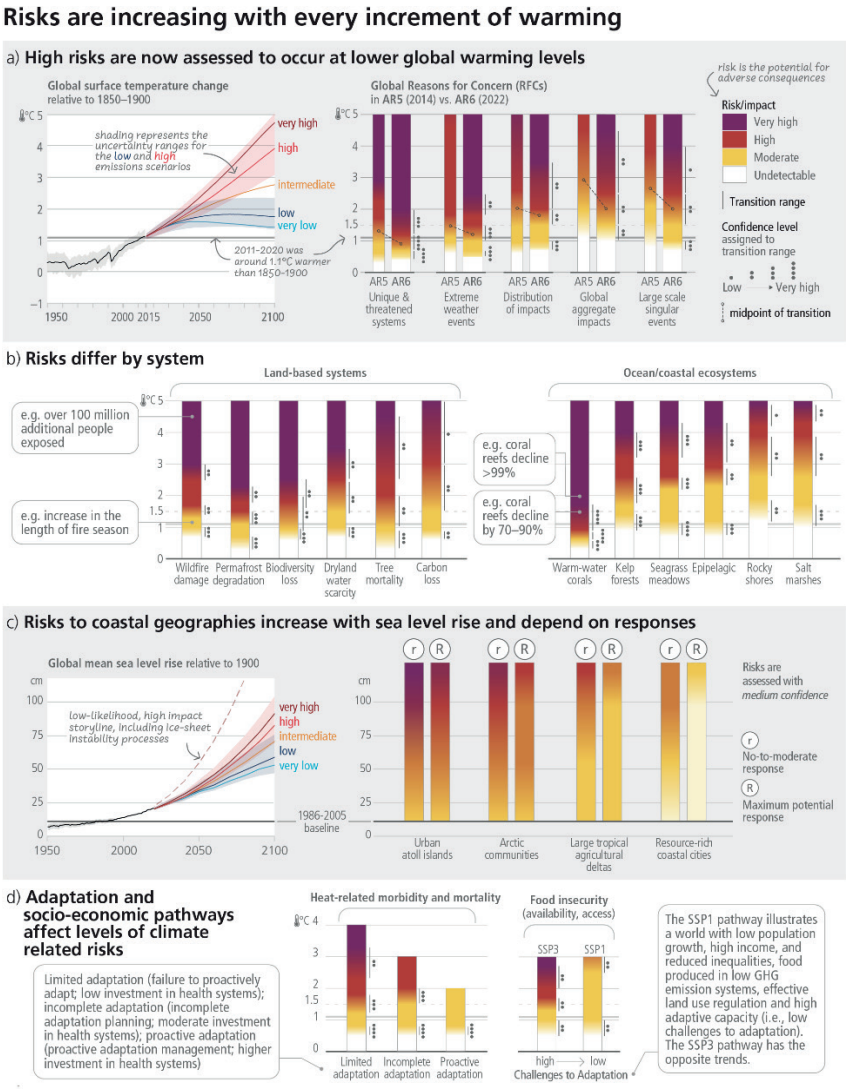


Figure 10: Risks are increasing with every increment of warming[230].

110. At a 1.5°C global warming level, the risks for both natural and human systems will be higher than at present (1.1°C), but lower than at 2°C (*high confidence*)[231]. These risks will also depend on details such as geographic location, rate and magnitude of warming, levels of development and vulnerability, as well as which adaptation and mitigation options are implemented (*high confidence*) (see Figure 10 above and Figure 11 below)[232]. Some small islands are expected to face less risk at 1.5°C, particularly when coupled with adaptation efforts[233]; for example, some small islands are expected to experience 25 percent less freshwater stress at 1.5°C GWL than would be experienced at 2°C by 2030[234]. Additionally, within the Caribbean, moderate to extreme drought conditions are expected to last

230 IPCC, "Summary for Policymakers", *Sixth Assessment Synthesis Report* (2023), Figure SPM.4.

231 *Id*., "Longer Report", p. 36.

232 IPCC, "Summary for Policymakers", *Special Report: Global Warming of 1.5°C* (2018), p. 5.

233 *Id*., pp. 7, 9; *Id*., *Chapter 4: Strengthening and Implementing the Global Response*, pp. 357–359.

234 IPCC, "Chapter 3: Impacts of 1.5°C of Global Warming on Natural and Human Systems", *Special Report: Global Warming of 1.5°C* (2018), p. 234.

approximately 9 percent longer at 2°C than at 1.5°C[235]. Other examples include increases in the frequency of drought and floods in the South Pacific Islands due to changes in the frequency of extreme La Niña and El Niño events at 2°C, as well as increased exacerbation of coastal impacts throughout the tropical Pacific due to changes in the frequency of extreme La Niña events[236].

111. Above 1.5°C GWL, losses and damages as well as adaptation limits which are already strongly concentrated among vulnerable populations such as those living on small islands will become increasingly difficult to avoid (*high confidence*)[237]. For example, above 1.5°C GWL, limited freshwater resources will generate hard adaptation[238] limits (already beginning at 1.1°C GWL) for small islands (and regions dependent on glacier and snow melt) (*medium confidence*)[239]. Additionally, ecosystems found on small islands, such as warm-water coral reefs, rainforests, coastal wetlands and mountain ecosystems, are expected to reach or surpass hard adaptation limits—and as a consequence, some Ecosystem-based Adaptation ("EbA") measures will no longer be viable, while many of the remaining EbAs will likely become less effective (*high confidence*)[240].

235 *Id*.

236 *Id*., pp. 234–235; *id*., "Chapter 4: Strengthening and Implementing the Global Response", p. 356.

237 IPCC, "Longer Report", *Sixth Assessment Synthesis Report* (2023), p. 64.

238 Hard adaptation limit means that adaptive actions are possible to avoid intolerable risks.

239 IPCC, Working Group II, "Summary for Policymakers", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 26.

240 IPCC, "Summary for Policymakers", *Sixth Assessment Synthesis Report* (2023), p. 20.

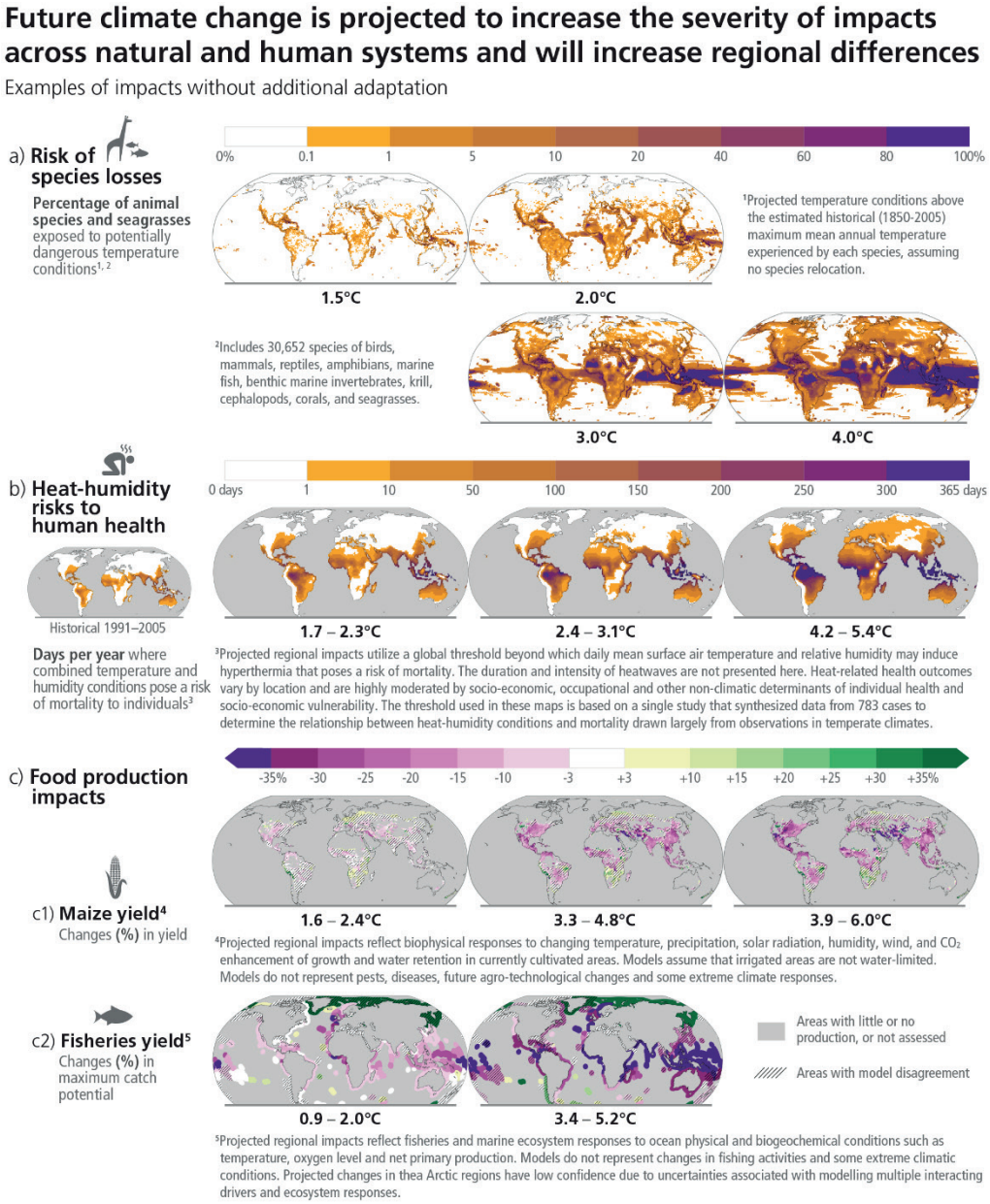


Figure 11: Future climate change is projected to increase the severity of impacts across natural and human systems and will increase regional differences[241].

112. At 2°C GWL, Climate Impact-Drivers (CIDs)[242] are projected to increase when compared to 1.5°C, which will lead to larger adverse changes[243]. For small islands, a 2°C GWL would mean further intensification of climate-related risks which are already disproportionately higher than most regions across the globe at a 1.5°C GWL. Projections

241 *Id*., "Summary for Policymakers", *Sixth Assessment Synthesis Report* (2023), figure SPM.3.

242 Climate Impact-Drivers are physical climate system conditions (e.g., means, events, extremes) that affect an element of society or ecosystems.

243 IPCC, Working Group I, "Summary for Policymakers", *Sixth Assessment Report: The Physical Science Basis* (2021), p. 24; *see also* IPCC, "Chapter 3: Impacts of 1.5°C of Global Warming on Natural and Human Systems", *Special Report: Global Warming of 1.5°C* (2018), pp. 210–212, table 3.2.

include (but are not limited to) intensification of frequent heavy precipitation and associated flooding events in the Pacific Islands (*medium to high confidence*), continued intensification of tropical cyclones (*medium confidence*), increases in frequency and/or severity of agricultural and ecological droughts in the Caribbean (*medium confidence*)[244].

113. Additionally, it is *very likely to virtually certain* that increased Relative Sea Level Rise ("RSLR")[245] will continue throughout the 21st century, and this will contribute to increases in both the frequency and severity of coastal flooding on small islands (*high confidence*)[246]. Threats related to SLR such as flooding, permanent inundation, salinization, erosion and pressure on ecosystems are expected to persist well beyond the 21st century, becoming more challenging at 2°C compared to 1.5°C GWL[247]. Further, projections under *all scenarios* suggest that, due to RSLR, current 1-in-100-year extreme sea level events are likely to occur *at least* annually in more than half of all tide gauge locations by 2100 (*high confidence*)[248]. Even if GWL is stabilized at 1.5°C, it is *virtually certain* that SLR will continue to rise up to and beyond 2100[249], but decreasing GHG emissions will slow *rates* of SLR by the end of the century—which will allow more time for the human and ecological systems of small islands to adapt to rising sea levels (*medium confidence*)[250].

114. Marine systems and associated livelihoods are also expected to become more adversely impacted at 2°C than at 1.5°C (*medium to high confidence*)[251]. In particular, higher coral reef mortality levels projected at 2°C would cause dramatic reductions for a range of ecosystem services provided to human populations ranging from protection services to provision of livelihoods and food[252].

115. It is also noteworthy that the very low and low GHG emissions reduction scenarios would strongly limit the change of several CIDs—including increases in the frequency of extreme sea level events, heavy precipitation and exceedance of dangerous heat thresholds (*high confidence*)[253].

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244 IPCC, Working Group I, "Summary for Policymakers", *Sixth Assessment Report: The Physical Science Basis* (2021), p. 24.

245 Relative sea-level rise incorporates land movement. *See* IPCC, Working Group II, "Chapter 15: Small Islands", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 2050.

246 IPCC, Working Group I, "Summary for Policymakers", *Sixth Assessment Report: The Physical Science Basis* (2021), p. 25.

247 IPCC, "Summary for Policymakers", *Sixth Assessment Synthesis Report* (2023), p. 234.

248 *Id*., p. 13.

249 *Id*.

250 IPCC, "Chapter 3: Impacts of 1.5°C of Global Warming on Natural and Human Systems", *Special Report: Global Warming of 1.5°C* (2018), p. 178; *see also* IPCC, "Summary for Policymakers", *Sixth Assessment Synthesis Report* (2023), p. 19.

251 IPCC, "Summary for Policymakers", *Special Report: Global Warming of 1.5°C* (2018), pp. 7–8; IPCC, "Chapter 3: Impacts of 1.5°C of Global Warming on Natural and Human Systems", *Special Report: Global Warming of 1.5°C* (2018), p. 235.

252 IPCC, *Chapter 3: Impacts of 1.5°C of Global Warming on Natural and Human Systems*, SPECIAL REPORT: GLOBAL WARMING OF 1.5°C (2018), p. 235.

253 IPCC, Working Group I, "Summary for Policymakers", *Sixth Assessment Report: The Physical Science Basis* (2021), p. 31.

116. The IPCC has concerningly stated that "[p]athways reflecting [current nationally stated mitigation ambitions as submitted under the Paris Agreement] would not limit global warming to 1.5°C, even if supplemented by very challenging increases in the scale and ambition of emissions reductions after 2030 (*high confidence*)"[254].

117. Even more recently, the IPCC has concluded with high confidence that "[p]rojected CO_2 emissions from existing fossil fuel infrastructures without additional abatement would *exceed the remaining carbon budget* for 1.5°C"[255]. Limiting warming to 1.5°C or 2°C, would require achieving net zero CO_2 emissions and further reduction of non-CO_2 GHG emissions (*high confidence*)[256]. The Secretariat of the United Nations Framework Convention on Climate Change ("UNFCCC") concluded in September 2023 that achieving net zero CO_2, in turn, "requires systems transformations across all sectors and contexts, including scaling up renewable energy *while phasing out all unabated fossil fuels*, ending deforestation, reducing non-CO2 emissions and implementing both supply- and demand-side measures"[257]. More specifically, the IPCC assesses that, to achieve at least a 50 percent chance of limiting warming to 1.5ºC, GHG emissions must be reduced (as measured against 2019 levels) by at least 43 percent by 2030, 60 percent by 2035, 69 percent by 2040, and 84 percent by 2050[258]. Countries—including those at the 28th Conference of the Parties of the UNFCCC ("COP28") in 2023—have never reached a specific, binding agreement for how to achieve these urgently needed emissions reductions despite consistently endorsing the science behind them.

2. Overshoot

118. As mentioned above, overshoot of the 1.5°C limit would increase adverse impacts, some of which will be abrupt and/or irreversible. It would also cause additional risks for both human and natural systems—compared to staying below the 1.5°C limit—and these risks are expected to increase with the *duration* and *magnitude* of the overshoot (*high confidence*)[259]. In an overshoot scenario, both natural and human systems would be exposed to greater and more widespread climate impact-drivers such as extreme precipitation and heat—which would increase risks to low lying coastal settlements (such as on many small islands) and associated infrastructure and livelihoods (*high confidence*)[260].

119. Overshooting 1.5°C would also lead to irreversible adverse impacts on ecosystems with low resilience such as coastal, mountains and polar ecosystems—which would become further impacted by the melting of ice sheets and glaciers and/or by accelerating and higher locked-in sea level rise (*high confidence*)[261]. Irreversible changes include the extinction of species and/or the irreversible loss of ecosystems such as coral reefs (*very high confidence*)

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254 IPCC, "Summary for Policymakers", *Special Report: Global Warming of 1.5°C* (2018), p. 18.

255 IPCC, "Summary for Policymakers", *Sixth Assessment Synthesis Report* (2023), p. 20.

256 *Id*.

257 UNFCCC Secretariat, Technical Dialogue of the First Global Stocktake: Synthesis Report by the Co-Facilitators on the Technical Dialogue, document FCCC/SB/2023/9 (8 September 2023), ¶ 17 (emphasis added).

258 IPCC, "Summary for Policymakers", *Sixth Assessment Synthesis Report* (2023) (Dossier No. 78), p. 21 (Table SPM.1).

259 IPCC, "Longer Report", *Sixth Assessment Synthesis Report* (2023), p. 53.

260 *Id*.

261 *Id*.

and forests (*medium confidence*)[262]. Some of these risks that are associated with largescale singular events (or tipping points) are projected to transition to *high risk* between 1.5°C to 2.5°C (*medium confidence*)[263].

120. Additionally, these adverse impacts caused during the period of overshoot may likely cause additional warming due to the weakening of natural land carbon sinks by increasing emissions even further from increased wildfires, drying of peatlands, mass mortality of trees and the thawing of permafrost[264]. These would make returning to the 1.5°C limit even more challenging (*medium confidence*)[265].

121. Further, while it is virtually certain that global mean sea-level rise will continue in the 21st century, the *rate*, the *magnitude*, the *timing* of exceedance thresholds and the length of time that sea level will continue to rise depend on GHG emissions—with higher emissions leading to faster rates and greater magnitudes of SLR[266]. There is *high confidence* that both the rate and probability of ice mass loss will increase with higher global surface temperatures[267]. Global mean sea-level could rise by approximately two to three metres if the GWL is limited to 1.5°C, and 2 to 6 metres if it is limited to 2°C (*low confidence*)[268]—which would adversely impact ecosystems, people and infrastructure on low-lying coastlines such as on small islands[269]. Around 3 million years ago, when global temperatures were 2.5°C to 4°C higher than 1850-1900, it is *very likely* that global mean sea level was five to 25 metres higher than today (*medium confidence*)[270].

IV. Adaptation

122. The extreme risk of serious harm that climate change poses on small island communities makes adaptation critical to sustain life on small islands. Despite the importance of adaptation, however, the IPCC has concluded: "Small islands present the most urgent need for investment in capacity building and adaptation strategies (*high confidence*) but face barriers and constraints which hinder the implementation of adaptation responses."[271] Furthermore, as small islands reach adaptation limits due to increasing warming, adaptation options are further restrained. Accelerated adaptation actions are thus urgently needed to improve adaptation outcomes and to build resilience in small islands[272]. But these actions are

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262 *Id*., p. 42.

263 *Id*.; IPCC, "Summary for Policymakers", *Sixth Assessment Synthesis Report* (2023), p. 19.

264 IPCC, "Longer Report", *Sixth Assessment Synthesis Report* (2023), p. 53.

265 IPCC, "Summary for Policymakers", *Sixth Assessment Synthesis Report* (2023), p. 24; *id*., "Longer Report", p. 54.

266 IPCC, Working Group II, "Chapter 17: Decision-Making Options for Managing Risk", *Sixth Assessment Synthesis Report: Impacts, Adaptation, and Vulnerability* (2022), pp. 2578–2580.

267 IPCC, "Longer Report", *Sixth Assessment Synthesis Report* (2023), p. 42.

268 *Id*.

269 *Id*., p. 43.

270 *Id*., pp. 42–43.

271 IPCC, Working Group II, "Chapter 15: Small Islands", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 2047.

272 *Id*.

not enough; to effectively reduce climate-related risks, they must be taken in parallel with mitigation[273].

A. Adaptation and Mitigation Needed in Parallel to Achieve Effective Resilience

123. Adaptation[274] to changing climate plays a critical role in reducing climate-related risks—along with mitigation (and sustainable development). Mitigation[275] via emissions reductions and removal of carbon from the atmosphere will reduce atmospheric GHG forcing[276] and the climate hazards which result from this forcing; while in parallel, adaptation and sustainable development will reduce risk, vulnerability and exposure to these climate hazards—strengthening resilience, enhancing well-being and the capacity to anticipate and successfully respond to future changes[277].

124. Because climate change is impacting different peoples, communities and nature in varying ways, adaptation goals are often diverse and not straightforward[278]. The IPCC notes that current observed impacts and projected future risks of changing climates (e.g., unprecedented and more frequent floods and droughts, longer and stronger heatwaves, accelerating SLR and associated storm surges, increasingly intense TCs) make climate action a matter of urgency for many people around the world[279]. This is especially the case for regions and communities who are already facing higher risks and vulnerability—such as small islands and coastal communities as well as those who are marginalised and/or face poverty[280].

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273 IPCC, Working Group II, "Chapter 1: Point of Departure and Key Concepts", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), pp. 127, 175.

274 Adaptation means: "In human systems, the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects." IPCC, Working Group II, "Annex II: Glossary", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 2898.

275 Mitigation (of climate change) refers to a "human intervention to reduce emissions or enhance the sinks of greenhouse gases". *Id*., p. 2915.

276 Any deviation from a state of "energy equilibrium"—that is, where the amount of energy (in the form of solar radiation) entering the Earth's atmosphere is different from the amount of energy that leaves it—is referred to as a *radiative forcing*. When more energy is entering the atmosphere than is leaving it, as is the case today, the atmosphere warms. GHGs absorb some incoming solar radiation and hence, *GHG forcing* refers to the radiative forcing attributed to greenhouse gases within the atmosphere. Increasing GHG concentrations within the atmosphere is leading to an increasingly positive forcing, i.e. an increasing amount of heat (radiation) absorbed by the atmosphere, and hence the climate system. *See* IPCC, Working Group I, "Annex VII: Glossary", Sixth Assessment Report: The Physical Science Basis (2021), p. 2245 ("The change in the net, downward minus upward, radiative flux (expressed in W m–2) due to a change in an external driver of climate change, such as a change in the concentration of carbon dioxide (CO2) . . . .").

277 IPCC, Working Group II, "Chapter 1: Point of Departure and Key Concepts", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 197.

278 *Id*., p. 177.

279 *Id*., p. 178.

280 *Id*.

125. Evidence indicates that many natural systems are not adapting at a sufficient rate to retain resilience[281] in the face of both current and projected future changes in climate[282]. Similarly, for human systems, multiple lines of evidence suggest that within many regions (such as small islands) and sectors—policies, practices, institutions, and infrastructure remain inadequate, leading to adaptation insufficient to achieve effective resilience[283].

126. Indeed, despite both national and international policies as well as legal instruments and frameworks currently supporting the planning and implementation of adaptation efforts (*medium confidence*), evidence clearly suggests that current levels of adaptation are not enough to help ensure sustainable development and other goals in communities across the world—*even under the most optimistic scenarios for GHG reduction*[284]. The IPCC has concluded that climate change adaptation is urgent because reducing climate risk to levels that avoid threatening private or social norms and ensuring sustainable development requires immediate and long-term action by multiple parties including governments, civil societies, businesses and individuals—at a *significantly greater scale and speed* than current trends[285].

127. Current adaptation efforts generally focus on adaptation planning instead of implementation, with most current implementation efforts being "fragmented, small in scale, incremental, sector-specific, designed to respond to current impacts or near-term risks … (*high confidence*)"[286]. Additionally, there is *high confidence* that implemented adaptation is not equally distributed across regions, driven at least partially by cost and inadequate allocation of finance. Indeed, the largest adaptation gaps continue to occur among lower income populations (*high confidence*)[287]. As such, most ongoing adaptation efforts are not transformational because their piecemeal design and unequal distribution do not allow for (socio-ecological) system-wide action in anticipation of changing climate and its impacts[288].

128. Given that, by nature, many adaptation efforts tend to (*1*) require long time scales and (*2*) have potential to reduce longer-term costs with near-term actions. Closing existing adaptation gaps requires accelerated adaptation actions over the next few years (i.e. *in this decade*)—at a scale and speed significantly faster than is occurring today[289]. This is particularly relevant and urgently required within the small islands context as, apart from no evidence of transformational adaptation reported[290], they are disproportionately susceptible to climate-related risk, exposure, vulnerability and already occurring losses and damages to both

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281 The capacity of interconnected social, economic and ecological systems to cope with a hazardous event, trend, or disturbance, responding or reorganizing in ways that maintain their essential function, identity and structure. Resilience is a positive attribute when it maintains capacity for adaptation, learning and/or transformation (Arctic Council, 2016). IPCC, Working Group II, "Annex II: Glossary", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 2920.

282 IPCC, Working Group II, "Chapter 16: Key Risks Across Sectors and Regions", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 2431.

283 *Id*., pp. 2433–2437.

284 *Id*., "Chapter 1: Point of Departure and Key Concepts", p. 178.

285 *Id*., pp. 130, 178.

286 *Id*., "Summary for Policymakers", p. 20.

287 *Id*.

288 *Id*.

289 *Id*., "Chapter 17: Decision-Making Options for Managing Risk", p. 2619.

290 *Id*., p. 2561.

natural and human systems. Failure to implement strong and transformative adaptation actions will exacerbate adverse impacts and very likely impair the habitability and resilience capacities of some islands (*high confidence*)[291].

129. However, adaptation alone is not enough to reduce climate-related risk to levels sufficient to achieve effective resilience. Parallel mitigation towards the reduction of GHG forcing within the atmosphere is critical to not only keep risks within such levels, but also to reduce the extent of adaptation needed to do so[292]. Apart from the potential of rapid global mitigation to buy time for much needed adaptation[293], the implementation of mitigation and adaptation together (combined with broader sustainable development goals) in *this decade* would result in multiple benefits for both human populations and ecosystem/planetary health (*high confidence*)[294]. Such accelerated climate action can provide co-benefits; for example, mitigation actions would confer health benefits through lower air pollution; while adaptation efforts could also result in multiple benefits such as (but not limited to) improved food security, livelihoods, agricultural productivity and biodiversity conservation (*very high confidence*)[295].

130. As such, *deep, rapid and sustained* mitigation in parallel with *accelerated* adaptation actions are critical for providing "a liveable and sustainable future for all"[296]. Delayed or inadequate mitigation will further increase global warming, which will result in increased losses and damages in addition to further natural and human systems reaching adaptation limits. Apart from increasing losses and damages, delayed and inadequate adaptation and mitigation actions will also increase the risk of cost escalation, stranded assets, the lock-in of infrastructure and the reduced feasibility and effectiveness of present and future adaptation and mitigation options—disproportionately impacting small islands and other vulnerable regions and populations across the world (*high confidence*)[297].

B. Adaptation Limits with Increasing Global Warming Levels

131. With increasing global warming, adaptation options that are feasible today will become both more constrained and less effective. For the IPCC, an "adaptation limit" is the "point at which an actor's objectives . . . cannot be secured from intolerable risks through adaptive actions"[298]. Soft adaptation limits are those where "[o]ptions . . . are currently not available to avoid intolerable risks through adaptive action"; hard limits are those where "*no* adaptive action" can avert intolerable risks[299]. Even at the current 1.1°C global warming, and despite adaptation efforts currently buffering some climate impacts, soft and hard limits to adaptation have already been reached or are being approached within some sectors and

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291 *Id*., "Chapter 16: Key Risks Across Sectors and Regions", p. 2488.

292 *Id*., "Chapter 1: Point of Departure and Key Concepts", p. 127.

293 *Id*., "Chapter 2: "Terrestrial and Freshwater Ecosystems and Their Services", p. 2183.

294 IPCC, "Longer Report", *Sixth Assessment Synthesis Report* (2023), p. 76.

295 *Id*., pp. 22, 76.

296 *Id*., p. 68.

297 *Id*., p. 82; IPCC, Working Group II, "Summary for Policymakers", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 22.

298 IPCC, Working Group II, "Annex II: Glossary", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 2898.

299 *Id*. (emphasis added).

regions such as small islands (*high confidence*)[300]. The IPCC has *high confidence* that this will result in increased losses and damages—concentrated among the poorest and most vulnerable populations such as on small islands[301].

132. Hard adaptation limits[302] are already (i.e., below 1.5°C) being reached in some ecosystems such as some warm water coral reefs, some rainforests, some coastal wetlands as well as some polar and mountain ecosystems (*high confidence*)[303]. This is particularly true for ecosystem-based adaptation strategies, adaptation techniques which leverage "biodiversity and ecosystem services as part of an overall adaptation strategy" by "us[ing] the range of opportunities for the sustainable management, conservation, and restoration of ecosystems to provide services that enable people to adapt to the impacts of climate change"[304]. As these ecosystems begin to reach hard adaptation limits at 1.5°C, some related ecosystem-based adaptation strategies will become vulnerable to increasing climate impacts and will lose their effectiveness in providing benefits to human populations (*high confidence*)[305]. Above 1.5°C, small islands and regions dependent on snowmelt and glaciers will face hard adaptation limits due to limited freshwater resources[306].

133. Soft limits[307] to adaptation occur when intolerable risks or impacts may occur, however, these can be abated, reduced or avoided by additional (incremental or transformational) adaptation efforts. These additional adaptation efforts often include social, legal, policy, financial and/or management interventions which "alter human behaviour and support adaptive governance, contributing to improved adaptation capacity, increased awareness, and change in values and actions on climate change issues"[308]. Soft limits have already (i.e., under current 1.1°C GWL) been reached by households and individuals in low-lying coastal areas such as small islands as well as smallholder farmers in Africa, Europe, Central, and South America and Asia due to financial, policy, governance, and institutional constraints[309]. Unlike with hard adaptation limits, many of these soft adaptation limits can be overcome by addressing these constraints (*high confidence*)[310]. Additionally, there is high confidence that transitioning from incremental to transformational (system-wide) adaptation

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300 IPCC, Working Group II, "Summary for Policymakers", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 26.

301 *Id*.

302 Hard adaptation limits occur when no adaptive actions are possible to avoid intolerable risks. *Id*., "Annex II: Glossary", p. 2898. Intolerable risks are those which threaten a social or private norm such as public safety, continuity of traditions, cultural values, livelihoods, etc. despite adaptive actions taken. *Id*., "Chapter 1: Point of Departure and Key Concepts".

303 *Id*.

304 IPCC, Working Group II, "Annex II: Glossary", *Fifth Assessment Report: Impacts, Adaptation, and Vulnerability* (2014), p. 1764.

305 IPCC, Working Group II, "Summary for Policymakers", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 26.

306 *Id*.

307 Soft adaptation limits describe situations where "options may exist but are currently not available to avoid intolerable risk through adaptive actions". *Id*., "Annex II: Glossary", p. 2898.

308 *Id*., "Chapter 8: Poverty, Livelihoods and Sustainable Development", p. 1253.

309 *Id*., "Summary for Policymakers", p. 26.

310 *Id*.

actions will help to abate soft adaptation limits, as will the implementation of cross-cutting multisectoral adaptation actions that are integrated, flexible and inclusive[311].

134. Sea level rise in particular poses a distinctive and severe adaptation challenge, particularly for low-lying coastal areas such as small islands, because it requires facing both slow-onset changes, as well as extreme sea-level events which are increasing in both frequency and magnitude (*high confidence*)[312]. As SLR and extreme events intensify, small islands and coastal communities will face increasing adaptation limits due to institutional, socioeconomic and financial constraints in conjunction with short timelines for the implementation of adaptation measures—resulting in reduced coastal protection, loss of life and economic damages (*medium confidence*)[313]. Adaptation actions to respond to such challenges will be needed much earlier under high rates of SLR (from increasing GHG emissions) (*high confidence*)[314]. Additionally, ecosystem-based adaptation strategies for SLR—such as wetland preservation, which reduces costs for flood defences—are expected to face site-specific physical limits above 1.5°C (*high confidence*) and will lose their effectiveness at high rates of SLR that exceed 0.5 to 1 cm yr^{-1} (*medium confidence*)[315]. Further, as the pace and scale of SLR increases beyond 2050, adaptation limits are likely to be exceeded—resulting in existential risks for some small islands and low-lying coastal areas (see Figure 12 below)[316].

311 *Id*.; *see also id*., "Chapter 16: Key Risks Across Sectors and Regions", p. 82.

312 IPCC, Working Group II, "Summary for Policymakers", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 25.

313 *Id*., "Technical Summary", pp. 84–85.

314 *Id*., "Summary for Policymakers", p. 25.

315 IPCC, "Longer Report", *Sixth Assessment Synthesis Report* (2023), pp. 43–44.

316 *Id*., p. 45, figure 3.4.

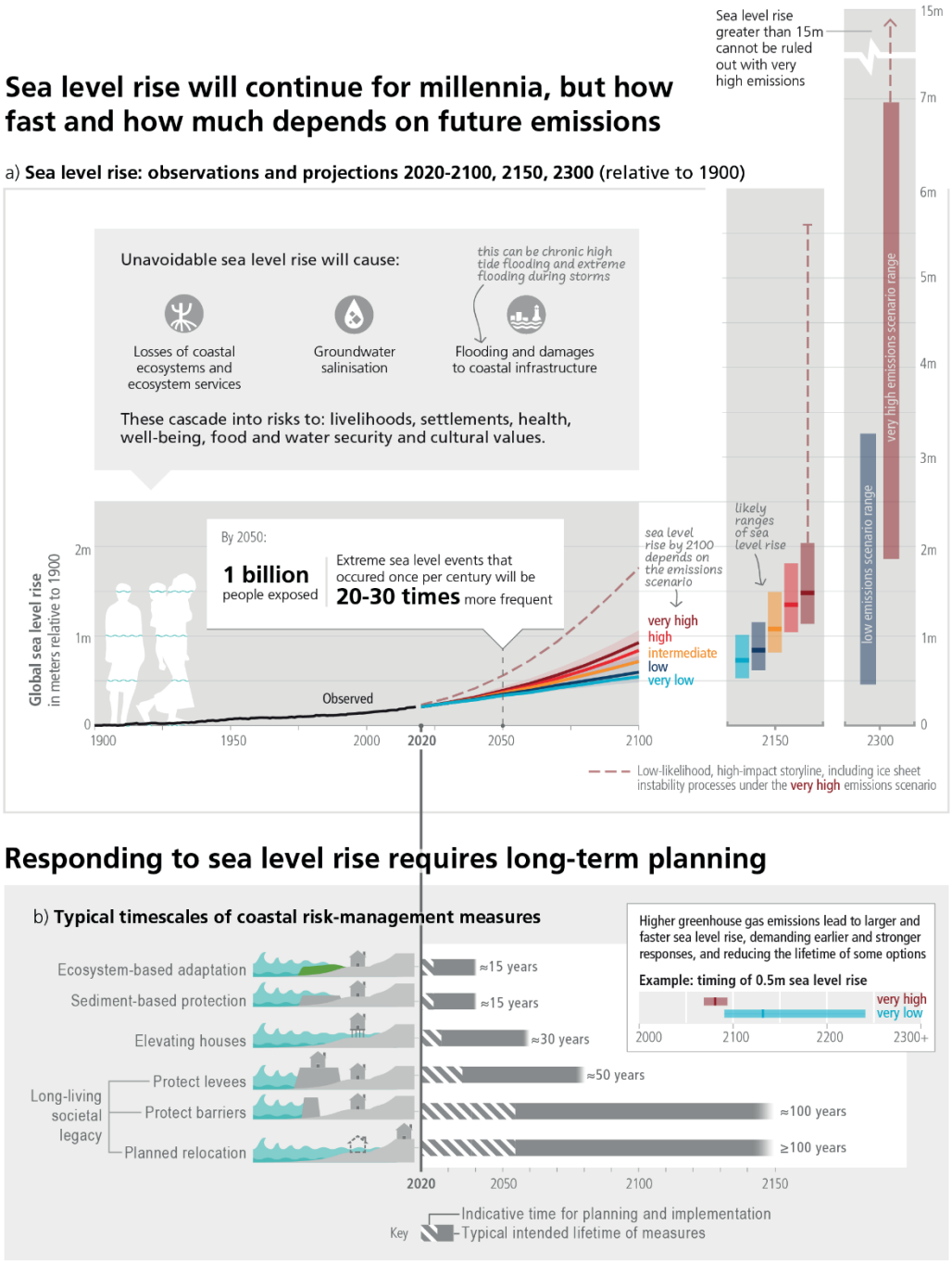


Figure 12: Increase in Sea Level Rise and Adaptation[317].

C. NEED FOR DATA TO SUPPORT ADAPTATION ON SMALL ISLANDS

135. There is an urgent need for data to support adaptation planning and implementation on small islands. Without adequate data, accelerated and scaled adaptation planning and implementation on small islands remains severely impaired. As mentioned at Section II above, there is a severe and chronic paucity of data and research required to inform the development and implementation of robust adaptation action. Paucities of research and data

317 IPCC, "Longer Report", *Sixth Assessment Synthesis Report* (2023), Figure 3.4.

related to (*1*) tolerable versus intolerable risk levels and hard/soft adaptation limits, (*2*) pathways from incremental towards transformational adaptation, and (*3*) the ability to directly attribute changing climate to migration decisions continue to prevent the development of localised, context specific adaptation strategies. Without such strategies, local island communities will continue to be ill prepared and unable to adequately adjust to already occurring changes[318].

136. Low technical capacities together with poor data availability and quality have been reported as limiting adaptation within Caribbean islands such as Trinidad and Tobago, Dominica, and Saint Vincent and the Grenadines[319]. For example, the unavailability of information critical to fisheries has been noted as a significant challenge in Dominica—which directly debilitates its fisheries management and its ability to build capacity to process and use such information for *evidence-based decision making*[320].

137. This urgent need for robust data and research to support adaptation is further compounded by the fact that some small island nations, such as Kiribati, consist of multiple islands which are spread across large distances—with enormous heterogeneity of habitat and local conditions. As such, adaptation requirements can often vary greatly across multiple locations for a given small island nation. Without adequate data, the complexity of projections required for adaptation planning and implementation at multiple locations cannot be robustly developed for small islands[321].

138. There is also very limited data that specifically focus on the future impacts small islands will face at 1.5°C vs 2°C GWL[322]. This can be linked back to the lack of adequately downscaled future climate data from the most recent suite of climate models, which reduces their ability to develop robust projections of regional, national and sectoral impacts. This makes it more difficult for these nations to (*i*) assess future losses and damages that will arise as GWL exceeds 1.5°C, (*ii*) understand when adaptation limits will be reached and (*iii*) switch from incremental to transformational adaptation strategies[323].

V. Financial Considerations

139. Financial constraints have been identified as one of the most important and common factors that limits adaptation across small islands (and other regions and sectors) (*high confidence*)[324]. Not only are small islands facing increasing costs due to the pervasive harm of climate change, but they are also grappling with eroding capacities and resources to address those resulting losses and damages.

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318 IPCC, Working Group II, "Chapter 15: Small Islands", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), pp. 2094–2095.

319 *Id*., p. 2087.

320 *Id*.

321 *Id*., p. 2047.

322 *See, e.g.*, IPCC, "Chapter 3: Impacts of 1.5°C of Global Warming on Natural and Human Systems", *Special Report: Global Warming of 1.5°C* (2018), p. 235.

323 IPCC, Working Group II, "Chapter 15: Small Islands", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), pp. 2077, 2094–2095.

324 *Id*., "Chapter 16: Key Risks Across Sectors and Regions", p. 2415.

A. Poor Global Financial Flows: a Major Constraint to Adaptation

140. There are increasing disparities between estimated costs of adaptation and global finance allocation to adaptation (*high confidence*)[325]. Despite global tracked finance showing an upward trend over the recent decade, less than 20 percent of this is currently allocated to adaptation, with the vast majority going to mitigation (*very high confidence*)[326]. As such, current global flows are insufficient to support effective adaptation and constrain the implementation of adaptation options—particularly in developing nations such as many small islands (*high confidence*)[327]. This financial constraint for adaptation is further compounded by ongoing adverse climate impacts (and resulting losses and damages) to small islands which reduce financial availability of already limited national resources (*medium confidence*)[328].

141. To achieve global climate goals, a many-fold increase in financing is needed for both adaptation and mitigation. However, while there is sufficient global capital to close existing financial gaps, there are barriers to redirecting global capital towards climate action[329]. Indeed, there is *high confidence* that both public and private finance flows for fossil fuels *continue to be greater than those for climate adaptation and mitigation*[330]. Moreover, the larger proportion of global tracked climate finance that is allocated towards mitigation also falls short of the levels of funding required to limit GWL to below 2°C or to 1.5°C *across all sectors and regions* (*medium confidence*)[331]. Further, in 2018, climate finance flows from developed to developing countries were significantly below the collective goal to mobilise USD100 billion per year by 2020 under the UNFCCC and the Paris Agreement (*medium confidence*)[332].

142. Increased finance is required to (i) address soft limits to adaptation and increasing climate-related risk as well as (ii) avert related losses and damages, particularly in vulnerable countries such as small island nations (*high confidence*)[333]. Additionally, apart from enhanced mobilisation of, and access to, increased finance, capacity building is also essential to implement adaptation actions, and close existing adaptation gaps—particularly for the most vulnerable groups (e.g. marginalised communities), sectors and regions (e.g., small islands) (*high confidence*)[334].

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325 IPCC, "Longer Report", *Sixth Assessment Synthesis Report* (2023), p. 29.

326 IPCC, Working Group III, "Chapter 15: Investment and Finance", *Sixth Assessment Report: Mitigation of Climate Change* (2022), pp. 1564, 1610; *see also* IPCC, Working Group II, "Cross-Chapter Box: Finance", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022).

327 IPCC, "Longer Report", *Sixth Assessment Synthesis Report* (2023), p. 23.

328 *Id*., p. 23.

329 *Id*., p. 80.

330 *Id*., p. 29.

331 *Id*. ("Average annual modelled mitigation investment requirements for 2020 to 2030 in scenarios that limit warming to 2°C or 1.5°C are a factor of three to six greater than current levels, and total mitigation investments (public, private, domestic and international) would need to increase across all sectors and regions (*medium confidence*).")

332 *Id*., pp. 28–29.

333 *Id*., p. 80.

334 *Id*.

143. There is *high confidence* that Nationally Determined Contributions (NDCs) made pursuant to the Paris Agreement have been key drivers of national adaptation planning, with cascading effects on sub-national and sectoral adaptation action[335]. It is noteworthy that nearly all developing countries, and particularly small island nations that have included adaptation as a component within their NDCs, do so with the view that adaptation is the most urgent component of their national climate response[336]. However, high proportions of the adaptation contributions within the NDCs of developing countries are *conditional on external financial support*—highlighting the crucial role that international finance plays in whether, or to what extent, the climate risks faced by these nations can be addressed (*high confidence*)[337].

144. Finally, there are increasing concerns among policy- and decision-makers in small islands regarding the current levels and forms that funding takes when it is available[338]. For example, nearly 75 percent of adaptation finance flows to the Atlantic and Indian Ocean[339]. The provision of finance to small islands has taken the form of concessional loans, while grants accounted for the remaining 25 percent, whereas in the Caribbean, around 38 percent of adaptation financing were in the form of concessional loans and 62 percent in the form of grants[340]. There have also been reports on limited autonomy given to receiving nations due to a lack of donor flexibility, with the latter preferencing their own priorities—which may not always fit with the priorities or context of the recipient country[341]. Further, direct budget support is rare; for example, 86 percent of aid in the Pacific took the form of project-based support, which has been known to undermine long-term sustainability of adaptation interventions[342].

145. However, despite all the above, there is *high confidence* that a sustainable, post-pandemic recovery over the long-term through increased finance flows (for developing countries from developed countries and other sources) over *this decade* can accelerate climate action—including developing regions such as small islands that face debt distress, debt costs and macroeconomic uncertainty (*high confidence*)[343].

B. Losses and Damages Caused by Climate Change and the "Unvirtuous Cycle"

146. As temperatures continue to increase, small island nations are incurring high economic costs relative to GDP from extreme events, particularly tropical cyclones. These are expected to have negative long-term implications for state budgets[344]. While inter-island heterogeneity across small islands globally implies that these nations do not have uniform

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335 IPCC, Working Group II, "Chapter 17: Decision-Making Options for Managing Risks", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), p. 2542.

336 *Id*.

337 *Id*.

338 *Id*., "Chapter 15: Small Islands", p. 2089.

339 *Id*.

340 *Id*.

341 *Id*., p. 2087.

342 *Id*., p. 2089.

343 IPCC, "Longer Report", *Sixth Assessment Synthesis Report* (2023), p 82.

344 IPCC, Working Group II, "Chapter 15: Small Islands", *Sixth Assessment Report: Impacts, Adaptation, and Vulnerability* (2022), pp. 2045, 2067; *see also id*., "Chapter 8: Poverty, Livelihoods and Sustainable Development", p. 1183.

climate risk profiles (*high confidence*), research into the national communications among 19 Small Island Developing States revealed that financial constraints and poor resource endowments were among the factors most frequently cited as inhibiting adaptation across a spectrum of climate impacts[345].

147. The costs incurred from losses and damages to many small island economies, particularly from extreme events, can deplete national capital reserves. As seen from the cascading and cumulative impacts of extreme events already occurring in the Caribbean and Pacific Small Island Developing States, these losses and damages can lead to an "unvirtuous cycle of climate-induced erosion of development and resilience"[346]. This cycle is well described within Chapter 15 of the Sixth Assessment Report:

> [A]ddressing loss and damage strains limited national resources, diverting public funding and other resources to address negative climate impacts. This in turn reduces resources and capacities which could be allocated to adaptation, building resilience and sustainable development, thereby increasing vulnerability to climate change and leading to further loss and damage where the cycle begins again.[347]

148. The mounting costs from this "unvirtuous" cycle impacts these islands' abilities to repay external debt and can therefore endanger their eligibility for accessing funding[348]. Additionally, the credit ratings of Small Island Developing States have recently begun including vulnerability to climate change—which may likely have negative impacts on their abilities to attract foreign investment, access concessional financing, or borrow funds[349]. As such, many of these nations are now in situations where they are facing increasing costs of climate change together with eroding capacities and resources to address losses and damages[350]. Among other concerns, this also raises questions regarding fairness and equity for small islands having to finance adaptation to adverse climate impacts—to which they have made negligible contributions[351].

149. Finally, it is noteworthy that questions remain as to insurance coverage for small islands. For example, some companies in Vanuatu do not cover damage from the sea or high tides and, hence, are of little help to properties damaged by storm surges from TCs[352]. There is also limited access to insurance schemes as a result of a smaller demand due to many people not having high cash-based incomes to cover insurance premiums[353].

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345 *Id*., "Chapter 16: Key Risks Across Sectors and Region", p. 2445.

346 *Id*., "Chapter 15: Small Islands", p. 2073.

347 *Id*.

348 *Id*.

349 *Id*.

350 *Id*.

351 *Id*., p. 2089.

352 *Id*.

353 *Id*.

VI. Conclusions

150. The IPCC's Sixth Assessment Report makes clear that climate change poses risks of serious harm to small islands, which already are experiencing climate impacts including sea-level rise, extreme climate events, disruption, and decline of ecosystems and their services, submergence and destruction of coastal settlements and infrastructure, destruction of livelihoods, water and food insecurity, and reduced human health outcomes. Given that large proportions of settlements, infrastructure, and other economic assets on small islands are often located close to the coast, island populations have experienced a wide array of significant losses, ranging from loss of human lives to economic assets and cultural heritage. The compounding, systemic nature of the risks and impacts that small islands are suffering makes it difficult for them to adapt, including by securing access to finance.

151. As temperatures and carbon dioxide levels continue to increase, it is likely that some small islands, especially low-lying islands, will become uninhabitable, and such reduced habitability is already occurring on some low-lying atoll islands of the Pacific and Indian Oceans. The future of small island populations will depend on the speed and magnitude with which global greenhouse gas emissions can be mitigated in combination with acceptable adaptation options for the populations of these islands. Above 1.5°C GWL, climate change poses meaningfully increased risks to small islands. Acceptable adaptation options are already limited in the small island context, and the number of these options is shrinking with increasing temperatures.

The opinions I have expressed represent my true and complete professional opinions on the matters to which they refer. I affirm that the written statement is true, correct, and materially complete.

(*Signed*)

Shobha Maharaj, D.Phil.

Appendix to Annex 2

CURRICULUM VITAE OF SHOBHA MAHARAJ, D.PHIL. (OXON.)

Shobha S. Maharaj (DPhil. Oxon)

Recent Research Experience

IPCC contributions

IPCC AR6, *2018 to 2023*
Lead Author, Small Islands Chapter (15), Working Group II
Lead Author, Biodiversity Hotspots Cross Chapter Paper (CCP1), Working Group II
Author, Summary for Policy Makers
Contributing Author, Key Risks across Sectors and Regions Chapter (16), Working Group II
Contributing Author, Technical Summary

- Detection and Attribution of slow and rapid onset climate impacts for Small Islands
- Key Risk assessment for Small Islands and global biodiversity hotspots
- Adaptation strategies – and associated limits - for Small Islands and global biodiversity hotspots
- Small Islands data gaps and consequences
- Co-developed 'Reasons for Concern' burning embers diagram for unique and threatened systems
- Assessment of mitigation strategies for mal-adaptation potential across global biodiversity hotspots
- Development of Box in CCP1 on terrestrial biodiversity on small islands
- Led internal white paper of Diversity, Equity and Inclusion issues faced by authors from the Global South and who are people of colour within Working Group II

IPCC AR5, *2011 to 2014*
Contributing Author, Small Islands Chapter (29), Working Group II

- Observed and projected climate impacts upon insular terrestrial ecosystems

IPCC-IPBES Report on Biodiversity and Climate Change, *2020 to 2021*

- Climate impacts, projections, adaptation and mitigation towards resilience of island biodiversity
- Climate-smart biodiversity adaptation towards resilience:
    - strategies across mountain and island environments and integration of climate refugia
    - global and regional integration of climate velocity metrics (Figure + Text)
- Incorporation – and limits -of Nature-based Adaptation into adaptation and mitigation strategies

Ecosystem Assessment for Grenada in support of IPBES contributions, *2020 to Present*
Coordinating Lead Author: Chapter 3 on Climate resilience (food and water security, disaster resilience, climate change adaptation/mitigation)

- Adaptation, mitigation and resilience options for resource limited scenarios within small islands: across terrestrial, freshwater, agricultural, coastal and marine environments
- Development of drivers, pressures, state, impact and response (DPSIR) models for varying small island environment types
- Sustainable bridging of human and natural systems within small island

Work Experience

Current position, *2022 to present*
Science Director,
73-4485 Kahilihili Street,
Kailua-Kona, HI 96740

- Ridge-to-Reef project development on Big Island, Hawaii
- Fintech: Development of a biodiversity 'measuring stick' to enable integration of biodiversity within global finance sector

Schulzstrße 13B, 85579 Neubiberg, Germany
Tel: +49 151 71081093; linkedin.com/in/shobhamaharaj; Twitter: @shobha_maharaj
e-mail: shobha.maharaj@schaffry.com

- Climate risk analyses and management to increase survival chances of global reforestation projects
- Leading education of company on Global South/North sensitivities and conflicts

Consultant, Factor Ideas for Change Consulting Group, *2019 to 2021*

Agriculture, Forestry and other Land Use (AFOLU) expert for the preparation of Trinidad and Tobago's Third National Contribution

- Overview, assessment and description of existing mitigation baseline for AFOLU sector
- Development of a suite of updated mitigation measures and actions for the AFOLU sector: reporting on emissions forecasts, methodologies and assumptions
- Development of Business as Usual (BaU) emissions scenario for the AFOLU sector

Climate Change and Biodiversity Researcher, University of the West Indies, Trinidad & Tobago, *2013 to 2019*

- Assessment of climate impacts upon biodiversity, ecosystem services and water availability for selected Caribbean Small Island Developing States (SIDS)
- Generation of ecological niche models to inform conservation planning, adaptation and resilience strategies for protected areas within the Caribbean SIDS
- Development of future narratives and adaptive policy design at both the small island and regional scales
- Training and local capacity building in field sampling techniques and local adaptive measures
- Advising of graduate students

Acting Curator, National Herbarium of Trinidad and Tobago, University of the West Indies, T&T, *2012 to 2013*

- Management of The National Herbarium of Trinidad and Tobago
- Initiated development of the research programme for National Herbarium by setting up collaborations with institutions at the local, regional and international levels
- Achieved several collaboration agreements including a Memorandum of Understanding between the University of the West Indies and the Government of India for the exchange and transfer of knowledge and technology in medicinal plant research
- Developed local and regional collaborations related to water availability and forest/ecosystem services

Project Manager: National Vegetation Inventory of Trinidad and Tobago, *2005 to 2008*

- Led a nationwide survey and collection of vascular plants within Trinidad and Tobago. Surpassed all expectations for number of specimens collected (in excess of 20,000 specimens)
    - This dataset is now considered as one of the most comprehensive, fine (spatial) resolution ever collected in the tropical world
- Capacity building: established, trained and led a team of National Foresters to conduct field surveys
- Re-established a previously defunct co-operation between the University of the West Indies and the National Forestry Division Trinidad and Tobago
- Trained team members, students and interested members of the public in field survey techniques

Education

DPhil (PhD), University of Oxford, United Kingdom, 2012.
'The Impact of Climate Change on the Small Island Developing States of the Caribbean'

MPhil, (Honours) Environmental Biology, University of the West Indies, Trinidad and Tobago, 2007.
'Land use change and River ecology in the Arima Valley, Trinidad'

BSc (Honours), Zoology and Botany, University of the West Indies, Trinidad and Tobago, 2000.

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Selected Publications

IPCC, 2022: Summary for Policymakers [H.-O. Pörtner, D.C. Roberts, E.S. Poloczanska, K. Mintenbeck, M. Tignor, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem (eds.)]. In: *Climate Change 2022: Impacts, Adaptation, and Vulnerability.* Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press.

Costello, M.J., M. Vale, W. Kiessling, **S. Maharaj**, J. Price, and G. Talukdar. 2022. Biodiversity Hotspots. *Climate Change 2022: Impacts, Adaptation and Vulnerability*. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.

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O'Neill, B. *et al.* including **S.Maharaj**. 2022. Key Risks Across Sectors and Regions. *Climate Change 2022: Impacts, Adaptation and Vulnerability*. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.

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Manes, S., Beckett, H., Costello, M.J., Debnath, A., Devenish-Nelson, E., Grey, K.A., Jenkins R., Khan, T. M., Kiessling, W., Krause, C., **Maharaj, S.S**., Midgley, G.F., Talukdar, G., Vale, M.M. 2021. Endemism increases species' risk to climate change in areas of global biodiversity importance. *Biological Conservation.*

Maharaj, S.S., H. Asmath, S. Ali, J. Agard, S.A. Harris and M. New. 2019. Assessing protected area effectiveness within the Caribbean under changing climate conditions: A case study of the small island, Trinidad. *Land Use Policy* 81: 185-193. https://doi.org/10.1016/j.landusepol.2018.09.030

Hosein, N.H., N. Austin, **S. Maharaj**, W. Johnson, L. Rostant, A. Ramdass and S. Rampersad. 2017. Utility of DNA barcoding to identify rare endemic vascular plant species in Trinidad. *Ecology and Evolution* 7(18): 7311-7333. https://doi.org/10.1002/ece3.3220

Baksh-Comeau, Y.S., **S.S. Maharaj**, C.D. Adams, S.A. Harris, D.L. Filer and W.D. Hawthorne. 2016. An annotated checklist of the vascular plants of Trinidad and Tobago with analysis of vegetation types and botanical 'hotspots'. *Phytotaxa* 250 (1): 001–431. https://doi.org/10.11646/phytotaxa.250.1

Maharaj, S.S. and New, M. 2013. Modelling individual and collective species response to climate change within Small Island States. *Journal of Biological Conservation,* 167: 283-291. https://doi.org/10.1016/j.biocon.2013.08.027

Selected talks and other online outreach

How will further global warming affect island biodiversity?

Launch of a cooperative audit on Climate Change Adaptation Actions, IDI & INTOSAI WGEA

Working with Nature for People and the Planet

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Annex 3

N. Schrijver, *Sovereignty over Natural Resources: Balancing Rights and Duties* (1997) (excerpt)

Sovereignty over natural resources

Balancing rights and duties

Nico Schrijver
Institute of Social Studies, The Hague

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VN

Goals and objectives for the exercise of permanent sovereignty

Claims regarding permanent sovereignty were initially motivated by efforts to reinforce the sovereignty of newly independent and other developing States.[78] Subsequently, claims regarding permanent sovereignty of peoples over natural resources were motivated by the desire to secure the benefits of natural-resource exploitation for non-self-governing peoples.[79]

Once most of the formerly colonial peoples had gained independence, emphasis shifted back to States as the main subjects invested with the right to permanent sovereignty, but with the injunction as the 1962 Declaration puts it that permanent sovereignty over natural wealth and resources '*must* be exercised' in the interest of the 'national development and the well-being of the people concerned'.[80] Likewise, subsequent resolutions increasingly emphasized that natural resources of developing countries must be utilized in the interest of development of those countries.[81]

Only a few references have been made to world economic interests, and most of them in an indirect way. The very first permanent sovereignty-related resolution (Resolution 523 (1952)) included as one of the objectives 'to further the expansion of the world economy'; the DD II Resolution (1970) pointed out that 'production policies should be carried out in a global context designed to achieve optimum utilization of world resources, benefiting both developed and developing countries';[82] and, finally, CERDS linked the right to association (and the right to form cartels) of primary commodity producers, a right sometimes claimed to arise from permanent sovereignty,[83] to 'the promotion of sustained growth of the world economy, in particular accelerating the development of developing countries'.[84] Such references are, however, the exception rather than the rule. The rule in permanent-sovereignty-related paragraphs of the NIEO resolutions is that they spell out vague objectives such as 'to safeguard these resources' (NIEO

[78] See the statement by Uruguay and Poland when they tabled proposals which finally resulted in the adoption of the first permanent-sovereignty-related GA Res. 523 and 626 in 1952. [79] For a discussion see chapter 2, pp. 49–51.

[80] Paragraph 1 of GA Res. 1803 (XVII), 14 December 1962 (emphasis added).

[81] See GA Res. 2158 (XXI), 25 November 1966.

[82] Paragraph 73 of GA Res. 2626 (XXV), 24 October 1970; see also para. 11.

[83] See para. 7 of GA Res. 3171 (XXVIII), 17 December 1973.

[84] Article 5 of CERDS reads: 'All States have the right to associate in organizations of primary commodity producers in order to develop their national economies, to achieve stable financing for their development and, in pursuance of their aims, to assist in the promotion of sustained growth of the world economy, in particular accelerating the development of developing countries. Correspondingly, all States have the duty to respect that right by refraining from applying economic and political measures that would limit it.'

Annex 3

Declaration) or none at all (Article 2 of CERDS), providing States with maximum discretion in the management of natural resources.

As regards the right to permanent sovereignty of peoples living under colonial or racial domination or foreign occupation, the primary objective undoubtedly has been 'to regain effective control over their natural resources'.[85] The objective of Decree I for the Protection of the Natural Resources of Namibia was indeed to secure 'for the people of Namibia adequate protection of the natural wealth and resources which is rightfully theirs'.[86]

It can be inferred from the series of environmentally relevant resolutions that States, as subjects of the right to permanent sovereignty, have increasingly been charged with the duty to manage the natural resources within their jurisdiction in an environmentally sound way or, in other words, in a sustainable way.[87]

Treaties which implicitly or explicitly formulate the right of permanent sovereignty hardly ever spell out its objectives. The Human Rights Covenants of 1966 provide that peoples may *for their own ends* dispose of their natural wealth and resources and that they should *enjoy and utilize* these fully and freely.[88] The African Charter on Human and Peoples' Rights of 1981 is slightly less general: 'This right shall be exercised in the exclusive interest of the people.'[89] It is further provided that States shall exercise this right 'with a view to strengthening African unity and solidarity'.[90]

Article 56 of the 1982 UN Convention on the Law of the Sea spells out that the sovereign right to natural resources is conferred upon States 'for the purpose of exploring and exploiting, conserving and managing the natural resources'. Innovative is the injunction enshrined in Article 193:

> States have the sovereign right to exploit their natural resources pursuant to their environmental policies and in accordance with their duty to protect and preserve the marine environment.

Finally, the two State Succession Conventions (1978 and 1983) contain provisions that agreements between the predecessor State and a newly independent State shall not infringe the principle of permanent sovereignty. They thus purport to provide newly independent States with maximum discretion (a *tabula rasa*)[91] as far as control over and management

[85] See GA Res. 3171 (XXVIII), 17 December 1973.
[86] Preamble. For a review of this Decree, see chapter 5, p. 147.
[87] See chapters 4 (pp. 120–42) and 10 (pp. 324–36).
[88] Article 1 and Arts. 25 and 47, respectively. [89] Article 21, para. 1. [90] Ibid., para. 4.
[91] See Vienna Convention on Succession of States in respect of Treaties, 23 August 1978, not yet in force, 17 ILM (1978), p. 1,488. The theory of *tabula rasa* is closely related to the 'Nyerere doctrine' named after the Tanganyikan prime minister who in 1961

of natural resources of their territories is concerned. This enables them to ensure that their peoples will fully benefit from the advantages to be derived from their natural resources.

Legal literature provides a fair account of the objectives to be pursued by the exercise of permanent sovereignty in the various periods of its evolution, as described in Part I of this study. For example, Hossain points out that:

> The principle was originally articulated in response to the perception that during the colonial period inequitable and onerous arrangements, mainly in the form of 'concessions', had been imposed upon unwary and vulnerable governments.[92]

In another context, Hossain was more specific:

> For developing countries the principle of permanent sovereignty was important because it provided a basis on which they could claim to alter 'inequitable' legal arrangements under which foreign investors enjoyed rights to exploit natural resources found within their territories. Such alteration could be affected through an exercise of (a) the right to nationalize, that is, to acquire the rights enjoyed by the foreign investor or (b) the right to alter certain terms of the arrangements (or to repudiate an agreement entered into with the foreign investor).[93]

Socialist international lawyers have paid ample attention to the principle of permanent sovereignty.[94] For example, Brehme analysed the need to exercise it within the framework of 'the struggle of the young independent states and other developing countries' for their economic independence:

> It arises from the contradiction between the potentials which most of these countries have on the basis of their natural conditions for a blossoming and independent economy and the actual exploitation of this natural wealth by foreign capital to its own advantage . . . National sovereignty over natural wealth and resources therefore means the objective driving out of foreign monopolies from the key positions of the economy, elimination of the domination of foreign monopoly capital . . . abolition of the plundering of the natural wealth for the

advocated that newly independent African States should have the right to a 'period of reflection' and the right to review the terms of bilateral treaties within a period of two years from the date of independence. The government of Tanganyika (later incorporated into Tanzania) announced that this would not be applied to multilateral treaties which instead would be reviewed individually. See *Yearbook of the International Law Commission* (1962), vol. II, pp. 115 and 121. See also Makonnen (1984). See generally Bedjaoui (1970), who served as ILC Rapporteur on the issue during the drafting of the Conventions on Succession of States.

[92] Hossain (1984a: IX). [93] Hossain (1980b: 35).

[94] See generally on socialist conceptions of international law, Tunkin (1974 and 1986).

Annex 3

advantage of foreign monopolies and their home states which ensues on the basis of inequality and pressure.[95]

While Western commentators have acknowledged that States have the right to control their natural wealth and resources, their main preoccupation was and still is how permanent sovereignty could be made compatible with international obligations arising from general international law or contractual undertakings. As Hyde put it in 1956:

A state has the power to control and use its natural wealth and resources. It may thus enter into binding agreements for the development of its natural wealth and resources. In the exercise of its power, it is obligated to act in accordance with recognized principles of international law as well as international agreements and with due regard for existing legal rights or interests, with adequate, prompt and effective compensation as one remedy, if the exercise of powers impairs them.[96]

Schachter points out that the development of the permanent sovereignty entailed a challenge to some traditional international law concepts. In his view permanent sovereignty has become 'the focal normative conception used by states to justify their right to exercise control over production and distribution arrangements without being hampered by the international law of state responsibility as it had been traditionally interpreted by the capital-exporting countries'.[97] He argues:

It would therefore be a mistake to consider the idea of permanent sovereignty over resources as anachronistic nationalistic rhetoric. It should be viewed as a fresh manifestation of present aspirations for self-rule and greater equality.[98]

Among Third World international lawyers, Abi-Saab observes that the principle of permanent sovereignty 'addresses the question of the limits imposed by international law on States regarding alien economic interests within their national jurisdiction' and takes the view that while 'this exclusive power is subject to any limitations imposed by international law . . . sovereignty is the rule and can be exercised at any time . . . limitations are the exception and cannot be permanent, but limited both in scope and time'.[99] In the same vein Chowdhury concludes:

The principle underlines the domestic jurisdiction of the State over natural resources, economic activities and wealth within its national jurisdiction without however exempting it from the application of the relevant principles and rules of international law.[100]

[95] Brehme (1967: 265) (in the English summary).
[96] Hyde (1956: 865). [97] Schachter (1977: 124–5). [98] Ibid., p. 126.
[99] Abi-Saab (1984: 47–8). [100] Chowdhury (1988: 80).

Bedjaoui takes a more radical position:

> When they treat the claim for the permanent sovereignty of States and nations over their own natural wealth as mere logomachy, traditional lawyers are singularly failing to understand the real facts about how the Third World countries have been dispossessed of their sovereignty for the benefit of foreign economic coteries.[101]

Bedjaoui considers the 'stronger and stronger assertion of the right of peoples and States to be in control of their natural resources' as a method of defence against the 'violent reaction by the imperialists to counter their demands for a new international economic order'.[102] In this respect he is supported by the French lawyer Rosenberg who analyses permanent sovereignty from the perspective of 'un droit à l'émancipation et une arme de libération pour les peuples du tiers monde'.[103] Zakariya also analyses the principle in the context of the search for an NIEO, but in more specific terms. He points out that 'petroleum, the natural resource par excellence ... kindled the big controversy' concerning the search for a new international economic order. However, NIEO debates and resolutions:

> reaffirm the crucial place of natural resources, and the manner in which they ought to be developed and disposed of both for the benefit of the producing countries and in the interests of the world community at large.[104]

This study will stress that the exercise of permanent sovereignty should coincide with sustainable use of natural wealth and resources. Elian refers to the necessity for all States to ensure 'better husbanding of their natural resources'[105] and Weiss observes that:

> While States have sovereignty over their territory, this sovereignty is of necessity tempered by the requirements of intergenerational equity. They have rights to use and benefit from the resources of the planet, but not to destroy it for future generations.[106]

In summary, the motives for formulating the principle of permanent sovereignty and the objectives to be pursued by it are obvious. The principle was developed during the 1950s, as part of an effort both to secure the benefits arising from exploiting natural resources for peoples living under colonial rule and to provide newly independent States with a shield against infringements upon their sovereignty by foreign States or companies. A far-reaching series of rights was claimed on the basis of the principle of permanent sovereignty. In recent texts a growing emphasis can be discerned

[101] Bedjaoui (1979: 99). [102] Ibid., p. 153. [103] Rosenberg (1975–6) and (1983).
[104] Zakariya (1980: 209). [105] Elian (1979: 217). [106] Weiss, E. B. (1989: 290).

on the obligation of all States to manage their resources in the interests of economic development and that of their population, and in an environmentally responsible way, while also taking into account the interests of other States and humankind. This will be discussed further in Part III.

Scope and orientation of the study

Part I of this book summarizes and assesses the evolution of the principle of permanent sovereignty through the political organs of the United Nations during the period 1945–95. Approximately sixty-five resolutions are reviewed, as well as for the most important ones the records of the relevant debates conducted in working groups, committees and sessions of the UN General Assembly, ECOSOC, the Commission on Human Rights, UNCTAD and, on one occasion, the Security Council.

The overall aim of Part I is to analyse the major norm-setting legal instruments which initially shaped the principle and which later tailored it to new circumstances, practices and needs. These legal instruments include in particular, but not exclusively, UN General Assembly resolutions.[107]

Part II shows that permanent sovereignty is deeply rooted in international law and has not evolved as a legal principle in isolation but rather as part and parcel of other modern trends in public international law. These related developments in modern international law have had a major impact on the evolution, application and interpretation of the principle of permanent sovereignty. Chapter 6 deals with developments in international investment law, in particular the controversies relating to the national versus the international minimum standard; chapter 7 discusses the international law of the resources of the sea, especially the extension of exclusive economic jurisdiction over marine resources; and chapter 8 reviews trends in international environmental law and assesses their impact on the principles of territorial sovereignty and permanent sovereignty over natural resources.

Part III examines the essential content of permanent sovereignty, particularly the rights *and* duties of States and peoples arising from the principle. Chapter 9 focuses on what kind of corollary *rights* have been claimed on the basis of permanent sovereignty and can be derived from it: the right to dispose freely of natural resources; to choose freely a socio-economic system; to expropriate or nationalize foreign investment; to regain effective control over natural resources and to receive compensation

[107] See the list contained in Appendix I.

Annex 4

B. Cheng, *General Principles of Law as Applied by International Courts and Tribunals* (1953) (excerpt)

GENERAL PRINCIPLES OF LAW

as applied by

INTERNATIONAL COURTS AND TRIBUNALS

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PART ONE

THE PRINCIPLE OF SELF-PRESERVATION

"INTERNATIONAL law governs relations between independent States. The rules of law binding upon States therefore emanate from their own free will as expressed in conventions or by usages generally accepted as expressing principles of law and established in order to regulate the relations between these co-existing independent communities or with a view to the achievement of common aims. Restrictions upon the independence of States cannot therefore be presumed,"[1] even if it be true that "according to ordinary international law, every country is free to renounce its independence and even its existence."[2]

"The right of a State to adopt the course which it considers best suited to the exigencies of its security and to the maintenance of its integrity, is so essential a right that, in case of doubt, treaty stipulations cannot be interpreted as limiting it, even though these stipulations do not conflict with such an interpretation."[3] "This right possessed by all nations, which is based on generally accepted usage, cannot lose its *raison d'être* simply because it may in some cases have been abused."[4]

For the reason given in the preceding paragraph, Judge Anzilotti and Judge Huber in the case of *The Wimbledon* (1923) maintained in their joint dissenting opinion that, since Article 380 of the Treaty of Versailles[5] did not expressly impose a duty on Germany to maintain the Kiel Canal free and open in time of war between third States, she was entitled when her neutrality and internal security were endangered, to adopt extraordinary measures temporarily affecting the application

[1] PCIJ: *The Lotus* (1927), A. 10, p. 18.
[2] PCIJ: *Austro-German Customs Union* (1931), Adv.Op., Ind.Op. by Anzilotti, A/B. 41, p. 59.
[3] PCIJ: *The Wimbledon* (1923), D.O. by Anzilotti and Huber, A. 1, p. 37.
[4] *Ibid.*, p. 36.
[5] "The Kiel Canal and its approaches shall be maintained free and open to the vessels of commerce and of war of all nations at peace with Germany on terms of entire equality."

of the provision in order to protect her neutrality or to ensure her national defence.[6]

Similarly, but even more categorically, in the "*Blockad*" *of Portendic Case* (1843)[7] between Great Britain and France, the British Commissioners declared that they were "prepared to admit, that there are extraordinary cases, no doubt, which ride over ordinary rights, and the necessity of self-preservation, as the French Government in one of its papers properly observes, is one of these."[8]

This overriding interest of self-preservation of the State, the Romans aptly epitomised in the injunction: *Salus Populi Suprema Lex Esto*.[9] This maxim of law has often been invoked before international tribunals and the German-Venezuelan Mixed Claims Commission (1903) conceived it to be the indispensable fundamental law of every civilised country, of which international tribunals should take judicial notice. In fact the Umpire of the Commission in the *Great Venezuelan Railroad Case*[10] held an act performed by a high State official to have been null and void because it "conflicts," in his opinion, "with

[6] *Ibid.*, pp. 36, 37, 40.

[7] This was a dispute which arose out of losses alleged to have been suffered by British merchantmen as a result of the sudden closure by the French of their African port of Portendic in 1835, notwithstanding Art. XI of the Anglo-French Treaty of 1783 (Martens, 3 R., pp. 519 *et seq*) securing to British subjects the right to trade along these coasts, and notwithstanding a verbal assurance of the French Minister of the Navy and the Colonies made in 1834 to the effect that Portendic would not be put under blockade.

The dispute was finally submitted for arbitration to Frederic-William IV, King of Prussia, who made the award in 1843. See 23 B.F.S.P., pp. 543–588; 27 *ibid.*, pp. 1228–1299; 30 *ibid.*, pp. 581–649; 34 *ibid.*, pp. 1036–1108; 42 *ibid.*, p. 1377. See also *infra*, pp. 137 *et seq.*, p. 199, note 25.

Prior to submission to arbitration, a mixed commission was set up in Paris to seek a settlement but failed to reach agreement.

[8] Note of the British Commissioners to the French Commissioners, October 4, 1841 (30 B.F.S.P., p. 619, at p. 643), annexed to the British *Statement* filed with the arbitrator. For the French contention that she had acted under the "right of self-preservation, the most pressing of all, which, in time of war, suspends all those that may come into conflict with it," see 27 *ibid.*, pp. 1237, 1251, 1282–1293.

Although the award did not set out the reasons of the decision, as the British Commissioner of Liquidation, appointed pursuant to the award, reported to the British Foreign Secretary, "the inference is irresistible that, in the opinion of the Royal Arbitrator, the blockade was, under the peculiar circumstances, justifiable," October 9, 1844 (34 *ibid.*, p. 1088, at p. 1102). Damages were, however, awarded on other considerations; see *infra*, pp. 137 *et seq.*

[9] Cicero, *De Legibus*, III, iii, 8. Attributed by some authorities to the XII Tables.

[10] *Ven.Arb. 1903*, p. 632. Claims growing out of transportation of troops or munitions, and suspension of traffic.

the highest law of any nation, the safety of its people." [11] The well-known maxim *Salus populi suprema lex* may thus properly be regarded as one of the general principles of law recognised by civilised nations, within the contemplation of Article 38 I (c) of the Statute of the World Court.

In the present structure of the international society, however, where a State stands on the one hand as a supreme political institution, sovereign within its own boundaries, and on the other hand as a member of a society in which other equally sovereign members co-exist, the application of this principle in international law inevitably assumes a dual significance corresponding to the dual aspect of the State. The present investigation into the principle of self-preservation in international law will, therefore, follow this distinction by dividing the problem into two parts: (1) Territorial application of the principle of self-preservation (acts of self-preservation carried out by the State in territory subject to its authority), (2) External application of the principle of self-preservation.

Generally speaking, it will be seen that, in the former case, the principle *Salus populi suprema lex* permits the welfare and security of the nation as a whole to override the rights and interests of individuals, national or alien, subject to the State's authority; and, in the latter case, it empowers the State to take all necessary measures to protect the nation against external danger and hostility, and, under very exceptional circumstances, even to disregard a minor right of another State or its nationals in order to preserve its own existence. In view, however, of the frequent abuses of the principle of self-preservation, it may be emphasised at the outset that a proper knowledge of the limits and conditions of its application is just as important as knowledge of the existence of the principle itself.

[11] The Umpire held that a contract concluded between the Venezuelan Minister of Public Works and the railroad concerned, " in which the minister attempts to bind the Government for all the injuries which the railroad may suffer because of its performance of a lawful act, if not duty, in transporting troops and material of war to enable the Government to put down a rebellion, is utterly invalid—first, because it is contrary to public policy and conflicts with the highest law of any nation, the safety of its people " (*loc. cit.*, p. 635).

Chapter 1

TERRITORIAL APPLICATION OF THE PRINCIPLE

Inasmuch as the treatment of nationals, at the present stage of development of the international society, does not in principle fall within the purview of international law, except in virtue of treaty provisions,[1] the problem of the municipal application of the principle of self-preservation in international law becomes largely a question connected with aliens. No attempt is made here to undertake even a summary survey of the vast problem of the treatment of aliens. The object is merely to illustrate how, and to what extent, the overriding interest of the State may in certain cases affect their rights and interests.

In the first place, it will be seen that their admission and continued stay in a foreign country is contingent upon the superior interest of the State.

A. Exclusion and Expulsion of Aliens

An examination of cases decided by international courts and tribunals shows that the exclusion or expulsion of aliens by a State finds its juridical basis in the right and duty of the State to safeguard the nation's welfare and security.

Thus in the *Maal Case* (C. 1903),[2] the Umpire stated:—

"There is no question in the mind of the Umpire that the Government of Venezuela in a proper and lawful manner may exclude, or if need be, expel persons dangerous to the welfare of the country, and may exercise large discretionary powers in this regard. Countries differ in their methods and means by which these matters are accomplished, but the right is inherent in all sovereign powers and is one of the attributes of sovereignty, since *it exercises*

[1] *e.g.*, treaty provisions guaranteeing human rights or rights of minorities.

[2] Neth.-Ven. M.C.C. (1903), *Ven.Arb. 1903*, p. 914. The claimant, suspected of conspiracy with the revolutionaries against the government, was expelled. While under arrest, he was subjected to the indignity of being stripped of his clothing and thus made an object of laughter to bystanders.

The letter "C" before the date indicates that the latter refers to the *compromis*, as it has not been possible to ascertain the date of the decision.

it rightfully only in a proper defence of the country from some danger anticipated or actual." [3]

The significance of the right to exclude or expel aliens for reasons of public welfare or security lies in the fact that it cannot be assumed to have been implicitly surrendered by a general convention between two countries which provides that the citizens of each should have the liberty to travel or reside in the territory of the other.

The United States Domestic Commission in the American-Turkish Claims Settlement (1935) held in the *Lazar Rokash Case* (1937) [4] that:—

" The case of the expulsion of a native American, Max Scherpel, from the Free State of Hamburg in 1912 is of interest in connection with the construction of stipulations generally found in so-called commercial treaties relating to residence, conduct of business, and protection of rights of person and property of the nationals of the contracting parties. A question was raised whether Arts. VI and VIII of the Convention of Friendship, Commerce and Navigation concluded December 20, 1827, between the United States and the Hanseatic Republics,[5] stood in the way of the expulsion of this

[3] *Loc. cit.*, pp. 914–915. Italics added.
Damages were awarded for indignity suffered, because (and this confirms the thesis that such measures are conditional upon and circumscribed by the need for the protection of the community) " it was not for the protection of Venezuela that he was compelled to suffer this indignity to his person and his feeling " (p. 915).
See also Belg.-Ven. M.C.C. (1903): *Paquet Case*, *Ven.Arb. 1903*, p. 265 at p. 267 : " That the right to expel foreigners or prohibit their entry into the national territory is generally recognised; that each State reserves to itself the exercise of this right with respect to the person of a foreigner if it considers him dangerous to public order or for considerations of a high political character, but that *its application cannot be invoked except to that end* " (italics added). Damages were awarded for arbitrariness in refusing to state reasons for the measure (p. 267).
See also *Ben Tillet Case* (1898), G. B./Belgium, 92 B.F.S.P., p. 78, Award at pp. 105–9. Expulsion for attempting to ferment a strike at Antwerp and to organise an international federation of dockers. Held: " A State has the undisputed right to forbid its territory to foreigners when their intrigues or presence appear to compromise its security " (at p. 105. Transl.).

[4] Nielsen's *Op. & Rep.*, p. 503. Alleged damage suffered through removal of claimant (American citizen) and members of his family from Jerusalem to Damascus in November, 1917, by the Turkish authorities. Claimant invoked, inter alia, Art. IV of the Treaty of 1830 (*q.v.*, *infra*, p. 34, note 6).

[5] Miller, 3 *Treaties*, 1933, p. 387. Art. VI: " It is, likewise, agreed, that it shall be wholly free for all merchants, commanders of ships, and other citizens of both Parties, to manage, themselves[,] their own business, in all the ports and places subject to the jurisdiction of each other, as well with respect to the consignment and sale of the goods and merchandise, by wholesale or retail, as with respect to the loading, unloading and sending off their ships, submitting themselves to the laws, decrees and usage there established, to which native

citizen. The Department of State observed in an instruction of April 9, 1912, to the American Consul-General at Hamburg: ' that a convention of this nature undoubtedly should not be considered as renouncing such an important attribute of sovereignty as the right of expulsion,' although the Department was of the opinion that the measure had been harshly exercised. It is believed that clearly the much less comprehensive stipulations of the Treaty of 1830 [6] between the United States and the Ottoman Empire did not stand in the way of the removal of persons from Jerusalem to Damascus for reasonable purposes, although it is conceivable that arbitrary interference with residence or vocations might result in violations of such stipulations. Furthermore, it is not believed that the so-called capitulary rights stipulated in meagre language in this article prohibited measures taken in time of war to safeguard the public interest, unless of course such measures were shown to be clearly arbitrary and violative of rights of jurisdiction such as are secured by the treaty." [7]

But it also follows from the above that specific treaties must be respected.[8]

As to what constitutes a menace to the welfare and security of the community, the Upper Silesian Arbitral Tribunal in the *Hochbaum Case* (1934) held:—

" Subject to specific treaty, it is the view of the State in question which alone decides whether its internal or external security is at stake. That view may change; it has undoubtedly undergone changes in recent decades in various States and in various circumstances. But in every case it is the consequence of one of the most important rights of the State. . . . The reasonableness of the decision is not subject to review by the Tribunal. If the authority in question is in a position to adduce reasons of a serious nature

citizens are subjected; they being, in all these cases, to be treated as citizens of the Republic in which they reside, or at least, to be placed on a footing with the citizens or subjects of the most favored nation."

Art. VIII: " Both the Contracting Parties promise and engage formally to give their special protection to the persons and property, of the citizens of each other, of all occupations, who may be in the territory subject to the jurisdiction of the one or the other, transient or dwelling therein. . . ."

[6] 3 *ibid.*, p. 541. Art. IV: " . . . Citizens of the U.S.A., quietly pursuing their commerce, and not being charged or convicted of any crime or offence, shall not be molested; and even when they may have committed some offence they shall not be arrested and put in prison, by the local authorities, but they shall be tried by their Minister or Consul, and punished according to their offence, following in this respect, the usage observed towards other Franks."

[7] *Loc. cit.*, p. 509. *Cf.* PCIJ: *The Wimbledon* (1923), Joint D.O. by Anzilotti and Huber, A. 1, p. 37 (quoted *supra*, p. 29).

[8] *Cf.* also U.S. Domestic Commission, Mexican Claims (1849): " *Expulsion Cases*," 4 *Int.Arb.* p. 3334.

justifying expulsion, then the Tribunal is not entitled to reject these reasons as unimportant or insufficient." [9]

In time of war or disturbances, a State may even expel aliens on reasonable suspicion, either from its own territory, for the protection of the safety of the community,[10] or from occupied territory for the protection of its forces of occupation.[11]

[9] 5 *Collection of Decisions* (1935), p. 140, at p. 162; *Annual Digest* (1933–1934), Case 134. Expulsion of a Pole from German Upper Silesia in 1933. It appeared that this Pole formerly belonged to an association called "The Society of the Friends of the Soviet Union." Claim disallowed. The right of residence of Poles in German Upper Silesia was regulated by Art. 43 of the Convention of Geneva, May 15, 1922, but Art. 44 provided that each State retained the right of expulsion for reasons of internal or external security or on account of police regulations. The Tribunal held that: "This amounts to a recognition without any qualification, of the fundamental right of every sovereign State to decide in its free discretion as to continued residence of aliens in its territory." See also Kaeckenbeeck, *The International Experiment of Upper Silesia*, 1942, pp. 207–212, also Appendix III, pp. 567–822, where the Geneva Convention is reproduced.

Ben Tillet Case (1898) 92 B.F.S.P., p. 78, at p. 105. "The State determines in the plenitude of its sovereignty, whether the facts warrant such a prohibition" (Transl.).

Cf. Span.-U.S. Cl.Com. (1871): *Casanova Case* (1882), 4 *Int.Arb.*, p. 3353.

In Belg.-Ven. M.C.C. (1903): *Paquet Case* (*Ven.Arb. 1903*, p. 265, at p. 267), the umpire merely said: "The general practice among governments is to give explanations to the government of the person expelled if it asks them." A refusal gives rise to a presumption of arbitrary conduct.

It does not seem that in substance, the *Boffolo Case*, decided by the Ital.-Ven. M.C.C. (1903) (*Ven.Arb. 1903*, p. 696) is materially in contradiction with the above cases. All that the umpire required was that "the country exercising the power must, when occasion demands, state the reason of such expulsion before an international tribunal, and an inefficient reason or none being advanced, accepts the consequences" (p. 705). An Italian was expelled. The umpire tried to conjecture the reasons of the measure but found all the possible excuses would be invalid by Venezuelan law. Damages were awarded apparently because: "The umpire is more disposed to believe that for public reasons satisfactory to itself the [Venezuelan] Government has chosen not to offer the basis of its action, rather preferring to submit to such judgment as to this Commission might seem meet in the case" (p. 705). The *ratio decidendi* is therefore the absence of any reasons being adduced.

Cf. contra Mex.-U.S. Cl.Com. (1868): *Zerman Case*, 4 *Int.Arb.*, p. 3348: "In the present instance there was no war, and reasons of safety could not be put forward as a ground for the expulsion of the claimant without charges preferred against him or trial; but if the Mexican Government had grounds for such expulsion it was at least under the obligation of proving charges before this commission."

[10] *Zerman Case, loc. cit.*: "The President of the Republic of Mexico had the right to expel a foreigner from its territory who might be considered dangerous, and that during war or disturbances it may be necessary to exercise this right even upon bare suspicion."

Mex.-U.S. Cl.Com. (1868): *De Rijon Case* (1876), 4 *Int.Arb.* pp. 3348–9. Expulsion of a Mexican from the zone of military operations during the American Civil War. "The right which General Herron claimed of turning anyone out of his lines when he thought proper to do so was the undoubted right of any officer in the position held by General Herron. . . . An officer in command in such a position is not always bound in time of war to give his precise reasons for such steps" (pp. 3348–49).

[11] P.C.A.: *Chevreau Case* (1931), France/Great Britain, 2 UNRIAA, p. 1113. During the first world war, British forces occupying Persia deported a French

To enemy nationals found within the national territory at the outbreak of war, a State may apply a great number of measures of self-protection and, in principle, it has the right to expel them all.[12]

In all the above cases, however, this right, discretionary though it is, must be exercised in good faith.[13] It must not be arbitrary,[14] nor accompanied by unnecessary indignity or hardship.[15]

B. Measures to Promote Public Welfare

" In application of a generally accepted principle, any person taking up residence or investing capital in a foreign country must assume the concomitant risks and must submit, under

citizen. There was considerable armed resistance in this district. " Under these circumstances the arbitrator deems that he cannot deny to the British forces operating in Persia the right to take the measures necessary to protect themselves against the activities of the civilian population which were of a kind harmful to their operations or favourable to the enemy, a right which in general, according to international law, belongs to belligerent forces occupying enemy territory. . . . The arbitrary arrest, detention or deportation of a foreigner may give rise to a claim in international law. But the claim is not justified if these measures have been taken in good faith and upon reasonable suspicion, especially if a zone of military operations is involved " (at p. 1123. Transl.).

12 Fran.-Mex. Arbitration (C. 1839), decided by Queen Victoria (1844), 5 *Int. Arb.* p. 4865. On the wholesale expulsion of Frenchmen from Mexico on the outbreak of hostilities in 1838, the arbitrator was of opinion that no indemnity was due to France, the act " being justified by the state of hostilities between them " (p. 4866).

See 4 *Int.Arb.*, pp. 3334 *et seq.* for limitation of this right by treaties and customs.

Cf. also Mex.-U.S. G.C.C. (1923): *E. R. Kelly Case* (1930), *infra*, pp. 53 *et seq.*, for measures of self-protection applicable to enemy nationals.

13 See *Chevreau Case* (1931), *supra*, p. 35, note 11 *in fine*.

14 *Chevreau Case* (1931), *loc. cit.*, at p. 1123: " The arbitrary arrest, detention or deportation of a foreigner may give rise to a claim in international law " (Transl.).

Belg.-Ven. M.C.C. (1903): *Paquet Case*, *Ven.Arb. 1903*, p. 265. The umpire held that, the reasons for the expulsion having been asked for and refused, " the expulsion can be considered as an arbitrary act of such a nature as to entail reparation " (p. 267).

15 It is true that the arbitrator in the *Ben Tillet Case* (1898) pointed out that " in recognising the right of the State to expel, one cannot at the same time deny it the means of making its injunctions effective " (*loc. cit.*, p. 105. Transl.). But, as the Neth.-Ven. M.C.C. (1903) said in the *Maal Case*, where damages were awarded because the claimant was stripped in public, " There was no possible occasion for the public stripping, or private stripping, in fact, of the claimant. It was not for the protection of Venezuela that he was compelled to suffer this indignity to his person and to his feelings " (*loc. cit.*, p. 915).

In case of detention, " the detained person must be treated in a manner appropriate to his station, and conforming in the standards habitually practised among civilised nations. If this rule is not observed, there is ground for a claim " (*Chevreau Case* (1931), *loc. cit.*, at p. 1123. Transl.).

reservation of any measures of discrimination against him as a foreigner, to all the laws of that country." [16]

One of the risks is that, at any moment, a public need may arise either for the ownership or user of the alien's property and his right will then have to give way to the needs of the community, in the same way as other members of the community may be deprived of their property in similar circumstances. " The law of nations demands respect for private property, but it recognises the right of the State to derogate from this principle, when its superior interest so requires. Thus it allows expropriation for reasons of public utility in time of peace and requisition in time of war." [17]

I. EXPROPRIATION

Expropriation of private property, whether national or foreign, for reasons of public utility was recognised by the Permanent Court of International Justice [18] and the subject received detailed examination from the Permanent Court of Arbitration in the *Norwegian Claims Case* (1922).[19] The right was described by the latter as:—

[16] *Standard Oil Co. Case* (1926), Reparation Commission/U.S.A., 2 UNRIAA, p. 777 (*vide* " *The Deutsche Amerikanische Petroleum Gesellschaft Oil Tankers* " *Case*), at p. 794. Requisition by Germany of vessels belonging to a German company, for delivery to the Reparation Commission under the Treaty of Versailles. Standard Oil Co. claimed beneficial ownership over the vessels and contended that they should not be delivered. Claim disallowed.

[17] Portugo-German Arbitration (1919): *Award II* (1930), 2 UNRIAA, p. 1035, at p. 1039 (Transl.). Some of the cases decided concerned requisition by Germany of property belonging to Portuguese nationals in Belgium while Portugal was still neutral.

A passage extremely similar to that quoted in the text appears in Rumano-German Arbitration (1919): *David Goldenberg & Sons Case* (1928), 2 UNRIAA, p. 901, at p. 909. Requisition by Germany, in 1915, of 30 tons of tin, in occupied Belgium, belonging to the claimants (neutral). Payment of compensation in 1921 in paper marks represented only one sixth of the real value. Claim for balance allowed.

[18] *German Interests Case* (Merits) (1926), Germany *v.* Poland, A. 7, p. 22. On the subject of expropriation of foreign property, see further Schwarzenberger, " The Protection of British Property Abroad," 5 C.L.P. (1952) p. 295, and the present writer's " The Anglo-Iranian Dispute," 5 *World Affairs* (N.S.) (1951) p. 387.

[19] Norway/U.S.A., 2 H.C.R., p. 40. The court held: " This is a case of expropriation " (p. 77). " This is not a case of ' requisition of neutral property ' in the special meaning of that term in the laws and customs of war " (p. 72). Having been exercised by a belligerent for the need of national defence, this taking of property falls no doubt within the " general " notion of requisition (*cf. infra*, pp. 40 *et seq.*). The measure may also be considered as an exercise of the right of angary, at least as regards those contracts which conferred upon the purchaser real rights in the vessels under construction (*cf. infra*, pp. 42 *et seq.*). This is only a further instance showing the intimate relation between, and the basic identity of, the rights of expropriation, requisition and angary.

" the power of a sovereign State to expropriate, take or authorise the taking of any property within its jurisdiction which may be required for the ' public good ' or for the ' general welfare '." [20]

The right to expropriate, therefore, finds its juridical basis in the requirements of the " public good " or the " general welfare " of the community.

In case of a dispute, according to the Permanent Court of Arbitration, an international tribunal is competent to, and should, decide whether the " ' taking ' is justified by public needs." [21] The logical consequence of this is that any taking not so justified must be regarded as an unlawful act. It also follows logically that, if an expropriation has not been intended to be a definite assumption of ownership but merely a temporary measure to meet some passing requirement, the continued retention of the property, when the need has ceased, constitutes an unlawful act. The decisions of international tribunals in the *Walter F. Smith Case* (1929),[22] and in the *Norwegian Claims Case* (1922),[23] which respectively upheld these conclusions are clear examples showing that the right of the State to expropriate is not only founded on, but also strictly circumscribed by, the public interest.

[20] *Loc. cit.*, p. 66.
[21] *Loc. cit.*, p. 66.
[22] See *infra*, p. 39.
[23] *Loc. cit.*, at p. 63: " The Tribunal is of opinion that, whatever may be said in favour of the taking for title of the claimants' property during the war, there was no sufficient reason for keeping these ships after the signature of the Versailles Treaty in June, 1919. The reasons which have been given afford no legal interest which this International Tribunal could recognise as being superior to the rights of private foreign citizens in their own property," and it spoke of the " unlawful retaining of the title and use of the ships after all emergency ceased " (p. 75). This apparently applies only to those cases where expropriation for use " was possible without destroying the property, according to the contract, state of completion of ships, etc." (*ibid.*). Some of the contracts were taken for good and Norwegian property destroyed when they were first requisitioned on October 6, 1917. The duality of the position is shown by the two systems of computation of compensation envisaged by the Tribunal (*ibid.*).

Cf. Germ.-U.S. M.C.C. (1922): *Opinion Construing the Phrase " Naval and Military Works or Materials " as Applied to Hull Losses and also dealing with Requisitioned Dutch ships* (1924), *Dec. and Op.*, p. 75, at pp. 93–4: " They [the requisitioned ships] were lawfully in its possession . . . during an emergency the duration of which the United States alone could determine "; " Return them, at a time to be determined by it [the requisitioning State]." See *infra*, p. 45.

Cf. also the American reservation to the award in the *Norwegian Claims Case* (1922), letter of the Secretary of State to the Norwegian Minister at Washington, February 26, 1923: " The requisitioning State is free to determine the extent and duration of its own emergency " (*loc. cit.*, p. 81).

See *infra*, pp. 43 *et seq.*

What constitutes a public need [24] is obviously not a static notion, but one which evolves according to the practice of nations. The building of highways [25] and railroads,[26] of military barracks and public cemeteries,[27] the fulfilment of an international obligation,[28] the secularisation of religious property,[29] the mobilisation of commercial and industrial resources for the prosecution of a war [30] are only some of the instances which international tribunals have accepted as clear cases of genuine public need.[31] In such cases, they do not inquire into the intrinsic merits of the needs, as international law is not concerned with the internal administration of the State.

But international law, like law in general, must look at the facts [32]: *non ex nomine sed ex re.*

Thus, in the *Walter F. Smith Case* (1929), the Arbitrator did not hesitate to point out that:—

" The expropriation proceedings were not, in good faith, for the purpose of public utility. . . . While the proceedings were municipal in form, the properties seized were turned over immediately to the defendant company, ostensibly for public purposes, but, in fact, to be used by the defendant for purposes of amusement and private profit, without any reference to public utility." [33]

It may, therefore, be said that the public welfare of the community is considered by international law to be of such overriding importance that it is allowed to derogate from the

[24] Although admittedly of a different character and related to the interpretation of a specific treaty, the judgment of the P.C.I.J. in the *German Interests Case* (Merits) (1926) A. 7, relating to what constitutes the " needs " of an industrial enterprise (pp. 49 *et seq.*) is highly instructive, *e.g.*, the needs must be genuine and not fictitious or imaginary; they may be temporary or future, etc.

[25] Spanish Zone of Morocco Claims (1923): Claim No. 21, *Holliday* (*Ouad Hélu*) (1924) 2 UNRIAA, p. 615, at pp. 679–80.

[26] *Id.*: Claim No. 15, *Forde* (*Chemin de Fer Larache-Alcazar*) (1924) 2 *ibid.*, p. 615, at pp. 679–80.

[27] *Id.*: Claim No. 6, *Rzini* (*Ras-El-Karaber*) (1924) 2 *ibid.*, p. 615, at pp. 664 *et seq.*

[28] *Standard Oil Co. Case* (1926), *loc. cit.* See *supra*, p. 37, note 16.

[29] P.C.A.: *Expropriated Religious Properties Case* (1920) France, G.B., Spain, Portugal, 2 H.C.R., p. 1.

[30] *Norwegian Claims Case* (1922) *loc. cit.*, at pp. 46, 72.

[31] On nationalisation or socialisation as an object of expropriation, see the present writer's " The Anglo-Iranian Dispute," 5 *World Affairs* (N.S.) (1951), p. 387, at p. 391.

[32] PCIJ : *German Interests Case* (Merits) (1926), A. 7, p. 22: " The legal designation applied by one or other of the interested parties to the act in dispute is irrelevant if the measure in fact affects German nationals in a manner contrary to the principles enunciated above."

[33] U.S.A./Cuba, 2 UNRIAA, p. 913, at pp. 917–8. Seizure held unlawful.

principle of respect of private rights. Such derogation is, however, conditional upon the presence of a genuine public need, and is governed by the principle of good faith.[34]

II. REQUISITION

"Military requisition is a form *sui generis* of expropriation for reasons of public utility. The latter is a permitted derogation from the principle of the respect for private property. The same applies to requisition." [35] What has been said of expropriation applies, therefore, *mutatis mutandis*, to requisition and vice versa.

Requisition has been defined as follows:—

"Requisition is the manifestation of the unilateral will of the authorities exercising their powers of employing the resources found within the country for purposes of national defence. It finds sufficient justification in the necessity created by the war." [36]

Requisition is, therefore, distinguishable from other forms of expropriation by the kind of national need which it is called upon to serve—the requirements of national defence created by a state of war. War is, however, not to be interpreted in a formal sense. As was stated by the Umpire in the *Georges Pinson Case* (1928),

"I believe that the right of requisition ought to be conceded to every government, even where the insurgents have not previously been recognised as belligerents, on condition that adequate compensation is paid." [37]

Owing to the pressing and vital character of the military needs of a nation at war, it is only true to say that States have in practice been allowed to appropriate almost any form of

[34] On the question of compensation and the practical consequence of the distinction whether the taking is lawful or not, see *infra*, pp. 47 *et seq.*

[35] Rum.-Germ. Arb. (1919): *David Goldenberg & Sons Case* (1928) 2 UNRIAA, p. 901, at p. 909. (Transl.)

[36] Greco-Turk. M.A.T.: *Polyxène Plessa Case* (1928), 8 T.A.M. p. 224, at p. 230. (Transl.) *Cf. Finnish Vessels Case* (1934) 3 UNRIAA, p. 1479, at pp. 1530, 1542.

[37] Fran.-Mex. Cl.Com. (1924), *Jurisprudence*, p. 1, at p. 137, note 2. (Transl.). Requisition and destruction of property in time of revolution. Test case for a number of others. The view of A. Rougier in his *Les Guerres civiles et le Droit des Gens*, 1903, p. 476, to the contrary was expressly rejected by the Umpire.

private property situated in territory subject to their authority that might be useful for the conduct of military operations or for the maintenance of their armed forces. Sometimes, therefore, requisition is hardly distinguishable from the unlawful taking of property, except by reference to the use to which the appropriated articles have been put.[38]

By specific treaties, however, States may voluntarily curtail their wide discretionary power of requisition.[39] The Hague Regulations concerning the Laws and Customs of War on Land constitute a notable example in that inter alia they limit the power of requisition in hostile territory to the necessities (*besoins*) of the army of occupation.[40] Although such treaties are restrictively interpreted, there can be no doubt that violations of specific provisions constitute unlawful acts.[41] The very

[38] *Cf. e.g.*, Portugo-German Arbitration (1919): *Award II* (1930), Group A, Claim 22, 2 UNRIAA, p. 1035, at pp. 1046–7. Furniture belonging to a Portuguese (neutral) taken by German troops in occupied Belgium. "There could have been either requisition effected without the usual delivery of receipts, or acts of pillage. . . . In case of doubt, the arbitrators consider that they should calculate the damages as if there had been a requisition" (at p. 1046. Transl.).

Cf. also Mex.-U.S. Cl.Com. (1868): *Thomas C. Baker Case*, 4 *Int.Arb.*, p. 3668.

[39] *e.g.*, Treaty between Spain and the U.S.A., 1795, Art. VIII (Miller, 2 *Treaties*, 1931, p. 323); Franco-Mexican Treaty of Friendship, Commerce and Navigation, Nov. 27, 1886, Art. 7 (1) (2(15) Martens, N.R.G. (1879–90), pp. 840 *et seq.*); Treaty between Great Britain and Nicaragua, 1905. (*Handbook of Commercial Treaties*, 1931, p. 475.)

[40] Art. 52. See also Art. 53 and also Arts. 46, 47, 54, 56. *Cf.* Draft of International Declaration concerning the Laws and Customs of War adopted by the Conference of Brussels, Aug. 22, 1874, Arts. 6–8.

[41] Fran.-Mex. Cl.Com. (1924): *Pinson Case* (1928). The umpire conceded to States the right of requisition not only in international wars but also in unrecognised civil wars. But prima facie he did not consider a treaty exempting the citizens of the other contracting party from requisitions of war as applicable in case of a civil war, although he recognised that such an interpretation was perfectly reasonable. If it were to apply the requisition will be an unlawful act (*loc. cit.*, p. 137 *in fine* and note 2).

For the practical consequences in the distinction between a lawful and an unlawful taking of private property, see *infra*, pp. 50 *et seq.*

In regard to the legal effect of a violation of Art. 52 of the Hague Regulations, contradictory decisions seem to have been rendered by different M.A.T. In chronological order:—Brit.-Germ. M.A.T.: *Tesdorpf & Co. Case* (1923), 3 T.A.M., p. 22. Requisition of coffee belonging to British subject in warehouse, Antwerp, 1916. Coffee sent to Germany for distribution to army. Though recognising that the limits of Art. 52 of the Hague Regulations had been exceeded (p. 27), stressing inter alia the military character of the requisition (p. 26) and the nature of the goods, which, being goods that could not be used without being consumed, implied an immediate appropriation (p. 26), the M.A.T. refused to consider that the requisition was void and of no effect or that ownership of the property had not been transferred to Germany (p. 28).

Id.: *Ralli Brothers' Case* (1923, 1924) 4 T.A.M., p. 41. Cotton, hide, and linseed seized at Antwerp and sent to War Raw Material Dept., Germany. Held act contrary to Art. 52, but there was immediate appropriation. Act not devoid of legal effect.

Belgo-Germ. M.A.T.: *Zurstrassen & Cie. Case* (1924) 4 T.A.M., p. 326. Wool

existence of all these restrictions, however, confirms rather than disproves the original right of the State to requisition private property for military purposes.

Mention may be conveniently made here of a special form of requisition, the *jus angariae*, which the Greco-Bulgarian Mixed Arbitral Tribunal in the *Arakas* (*The Georgios*) *Case* (1927) [42] held to be a universally recognised doctrine sanctioned

seized in Poland and sent to Germany. Held act contrary to Art. 52 and, as an exceptional war measure, null on account of Treaty of Versailles, annex to Art. 297, § I (2) (pp. 328–9). Ownership not transferred to Germany (p. 329).

Fran.-Germ. M.A.T.: *Gros Roman & Cie.* (1924) 4 T.A.M., p. 753. Muslin-de-laine seized at Antwerp and sent to Germany. Act null. Ownership not transferred. Grounds same as above. This decision expressly mentioned the *Ralli Brothers' Case* (p. 756) and, therefore, must be considered to have knowingly differed from it.

On the whole, it would seem more consonant with general principles to deny to an unlawful act the effect of transferring ownership (*l'effet translatif de propriété*). A careful reading of the decision in the *Tesdorpf & Co. Case* (1923) suggests that the Brit.-Germ. M.A.T. did not in principle disagree with such a solution. " The Tribunal are not of opinion that in the absence of an express provision avoiding unlawful acts, such a sanction [*i.e.*, *nullity*] is to be excluded altogether. This is a point which must be decided according to the general rules and the spirit of international law and having regard to the actual circumstances of each case " (*loc. cit.*, p. 27). The Tribunal seemed to have given a rather subtle interpretation to Arts. 52, 53 of the Hague Regulations, distinguishing from the rest certain requisitions which had for their object consumption goods susceptible of being used by the army. In these cases, there was held to be an " immediate appropriation." If by this the Tribunal meant that there was an immediate transfer of ownership, then it would be quite logical to hold that the subsequent abuse, consisting in removing the validly requisitioned goods from the occupied territory to be used by units stationed outside the occupied territory, constituted an independent contravention of the Hague Regulations, no longer affecting the question of ownership over these goods, but falling only under Art. 3 of the Convention proper. The following passage of the decision seems to lend some additional colour to this interpretation of the award: " Considering that the requisition took place in fact for needs of the army and with regard to stores of food which were warehoused in an important commercial seaport, the Tribunal cannot come to the conclusion that the mere fact of the allocation of the coffee for the use of other parts of the German army than that part which occupied Belgium, is sufficient to deprive the requisition of the character and effects which as such it has according to international law and the very nature of the things seized " (*loc. cit.*, pp. 27–8). *A contrario* it seems that where, by their nature, the goods are not susceptible of direct use by the army and where the requisition is not of a military character, the seizure would be manifestly and *ab initio* contrary to the Hague Regulations, and thus devoid of all legal effect.

[42] 7 T.A.M., p. 39. This case, decided on January 31, 1927, is wrongly placed under the heading *Vlassios D. Katrantsios* c. *État bulgare* (July 23, 1926) in the T.A.M. The *Georgios*, a neutral vessel flying the Samiote flag was seized by the Bulgarian army occupying the port of Eregli (*Heraclée*) in December, 1912, during the first Balkan War. A cargo of wood was requisitioned and the vessel was subsequently sunk by order of the Bulgarian military authorities. Held: " The Case of *The Georgios* constitutes an application of the right of angary " (p. 46, Transl.).

Cf. the Greco-Germ. M.A.T.: *S.A. hellénique maritime* (*The Kerveros*) *Case* (1926) 7 T.A.M., p. 33. Held: embargo on a Greek ship in a German port while Greece was still neutral was an unlawful act. But it must be

by positive law.[43] The Tribunal seemed to conceive angary as the right of a belligerent State, for military purposes, to requisition neutral vessels and their cargo, or rolling stock belonging to neutral countries,[44] found within the limits of its authority, either for use or, if need be, for destruction.[45] It added that the right should be restricted solely to " cases of serious necessity,"[46] and that its exercise involved the inescapable duty of paying adequate compensation to the owners.[47]

By conceding to States the right of requisition and angary, international law allows a nation's military needs to take precedence over private property rights situated in territory subject to its authority. Apart from specific treaty restrictions upon its exercise, the existence of this right of requisition and angary is strictly conditional upon, and circumscribed by, the presence of such military needs. How they may best be met is, of necessity, a matter to be decided by the State alone.

A special problem arises in connection with property which a State, in requisitioning, does not intend to appropriate definitively. In such a case international tribunals are in agreement that, since requisition is justified only by the superior need of the community, the property requisitioned should be restored immediately after such need has ceased to exist. There is, however, no unanimity of opinion as to whether an international tribunal is competent to determine the duration of these public needs of a State. The German-U.S. Mixed Claims Commission (1922) was definitely of the opinion that the State was alone competent to decide.[48] It is believed, however, that, while this

pointed out that in this case the ship which was under a German crew was ordered out of a Dutch port by a German coastguard vessel to return to Germany where it was seized.

[43] *Loc. cit.*, pp. 45, 46.

[44] Hague Convention II, 1899, Regulations, Art. 54; Hague Convention IV, 1907, Regulations, Art 19.

[45] *Loc. cit.*, pp. 45–6.

[46] *Loc. cit.*, p. 46. The Tribunal did not indicate, however, in this case any special necessity beyond military needs, and the exercise was considered rightful. *Cf. The Kronprins Gustav Adolf Case* (1932) 2 UNRIAA, p. 1239, at p. 1257: " The word ' angary ' refers to the requisition and use of goods and to the justification of such a measure by the emergency which makes it necessary."

[47] *Loc. cit.*, p. 46. *Cf.* Bullock, " Angary," 3 B.Y.I.L. (1922–23), p. 99. See also Le Clère, *Les mesures coercitives sur les navires de commerce étrangers: Angarie, Embargo, Arrêt de Prince*, Paris, 1949.

[48] *Opinion Construing the Phrase " Naval and Military Works or Materials " as applied to Hull Losses and also Dealing with Requisitioned Dutch Ships* (1924), *Dec. & Op.*, p. 75, at pp. 93–4. See *supra*, p. 38, note 23.

is correct in principle, international tribunals are competent to intervene in case of evident arbitrariness—discrimination [49] or abuse.

The United States-Venezuelan Claims Commission (1885) held in the *Willet Case*:—

" Admitting fully the doctrine that the safety of the State is the supreme law, and that the property and person of the citizen [50] are subject to be taken for the public service whenever the exigency is sufficient to justify it, of which the State itself, by the necessity of the case, must be the only judge, yet we cannot perceive that there was any necessary connection between the seizure of the warehouse for purposes of defence and the consequent pillage and destruction of the property which ensued.

" Besides, while the seizure of the building was lawful in the first instance for the purpose of repelling an attack or guarding the arsenal, which was in the near neighbourhood, no reason has been assigned for its continued use and occupation as barracks long after the emergency had ceased to operate." [51]

The decision of the Permanent Court of Arbitration in the *Norwegian Claims Case* (1922) contained a very similar passage.[52]

Again the question whether property should be requisitioned definitively or only temporarily seems to be left to the exclusive judgment of the State. This, as well as the nature of the right over requisitioned property, may be gathered from the following passage in a decision of the German-U.S. Mixed Claims Commission (1922) in the cases of the *S.S. Merak* and *Texel* (1924), Dutch vessels requisitioned by the United States:—

[49] The *ratio decidendi* of the *Norwegian Claims Case* (1922) lies indeed in discrimination against friendly aliens, for it was held by the P.C.A.: " The United States are responsible for having thus made a discriminating use of the power of eminent domain towards citizens of a friendly nation, and they are liable for the damaging action of their officials and agents towards these citizens of the Kingdom of Norway " (2 H.C.R., p. 40, at p. 74).

[50] The case in fact concerned an alien.

[51] 4 *Int.Arb.*, p. 3743. at p. 3743. U.S. citizen, domiciled in Venezuela, had his warehouse occupied for many years after it had first been used as a kind of fort by the Government troops against the revolutionaries, everything of value in the building being in the meantime either destroyed or consumed.

[52] 2 H.C.R., p. 40, at p. 63. See *supra*, p. 38, note 23. It may be pointed out that in this case the P.C.A. considered that the U.S. had by its own acts shown that the emergency had at a certain moment ceased. " As early as February, 1919, the Emergency Fleet Corporation was giving back to their former owners some of the ships which had been needed during the war. but for which there was no further use " (p. 63). See also *The Edna* (1934) 3 UNRIAA, p. 1592, at pp. 1601 *et seq.*

" The right of the United States to possess and use them against all the world was absolute and superior to any possible contingent rights or interests of those Dutch nationals who owned them at the time they were requisitioned . . . As the United States had the absolute right against the whole world to possess these ships and use them as it saw fit, conditioned only upon the duty to make adequate compensation for their use and to return them, at a time to be determined by it or in the alternative to make adequate compensation, to the Dutch nationals who owned them at the time they were requisitioned, certain it is that this amounted to a special or qualified property in the ships tantamount to absolute ownership thereof for the time being. The possession of the United States was analogous to that of a grantee having an estate defeasible upon the happening of some event completely within his control." [53]

It also follows from the above that the risks, to which the property, even when temporarily requisitioned, may be exposed, lie with the requisitioning State.[54] Should the property perish while under requisition, the obligation of the State towards the owners, if it has not already been performed, is not thereby dissolved. In fact, frequent cases occur in which property is " requisitioned to be destroyed," a case which is to be distinguished from destruction incidental to military operations.

[53] *Opinion construing the Phrase " Naval and Military Works or Materials " as applied to Hull Losses and also Dealing with Requisitioned Dutch ships* (1924), *Dec. & Op.*, p. 75, at pp. 93–4.

The freedom of choice may be restricted in certain cases by conventional or customary international law. *Cf.* Hague Regulations, Art. 53, II. It may also be impaired by other considerations. For instance, it seems reasonable to consider that the P.C.A., in the *Norwegian Claims Case* (1922), regarded the freedom of choice of the U.S. as having been prejudiced by the fact that the progress payments made by the purchasers were not refunded by the U.S. when it requisitioned the contracts. " The necessary consequence," said the court, " is that the Corporation took over the rights and duties of the shipbuilders towards the shipowners " (2 H.C.R., p. 40, at p. 56). The duties of the shipbuilders can be no other than those of building and delivering the ships to their owners.

[54] The purpose of the decision was in fact to show that the U.S. had a claim against Germany for the unlawful destruction of these vessels.

See also *Cession of Vessels and Tugs for Navigation on the Danube* (1921) 1 UNRIAA, p. 97, at pp. 107–8: " In cases where a belligerent State has employed private property for military purposes under arrangements whereby the State undertakes to return the property to its owner, the appropriation of the property by the Enemy State would not place the burden of the loss upon the private owner, but would place it upon the owner's State which would be under an obligation to make compensation to the owner."

Mex.-U.S. Cl.Com. (1868): *Putegnat's Heirs Case* (1871) 4 *Int.Arb.*, p. 3718, pp. 3719–20: " The enemy destroyed the property indeed, but only after the government had taken it for public use, by being used by the government, and because it was so used."

The theoretical distinction was clearly drawn by the Mexican-U.S. Claims Commission (1868) in the *Putegnat's Heirs Case* (1871):—

"I conceive that the Government of Mexico is not liable for property destroyed by the enemy during the siege of a town without any complicity on its part; nor for property necessarily and incidentally destroyed by the government in its fire upon an enemy. To make the government responsible, the property must be taken by its authority to be used against the enemy (to assist an attack or make good a defence, for instance) or destroyed or carried away to prevent the enemy from using it. This is what Vattel calls taking deliberately or by way of precaution . . . Property taken or destroyed for the public use lawfully by the civil or military authorities must be paid for by the government . . . It is the seizure of private property for the public use and its loss or destruction while so employed, whether by the enemy or the government, that entitles the owner to payment. Even if it be morally certain that the enemy would himself take the property and use it, depriving the owner of it for ever, still its destruction by the government entitles the party to compensation . . . We must hold, even in such a case, that the public has received the value of the property, by embarrassing its enemy by its destruction, and is bound to make just compensation. It can never be just that the loss should fall exclusively on one man where the property has been lawfully used or destroyed for the benefit of all." [55]

This leads us conveniently to the problem of compensation.

[55] *Loc. cit.*, at pp. 3719–20. Mexican general turned claimant's store-house into fortification and forbade the removal of property to safety.

See also Brit.-U.S. Cl.Com. (1871): *John Turner Case*, 4 *Int.Arb.*, p. 3684. Destruction of house to prevent accumulated medical supplies from falling into hands of advancing enemy. Fran.-U.S. Cl.Com. (1880): *Bertrand Case*, 4 *ibid.*, p. 3705. Destruction of cotton to prevent it falling into the hands of the enemy. *Id.*: *Labrot Case*, 4 *ibid.*, p. 3706. Trees cut to give free range to guns defending position during American Civil War. Brit.-U.S. Cl.Com. (1871): *The Labuan Case*, 4 *ibid.*, p. 3791. Detention of ships in port for reasons of military security also considered as a taking of private property for public use. In all the above cases, damages were awarded.

Cf. also Brit.-U.S. Cl.Com. (1871), *McDonald Case* (4 *ibid.*, p. 3683), with the other claims for cotton destroyed during the American Civil War presented to the same Commission (4 *ibid.*, pp. 3679–83). It would seem therefrom that within one's own lines the notion of taking private property for public use covers some of the cases that would be considered as military necessity, *e.g.*, destruction to prevent enemy capture, in enemy territory.

Cf. Belgo-Hung. M.A.T.: *Sucrerie de Roustchouk Case* (1925) 5 T.A.M., p. 772. The destruction of vessels on the Danube to anticipate crossing by Serb troops was not considered as destruction following requisition, but purely as a military measure, having a strategic or tactical aim and nature. The use of one of the vessels after it had been refloated was considered as a measure of requisition requiring compensation. The case also illustrates the intimate connection between the benefit received and the compensation to be paid.

III. COMPENSATION

Both as regards expropriation and requisition, the payment of compensation to the individuals who have been deprived of their property is now considered indispensable.[56] The duty to pay compensation has either been based upon respect for private property,[57] or upon the enrichment of the community at the expense of isolated individuals, or classes of individuals, by a definite act of appropriation without any fault on the part of the individual.[58] There is much to be said in favour of the

[56] *e.g.*, U.S.-Ven. M.C.C. (1903): *Upton Case*, *Ven.Arb. 1903*, p. 172, at p. 174: " The right of the State, under the stress of necessity, to appropriate private property for public use is unquestioned, but always with the corresponding obligation to make just compensation to the owner thereof." See also p. 173. Panamanian-U.S. G.C.C. (1926): *De Sabla Case* (1933), Hunt's *Report*, 379, at p. 447: " It is axiomatic that acts of a government in depriving an alien of his property without compensation impose international responsibility."

The Brit.-U.S. Cl.Arb. (1910): *Eastern Extension Australasia and China Telegraph Co., Ltd. Case* (1923) (Nielsen's *Report*, p. 40, at p. 76) considered that the right of expropriation, requisition or angary " is in reality only itself acquired in consideration of the payment of compensation, and has no existence as a right apart from the obligation to make compensation."

The following cases considered a requisition not followed by complete compensation as an unlawful act:—

Greco-Germ. M.A.T.: *Karmatzucas Case* (1926), 7 T.A.M., p. 17. Requisition in Rumania by Germany of wheat belonging to claimant (neutral). Receipt given, but only part payment made. Held illegal on the basis of Hague Regulations, Art. 52. *Id*: *Kotzias Case* (1929), 9 *ibid.*, p. 701. *Id. Evghenides Case* (1929), 9 *ibid.*, p. 692. In this case, Hague Regulations, Art. 52 was in fact inapplicable, because the so-called " requisition " took place in the belligerent's own territory. But the M.A.T. simply followed the decision in the *Karmatzucas Case* (1926). Rum.-Germ. Arbitration (1919): *David Goldenberg & Sons Case* (1928), 2 UNRIAA, p. 901, at p. 909. Portugo-Germ. Arbitration (1919): *Award II* (1930), 2 *ibid.*, p. 1035, at p. 1039.

[57] *e.g.*, P.C.A.: *Norwegian Claims Case* (1922), 2 H.C.R., p. 40, at p. 69: " Whether the action of the United States was lawful or not, just compensation is due to the claimants under the municipal law of the United States, as well as under international law, based upon the respect for private property." Rum.-Germ. Arbitration (1919): *David Goldenberg & Sons Case* (1928), *loc. cit.*, at p. 909. Portugo-Germ. Arbitration (1919): *Award* II (1930), *loc. cit.*, at p. 1039.

It is true that the P.C.I.J. staunchly defended the principle of " respect for vested rights " (*e.g.*, A. 7, pp. 21, 22; A. 9, p. 27), but it also admitted that expropriation for reasons of public utility was a permitted derogation from the principle (A. 7, p. 22). It is doubtful whether the P.C.I.J. can be regarded as having subscribed to this opinion.

[58] Mex.-U.S. Cl.Com. (1868): *Putegnat's Heirs Case* (1871), already quoted *in extenso*, above (p. 46) is a good example of this theory, the salient points of which may be recalled: " Property taken or destroyed for the public use lawfully by the civil or military authorities must be paid for by the government. . . . The public has received the value of the property . . . and is bound to make just compensation. It can never be just that the loss should fall exclusively on one man where the property has been lawfully used or destroyed for the benefit of all." (4 *Int.Arb.*, p. 3718, at pp. 3719–3720.) Cited by U.S.-Ven. M.C.C. (1903): *American Electric and Manufacturing Co Case*, *Ven.Arb. 1903*, p. 35, at p. 36. U.S.A.: Spanish Treaty Claims Commission, established under Act of March 2, 1901, 24 *Spanish Treaty*

second solution. In the difficult problem of fixing the amount of compensation, this view may yet be of help in discovering a satisfactory solution. Indeed the second view seems to be more in conformity with the basic conception of expropriation and of requisition as the taking of private property for public use, and also with the principles of political economy. For it should be remembered that, whilst an individual should be compensated for his property which has been used for the general welfare, as a member of the community, he may at the same time have to pay for property that other members have similarly been deprived of. In such cases, there may well be a set-off of the mutual debts. If this is true, it becomes easy to explain why the rate of compensation may decrease as the circle of persons affected widens. The justice of this decrease has often been felt, but has rarely been articulately expressed. Thus when the *Rapporteur* on the Spanish Zone of Morocco Claims (1923) said that " an alien may not be deprived of his property without just compensation," he added: " This is true particularly when the restriction imposed upon the free exercise of the right of property is the result of a measure directed only at specific persons, and not at all owners of property similarly situated." [59] If compensation is based on respect for private property, it does not seem logical to introduce such refinements. Indeed, the theory of compensation based on enrichment is much more flexible. It permits the taking into consideration of equities in favour not only of the individual, but also of the community. The Permanent Court of International Justice has said that in case of expropriation a " fair compensation " (" *une indemnité équitable* ") should be paid.[60] True equity, said the Umpire of the Franco-Mexican Mixed Claims Commission (1924), consists

Claims Commission (1910), p. 150: " The Commission made an allowance in every case where property was used or consumed by the Spanish forces for their benefit, the theory being that whenever it appeared that the Spanish forces had been advantaged by the use or consumption of private property it should be paid for." ICJ: *Anglo-Iranian Oil Co. Case* (Jd.) (1952), D.O. of Levi Carneiro, *ICJ Reports, 1952*, p. 93, at p. 162: " Where damage has been suffered by a member of the community in the interests of the latter, it would be unjust that that member alone should bear the full burden of the sacrifice."

See also Mex.-U.S. Cl.Com. (1868): *Thomas C. Baker Case*, 4 *Int.Arb.*, p. 3668. Belgo.-Hung. M.A.T.: *'Sucrerie de Roustchouk Case.* (1925), *loc. cit., supra*, p. 46, note 55 *in fine.*

[59] *Rapport III* (1924), 2 UNRIAA, p. 615, at p. 647. Transl.

[60] *Chorzów Factory Case* (Indemnity: Merits) (1928) A. 17, p. 46.

in holding in the best equilibrium the considerations of equity invoked by both parties.[61]

IV. CONCLUSIONS

In the preceding pages, one aspect of the application in international law of the general principle *Salus Populi Suprema Lex* has been briefly examined. In application of this general principle, international law, in common with the public law of all nations, allows the interest of the State, for the promotion of the communal welfare, to take precedence over the proprietary rights of private individuals situated in territory subject to its authority. International law recognises the superiority of the collective interest, when it gives expropriation the status of a legal right, albeit a right conditional upon the payment of compensation and strictly circumscribed by the collective needs which alone justify it. This right, like every other right of the State must be exercised by its competent organs in accordance with the requirements of good faith and, in particular, there must be no undue discrimination against aliens.[62] Moreover, when exercising such a right, it is incumbent upon the State, as much as possible, to safeguard the rights and interests of the individual,[63] to respect educational institutions,[64] places and objects of worship,[65] and to conform to the dictates

[61] *Pinson Case* (1928), *Jurisprudence*, p. 1, at p. 133.

[62] *Supra*, pp. 39 *et seq.*, 44 *et seq.* See *Standard Oil Co. Case* (1926) quoted *supra*, pp. 36–7.

[63] In the Spanish Zone of Morocco Claims (1923): Claim 21: *Holliday* (*Ouad Hélu*) *Case* (1924), the land was expropriated for the construction of a highway and the claimant's survey was erroneous in that its figures were less than the actual area involved. The *Rapporteur* declared: " *In a case of expropriation, where the authorities should have prepared the surveys*, an error committed by the owner during the establishment of a private survey should not cause him any disadvantage " (2 UNRIAA, p. 615, at p. 692. Italics added. Transl.). The objection of *ultra petita* was set aside.

PCA: *Norwegian Claims Case* (1922), 2 H. C. R., p. 39, at p. 72: " The just compensation to which they are entitled includes not only the items which have been duly proved, but also those which could have been proved and estimated if the officials of the belligerent State had, in the interest of both parties, paid or offered payment, or at least required contradictory expert evaluation and inventory, of the neutral property taken."

[64] PCA: *Expropriated Religious Property Case* (1920), 2 H.C.R., p. 1. Among the French claims, in one case where the land of a girls' school was involved, the PCA decided that the land should not pass to Portugal till the school had finished its use of the land (p. 5).

Cf. Hague Regulations, Art. 56.

[65] *Expropriated Religious Property Case* (1920). The court ordered the Chapel of Picoas, together with all the objects and ornaments for the practice of worship, to be restored to the claimant (*loc. cit.*, p. 5).

Cf. Hague Regulations, Art. 56; Hague Convention XI of 1907, Art. 4.

of humanity.[66] This right may also be restricted by specific rules of international treaty or customary law, which must of course be respected.[67]

The recognition that public needs constitute a legal right is of no mere academic interest; for it entails legal consequences of practical importance. As the Permanent Court of International Justice pointed out in the *Chorzów Factory Case* (Merits) (1928), a clear distinction should be drawn between expropriation and the unlawful taking of private property.[68] While the taking of private property for public use requires only the payment of "fair compensation" ("*indemnité équitable*") to make it lawful,[69] an unjustified taking of the private property of an alien is an internationally illegal act.

If the taking is unlawful, the State may, in the first place, be called upon to restore the property and at the same time to repair any damage not covered by the restitution.[70] If this is

[66] Mex.-U.S. G.C.C. (1923): *Bond Coleman Case* (1928). A boat chartered to take a wounded man to a town where he could receive proper medical treatment was seized by a Mexican general for troop transportation. "At a time when the dictates of humanity should have prompted assistance to the claimant, measures taken for his relief were frustrated. No imperative necessity for taking the boat has been shown." (*Op. of Com. 1929*, p. 56, at pp. 60–61). Seizure held a wrongful act and compensation awarded. Had public needs imperatively required it, the boat, it seems, might yet have been lawfully taken. But a State must not act in disregard of humanitarian considerations.

Cf. Preamble to Hague Conventions II and IV of 1899 and 1907 respectively.

[67] *Supra*, pp. 41 *et seq.* See also Spanish Zone of Morocco Claims (1923): Claim 51: *British Government (Aduana Vieja) Case* (1924). Spanish troops wanted to quarter in a British consular residence in Morocco and, finding it too dilapidated, destroyed it. Recalling the inviolability of consular residence in a country submitted to capitulations, the *Rapporteur* declared that the quartering of troops in the building was in the first instance illegal (2 UNRIAA, p. 615, at pp. 725–726).

[68] A. 17, pp. 46 *et seq.*

[69] It seems that, unless the national standard of compensation be higher (*Cf. Norwegian Claims Case* (1922), at p. 74: "Just compensation, as it is understood in the United States, should be liberally awarded"), the amount of compensation does not exceed the value of the property at the moment of dispossession plus interest to the day of payment (*Cf.* PCIJ: *Chorzów Factory Case* (Merits) (1928), A. 17, p. 47). *Lucrum cessans* is not compensated (*Cf. infra*, p. 51, note 71). The umpire of the Fran.-Mex. Cl.Com. (1924) even refused to allow interest "on the value of the requisitioned articles either from the date of requisition, or from that of the official notification of the claim to the government of the debtor State" (*Pinson Case* (1928), *Jurisprudence*, p. 1, at pp. 137–138). International Tribunals may, however, also take into account other equities, *e.g.*, Rum.-Germ. Arbitration (1919): *David Goldenberg & Sons Case* (1928), 2 UNRIAA, p. 901, at p. 910.

On the theoretical basis of compensation, see *supra*, pp. 47 *et seq.*

[70] *Chorzów Factory Case* (Merits) (1928), A. 17, p. 47. *Cf. Walter Fletcher Smith Case* (1929), 2 UNRIAA, p. 913, at p. 918: "The Arbitrator believes that it would be not inappropriate to find that, according to law, the property should be restored to the claimant." *Cf. supra*, p. 41, note 41, with regard to requisition in violation of Art. 52 of the Hague Regulations.

not possible, reparation would then have to be made in money, which, in this eventuality, would include any ascertainable *lucrum cessans* of the individual so injured by the unlawful act.[71]

C. Measures to Ensure Public Safety

The *Rapporteur* on the Spanish Zone of Morocco Claims (1923) conceived "the maintenance of internal peace and social order" to be the prime object and duty of every State.[72] The State cannot, therefore, be reasonably denied the means of realising this object and fulfilling its duty.

The undisputed principle of the absolute and exclusive jurisdiction of a sovereign State within its national territory requires no recapitulation here.[73] The substantive question is to what extent a State may take exceptional measures affecting the rights and interests of aliens when the safety of the community is endangered.

A general answer may be found in the decision of the Mexican-U.S. General Claims Commission (1923) in the *Dickson Car Wheel Co. Case* (1931):—

"States have always resorted to extraordinary measures to save themselves from imminent dangers, and the injuries to foreigners resulting from these measures do not generally afford a basis for claims . . . The foreigner, residing in a country which, by reason of natural, social or international calamities is obliged to adopt those measures, must suffer the natural detriment to his affairs without any remedy."[74]

[71] *Chorzów Factory Case* (Merits) (1928), A. 17, p. 47. See *infra*, pp. 233 *et seq.*: The Principle of Integral Reparation. See, however, on the other hand, Spanish Zone of Morocco Claims (1923): Claim No. 6: *Rzini (Ras-El-Karaber) Case* (1924), 2 UNRIAA, p. 615, at pp. 664 *et seq.* The *Rapporteur* held that, the land having been taken for public utility, only the price of the land at the time of dispossession plus normal interest should be paid. He would not take into account any particularly high price which the land might have fetched since the day of expropriation to the day of the decision (pp. 665–6).

[72] *Rapport III* (1924) 2 UNRIAA, p. 615, at p. 642. See also PCA: *Palmas Case* (1928), U.S./Neth., 2 H.C.R., p. 84, at p. 93.

[73] See, *e.g.*, *Palmas Case* (1928), *loc. cit.*, p. 92; PCIJ: *The Lotus Case* (1927), A. 10, pp. 44, 69, 94.

[74] *Op. of Com. 1931*, p. 175, at pp. 192–193. Claims for railway wheels sold to Mexican railroads before latter taken over by Mexican Government as an emergency measure. As an example, the Commission said, "Moratoriums imposed upon National Banks are measures of this character, and there is no precedent showing that international indemnities have been awarded on this ground." (p. 192.)

Irrespective of the source of danger, therefore, a State may take all necessary steps to ensure the safety and welfare of the community.

I. ADMINISTRATIVE MEASURES

If necessary, a State may "prevent the passage of persons either for travel or business" in territory under its control, "suspend traffic upon any line of transportation,"[75] prohibit navigation on its own rivers, even though permission to navigate them has previously been given.[76] It may close its harbours and ports, even though there exists a treaty granting aliens the right of call,[77] or a concession conferring special rights of user.[78] It may impose a moratorium on its banks,[79]

[75] Germ.-Ven. M.C.C. (1903): *Great Venezuelan Railroad Case*, *Ven.Arb. 1903*, p. 632, at p. 636.

[76] Germ.-Ven. M.C.C. (1903): *Faber Case*, *Ven.Arb. 1903*, p. 600, at pp. 626 and 630. Claims on behalf of German nationals in Colombia, who had a commercial interest in navigating the Catatumbo and the Zulia rivers.

U.S.-Ven. M.C.C. (1903): *Orinoco Steamship Co. Case* (1904), *Ven.Arb. 1903*, p. 72 *et seq.*; 1 H.C.R., p. 240, at pp. 272–3: "The right to open and close, as a sovereign on its own territory, certain harbours, ports and rivers in order to prevent the trespassing of fiscal laws is not and could not be denied to the Venezuelan Government, much less this right can be denied when used in defence not only of some fiscal rights, but in defence of the very existence of the Government; . . . The temporary closing of the Orinoco River (the so-called 'blockade') in reality was only a prohibition to navigate that river in order to prevent communication with the revolutionists in Ciudad Bolivar and on the shores of the river, this lawful act by itself could never give a right to claims for damages to the ships that used to navigate the river." In this case there had previously been an express written permission to navigate the river, which the claimants alleged to be a granted "monopoly." Case was first decided by the above mentioned Claims Commission; was subsequently submitted again to the P.C.A. at the instance of the U.S. and by means of a special agreement of 1909 (1 H.C.R. at pp. 226 *et seq.*). While some counts of the original award were reversed for disregard of the *compromis*, others were allowed to stand. The part of the award from which the above passage was extracted was in no way affected.

[77] "*Blockade*" *of Portendic Case* (1843), *supra*, p. 30. Note particularly that the *Meta* and the *Marmion* were not awarded damages. See Report of the British Commissioner of Liquidation, 34 B.F.S.P. 1088, at pp. 1101–2: "According to the terms of the royal award, the fact of the blockade does not constitute a ground for compensation. . . . The inference is irresistible, that in the opinion of the Royal Arbitrator, the blockade was under the circumstances, justifiable." See also Ital.-Ven. M.C.C. (1903): *Poggioli Case*, *Ven.Arb. 1903*, p. 847, at p. 870.

[78] Fran.-Ven. M.C.C. (1902): *Compagnie générale de l'Orénoque Case* (1905), Ralston's *Report*, p. 244, at p. 360, quoted *infra*, p. 55.

Ital.-Ven. M.C.C. (1903): *Martini Case*, *Ven.Arb. 1903*, p. 819, at p. 843: "This closure, while entirely legal and within the power of the Government as against the world at large . . ."

[79] Mex.-U.S. G.C.C. (1923): *Dickson Car Wheel Co. Case* (1931), *loc. cit.*, p. 192. *Supra*, p. 51, note 74.

or prohibit the exportation of certain articles, notwithstanding a treaty provision securing liberty to trade.[80]

On the principle of *Salus populi suprema lex esto*, the Mixed Courts of Egypt, in 1921, recognised the right of the Commander-in-Chief of the British Forces in Egypt, as representing the protecting power, to proclaim a "political state of siege ('*état de siège politique*')," concentrating in the hands of the military authorities the powers of State, and allowing them to take measures not only of police and order, but also measures extending to economic, legal and social fields, thereby affecting the interests and rights of aliens normally enjoying extraterritoriality.[81] A political state of siege was considered to be "a measure of an internal character concerning public order and social peace, adopted on account of necessity and not in view of a foreign war."[82]

In case of war, however, there is a natural presumption of national emergency. In particular, a state of war brings about a special relationship between the belligerent State and enemy nationals, and permits the former to take all necessary measures in relation to the latter so as to prevent them from engaging in any activity harmful to its welfare or security. The position was discussed at length by the Mexican-United States General Claims Commission (1923), in the *Kelly Case* (1930)[83]:—

"During the last century there has been a world wide effort to mitigate the horrors of war. The principle has been acknowledged more and more that the unarmed citizens should be spared in person, property and honour, as much as the exigencies of war will permit."[84]

"There are well defined rules of international law for the safeguarding of rights of non-combatants. But there are, of course, many ways in which non-combatants may, without being entitled to

[80] Brit.-U.S. Cl.Com. (1871): *The Daring*, *The Templar*, *The Patmos* ("*Calcutta Saltpetre Cases*"). Prohibition of export of saltpetre described by counsel for Great Britain as a measure of self-defence; especially when war threatened between the two countries. Claims dismissed (4 *Int.Arb.*, p. 4379, at p. 4383).

[81] *Ismail Pasha Sedky* v. *Sidarous Bichara* (1921) 11 T.M.E. (1920–1), pp. 162–3.

[82] *Loc. cit.*, p. 163, c. 2. Transl.

[83] *Op. of Com. 1931*, p. 82. Removal of a U.S. citizen from a responsible position in the Mexican railroads when the U.S., without actual declaration of war, landed forces at Vera Cruz in 1914 and extensive hostilities took place. The Commission, without actually deciding whether these hostilities constituted a state of war, assimilated U.S. nationals to enemy aliens.

[84] *Loc. cit.*, p. 90.

compensation, suffer losses incident to the proper conduct of hostile operations. And a government has recourse to a great many measures of self-protection distinct from actual military operations such as the segregation or internment of enemy nationals, the elimination of such persons from any position in which they might be a source of danger, and their exclusion from prescribed locations." [85]

" As is shown by precedents that have been cited and others that might be mentioned, there is a wide range of defensive measures in time of hostilities. Undoubtedly, the justification of such measures must be found in the nature of the emergency in each given case and of the methods employed to meet the situation." [86]

" Payment must be made for property appropriated for use by belligerent forces. Unnecessary destruction is forbidden. Compensation is due for the benefits resulting from ownership or user. In dealing with the precise question under consideration by such analogous reasoning as we consider it to be proper to employ, we must take account of things which in the light of international practice have been regarded as proper, strictly defensive measures employed in the interest of public safety. Generally speaking, international law does not require that even nationals of neutral countries be compensated for losses resulting from such measures." [87]

It may, therefore, be said that whenever the safety of the State is threatened, whatever may be the cause, it has a right to take the requisite measures, in territory subject to its authority, in order to ensure the safety of the community.

The opportuneness of these measures is not subject to review by an international tribunal. In the words of the Umpire in the *Faber Case* (C. 1903):—

" What is necessary to peace, safety, and convenience of her own citizens she must judge, and it seems to the Umpire quite clear that in any case calling for an exercise of that judgment her decision is final." [88]

[85] *Loc. cit.*, p. 85.
[86] *Loc. cit.*, p. 91.
[87] *Loc. cit.*, pp. 92–3; claim disallowed.
See Rum.-Germ. M.A.T.: *Rosenstein Case* (Merits) (1930), 10 T.A.M., p. 122, at p. 127: " Undoubtedly, we have, in principle, to admit the right of a Sovereign State, for reasons of public interest, to withdraw public works from a contractor who, as the result of a declaration of war, has become the subject of an enemy State and, as such, not only suspect, but also liable to be interned at any time " (Transl.). No indemnity was held to be due.
[88] *Ven.Arb. 1903*, p. 600, at p. 626, reiterated at p. 630. See also Ital. Ven. M.C.C. (1903): *Poggioli Case*, *Ven.Arb. 1903*, p. 847, at p. 870: " The Umpire has nothing whatever to do with the reasons inducing the government to close

It seems sufficient for the State to show that there existed in fact " a case for the exercise of this discretion," [89] in other words, that the safety of the community was threatened.

With regard to the question how far these exceptional measures may be compatible with a State's legal undertakings, a distinction has to be drawn between contracts under municipal law and treaties under international law. The former cannot limit the State's right to resort to exceptional measures for its safety. The State may elect to pay compensation instead of performing its obligations under a contract, whenever its interest of self-preservation so requires. Thus the Franco-Venezuelan Mixed Claims Commission (1902) declared in the case of the *Compagnie générale de l'Orénoque* (1905):—

" As the Government of Venezuela, whose duty of self-preservation rose superior to any question of contract, it had the power to abrogate the contract in whole or in part. It exercised that power and cancelled the provision of unrestricted assignment. It considered the peril superior to the obligation and substituted therefor the duty of compensation." [90]

With regard to treaties, it is necessary to bear in mind the following reservation contained in the joint dissenting opinion by Judges Anzilotti and Huber in *The Wimbledon Case* (1923), which appears to be corroborated by decisions of other international tribunals:—

" In this respect, it must be remembered that international conventions and more particularly those relating to commerce and communications are generally concluded having regard to normal peace conditions. If, as the result of a war, a neutral or belligerent State is faced with the necessity of taking extraordinary measures

the port." PCIJ: *Oscar Chinn Case* (1934), U.K./Belgium, A/B. 63. Speaking of the economic crisis in Belgian Congo, the P.C.I.J. said: " The Belgian Government was the sole judge of this critical situation and of the remedies that it called for—subject of course to its duty of respecting its international obligations " (p. 79).

[89] *Faber Case, loc. cit.*, pp. 626, 630.

[90] Ralston's *Report*, p. 244, at p. 360. The contract-concession originally permitted unrestricted assignment. When in 1890, the claimant company succeeded in interesting an English company in taking over the concession, the Venezuelan Government absolutely refused to permit the transfer, on account of a very serious and threatening dispute between Great Britain and Venezuela over part of the territory covered by the concession.

Cf. also Ital.-Ven. M.C.C. (1903): *Martini Case, Ven.Arb. 1903*, p. 819, at p. 843. Fran.-Ven. M.C.C. (1902): *Pieri Dominique & Co. Case* (1905), Ralston's *Report*, p. 185, at p. 205 (*f*).

temporarily affecting the application of such conventions in order to protect its neutrality or for the purposes of national defence, it is entitled to do so even if no express reservations are made in the convention. This right possessed by all nations, which is based on generally accepted usage, cannot lose its *raison d'être* simply because it may in some cases have been abused. . . .

" The right of a State to adopt the course which it considers best suited to the exigencies of its security and to the maintenance of its integrity, is so essential a right that, in case of doubt, treaty stipulations cannot be interpreted as limiting it, even though these stipulations do not conflict with such an interpretation." [91]

But as Judges Anzilotti and Huber themselves acknowledged:—

" The foregoing considerations could not be effective against a definite provision expressly referring to the circumstances arising out of a war." [92]

Any violation of such a provision would undoubtedly be an unlawful act.

Express treaty provisions apart, the only legal limitation on the discretion of the State appears to be the principle of good faith. The measures taken should be reasonable and must not be arbitrary,[93] oppressive, or maintained for longer than necessary.[94] Indeed, as the Mexican-United States General Claims Commission (1923) observed in the *E. R. Kelly Case* (1930):—

" Undoubtedly the justification of such measures must be found in the nature of the emergency in each given case and of the methods to meet the situation." [95]

In determining what is meet and proper in a given case, it is necessary to

[91] PCIJ: A. 1, pp. 36–7. See " *Blockade* " *of Portendic Case* (1843), *supra*, pp. 30, 52.

[92] *Loc. cit.*, p. 37. See also PCIJ: *Oscar Chinn Case* (1934), A/B. 63, p. 79.

[93] PCIJ: *The Wimbledon* (1923), D.O. by Anzilotti and Huber, A. 1, pp. 40–1: " For these reasons, we are of opinion that the only question to be decided is whether the application to the Kiel Canal of the neutrality regulations adopted by Germany was an arbitrary act calculated unnecessarily to impede traffic."

[94] *Carlos Butterfield Case* (1890) U.S./Den., 2 *Int.Arb.*, p. 1185. In dismissing the claim, the Arbitrator, speaking of the Danish measures for protecting her neutrality, said: " The Arbitrator is of opinion that these measures were reasonable, and in no sense oppressive " and " the precautionary measures were not maintained longer than was necessary " (p. 1206).

[95] *Op. of Com. 1931*, p. 82, at p. 91.

" take account of things which in the light of international practice have been regarded as proper, strictly defensive measures employed in the interest of public safety." [96]

This practice may, and indeed does, vary with time and circumstances.[97]

Generally speaking, measures taken in time of peace or in time of war to ensure the safety of the community give rise to no compensation, even if the interests of friendly aliens are thereby directly affected,[98] and this is so, *a fortiori*, when the damage has resulted from measures primarily affecting the State's own nationals.[99, 1] Exceptions to this general rule, it seems, are confined to three instances:—

1. Where a contract with individuals has to be disregarded.[2]

2. Where private property has been taken for public use.[3]

[96] *Ibid.*, at p. 92–3.

[97] *Cf.* Mixed Courts of Egypt: *Ismail Pasha Sedky* v. *Sidarous Bichara* (1921) 11 T.M.E. (1920–21), p. 162, at p. 163, c. 2: " It is sufficient to recall in this connection that the Great War has profoundly upset a great number of principles of public and private law, however intangible [*sic*! *infrangible*?] they may have been considered up to the present. Similarly, and as an inevitable consequence, it has affected the traditional principles which, during a state of siege, limited the powers of the military authorities to mere measures of police and order. It has extended them to the economic, juridical and social fields, as is shown by the numerous measures dictated by the exceptional circumstances of the moment and enacted more or less everywhere to avert all kinds of difficulties " (Transl.).

[98] Mex.-U.S. G.C.C. (1923): *Dickson Car Wheel Co. Case* (1931), *Op. of Com. 1931*, p. 175, at pp. 192–3; *Id.*: *Kelly Case* (1930) *ibid.*, p. 82, at pp. 92 *et seq.*; and other cases mentioned in the present section.

[99] *Dickson Car Wheel Co. Case* (1931), *loc. cit.*, at pp. 188 *et seq.* See also Mex.-U.S. Cl.Com. (1868): *Siempre Viva Silver Mining Co. Case* (1874) 4 *Int.Arb.* p. 3784; *Id.*: *John Cole Case* (1876) 4 *ibid.*, at p. 3785. An alien cannot complain if his interests are affected because nationals have been called up for national service. *Cf. contra* Greco-Germ. M.A.T.: *Evghenides Case* (1929) 9 T.A.M., p. 692.

[1] In the light of the above, the decision of the Mex.-U.S. Special Cl.Com. (1923) in the *Santa Isabel Cases* (1926) (*Op. of Com. 1926–31*, p. 1, at pp. 11–12) becomes easily understandable and also serves to illustrate the above proposition. While an amnesty to malefactors guilty of crimes against aliens is usually regarded as a failure of justice involving the responsibility of the State, the Commission in this case considered the action of the Mexican Government " a supreme effort for achieving, by any means whatsoever, the pacification of the country," and refused to hold it to be an act of leniency entailing the responsibility of Mexico.

[2] *Supra*, p. 55.

[3] *Supra*, pp. 36–51.

3. Generally where there has been a tangible enrichment of the State to the detriment of individuals without any fault on their part.[4]

II. FORCIBLE MEASURES

So far only administrative measures have been mentioned. There can be no doubt, however, that a State may also use force of arms to ensure the safety and welfare of the community, when circumstances so require. In the words of the Arbitrator in *The Montijo Case* (1875):—

"The first duty of every government is to make itself respected both at home and abroad."[5]

Force may thus be used to compel obedience to the law. As the sole Arbitrator said in the *James Pugh Case* (1933):—

"The right of the individual must ever be maintained, but the right of society is superior. A fundamental right of society is the right to law and order and the further right to compel obedience thereto by the individual. . . . Obedience to law is not a matter of individual choice, but is a matter of compulsion. Such being the necessary situation in organised society, the obedience must be compelled by the use of force when that becomes necessary."[6]

If an individual should resist the arm of the law, the State is not responsible for the consequences of the use of necessary

[4] *Kelly Case* (1930), *loc. cit.*, at p. 92: "Compensation is due for the benefits resulting from ownership or user."
However, in such cases, it is essential to determine the person to whose detriment in fact and in law the benefit has been obtained. If a person has supplied materials to a railroad company and the line is taken over and operated by the State in an emergency, the user of these materials is not to his detriment but to that of the Company, since he no longer has a right over them, but has only a contractual right against the railroad company. See *Dickson Car Wheel Co. Case* (1931), *loc. cit.*, pp. 185–6; *cf.* pp. 191–2.

[5] U.S.A./Colombia, 2 *Int.Arb.*, p. 1421, at p. 1444. Seizure of ships by revolutionaries. It may be mentioned, however, that the Umpire in this case established an absolute responsibility for the protection of aliens, while modern international jurisprudence is content with *diligentia quam in suis*. See Spanish Zone of Morocco Claims (1923): *Rapport III* (1924), 2 UNRIAA, p. 615, at pp. 643 *et seq.*; *infra*, pp. 220 *et seq.*

[6] *U.K. (for Irish Free State)* v. *Panama*, 3 UNRIAA, p. 1439, at pp. 1447–8. Pugh, a citizen of the Irish Free State, met his death as a result of clubbing by the Panamanian police. "What the record discloses to us is the unfortunate and accidental death of Pugh brought on by himself by reason of his resistance to arrest, his striking the police and the consequent lawful use of their clubs on him, without any intent, actual or constructive, of killing him but for the sole purpose of lawfully compelling his submission and of defending themselves" (p. 1451). Claim disallowed.

and reasonable force to vindicate its lawful authority.[7] Moreover, even where there is no fault on the part of the victim, a State is not responsible for injuries, even when fatal, caused to aliens incidentally in the enforcement of its laws by the use of arms, provided that such use is in accordance with the local law.[8] In every case, however, the use of force must be justified by necessity and the amount of force and the manner in which it is employed must be reasonable.[9] Furthermore, what is necessary and reasonable, although largely dependent

[7] See *Pugh Case* (1933), *supra*, p. 58.

See also Peruv.-U.S. Cl.Com. (1863): *Brand Case*, 2 *Int.Arb.*, p. 1625, at p. 1625: " Mr. Brand received his injuries in consequence of the violent armed opposition to legal authority by the resistance offered on the deck of the *Ganges*. . . . If he had been shot dead by one of the soldiers under the circumstances the Government of Peru would not have been accountable."

Cf. also *The I'm Alone* (1933, 1935), Canada/U.S., Joint Interim Report of the Commissioners (1933) 3 UNRIAA, p. 1609, at p. 1615: " On the assumptions stated in the question [*i.e.*, the right of hot pursuit existed in the circumstances], the United States might, consistently with the Convention, use necessary and reasonable force for the purpose of effecting the objects of boarding, searching, seizing and bringing into port the suspected vessel; and if sinking should occur incidentally, as a result of the exercise of necessary and reasonable force for such purpose, the pursuing vessel might be entirely blameless." *In casu*, the admittedly intentional sinking of the Canadian schooner by the U.S. was considered unjustified.

[8] Brit.-U.S. Cl.Arb. (1910): *Cadenhead Case* (1914) Nielsen's *Report*, p. 505. Tribunal disallowed a claim for accidental killing of a British subject by a United States soldier firing at a military prisoner escaping from a Michigan prison. The soldier was found to have acted in conformity with military orders and regulations. The Tribunal, however, recommended an *ex gratia* payment of compensation. *Cf. infra*, p. 64.

[9] *Cf. La Masica Case* (1916) *G.B.* v. *Honduras*, 121 B.F.S.P. (1925), p. 784, at pp. 792–793: " If the attitude of the negroes [British subjects] and their refusal to come down from the engine to be arrested cannot justify the public force [of Honduras] having discharged their rifles at them, the same cannot be said with respect to the action taken in the case of Joseph Holland because, as it is admitted by the two high parties that there was an affray and that the negroes refused to come down from the engine, the employment of force to compel them to do so was justified within certain limits, and there is no reason to think that these limits were exceeded in the case of Holland." Honduras held liable for the death of the negroes, but not for the injuries inflicted upon Holland.

In the *Pugh Case* (1933), the Arbitrator examined at length whether the circumstances justified the Panamanian police in using their clubs on Pugh and whether in so doing they committed any excess (*loc. cit.*, pp. 1447 *et seq.*).

Mex.-U.S. G.C.C. (1923): *Mallén Case* (1927), *Op. of Com. 1927*, p. 254. The U.S. was held liable for injuries inflicted by a deputy constable who, partly to satisfy a private vengeance, in effecting an arrest of doubtful legality, acted in a savage, brutal and humiliating manner (*cf. ibid.*, pp. 259, 260). As the U.S. Commissioner said in his concurring opinion: " The award of the Commission must be based on the character of the injuries inflicted upon the consul as a result of *force and violence not necessary to effect his arrest* " (p. 266).

Cf. also *Id.*: *Koch Case* (1928) *Op. of Com. 1929*, p. 118, at p. 119.

upon the circumstances of each case, is to be determined in accordance with international standards.[10]

The same principle also applies when a State is obliged to have recourse to arms for the suppression of organised resistance to its authority inside its territory or for the defence of the community against foreign invasion. Thus the *Rapporteur* on the Spanish Zone of Morocco Claims (1923) stated:—

" It has been said [11] that the State may not be held responsible for the fact that a revolution breaks out in its territory, or that the

[10] " Indemnities have been awarded in cases in which it has been considered that soldiers or police officials acted improperly in attempting to make arrests, when persons have failed to respond to a summons to halt. Domestic laws throughout the world seem none too certain with respect to the action of officers relative to such matters. It seems reasonable to suppose that such is the fact because it is considered inadvisable or impracticable to frame legislation tending on the one hand to tie too rigidly the hands of officials, or on the other hand, to give them too great latitude, and that therefore considerable discretion is left to them " (Mex.-U.S. G.C.C. (1923): *Kling Case* (1930), *Op. of Com. 1931*, p. 36, at p. 41). This shows the difficulty in formulating any hard and fast rules. The Arbitrator in the *Pugh Case* (1933) stated: " We reiterate that it is impossible to set forth the situations which demand and justify the use of a club by a policeman. Rather can we arrive at a conclusion by a study of a particular case " (*loc. cit.*, p. 1448). In the *Kling Case* (1930), the Mex.-U.S. G.C.C. (1923), *per* the American Commissioner, held Mexico liable for " indiscreet, unnecessary and unwarranted " use of firearms by Mexican soldiers when a party of Americans of the Texas Co. of Mexico, S.A., returning from a nearby town to the camp of their company, fired their revolvers into the air for fun. In the *García and Garza Case* (1926), the Commission recognised that there existed an " international standard concerning the taking of human life." And it declared: " If this international standard of appraising human life exists, it is the duty not only of municipal authorities but of international tribunals as well to obviate any reckless use of firearms " (*Op. of Com. 1927*, p. 163, at p. 166). With particular reference to the use of firearms in the enforcement of law along an international border, the Commission formulated the following rule: " In order to consider shooting on the border by armed officials of either government (soldiers, river guards, custom guards) justified, a combination of four requirements would seem to be necessary: (a) the act of firing, always dangerous in itself, should not be indulged in unless the delinquency is sufficiently well stated; (b) it should not be indulged in unless the importance of preventing or repressing the delinquency by firing is in reasonable proportion to the danger arising from it to the lives of the culprits and other persons in their neighbourhood; (c) it should not be indulged in whenever other practicable ways of preventing or repressing the delinquency might be available; (d) it should be done with sufficient precaution not to create unnecessary danger, unless it be the official's intention to hit, wound, or kill " (p. 167; see also *Id.*: *Falcón Case* (1926), *Op. of Com. 1927* p. 140). *Cf.* these four requirements with the conditions governing Self-Defence and Reprisals, *infra*, pp. 94 *et seq.*, 98 *et seq.*

[11] *Rapport III* (1924), 2 UNRIAA, p. 615, at p. 642: " It seems beyond dispute that the State is not responsible for the occurrence of a riot, revolt, civil war or international war, nor for the fact that these happenings cause damage in its territory. It might be more or less possible to prove mistakes on the part of the government, but, in the absence of specific agreements or treaty provisions, the necessary investigation to this end is not permissible. These events must be considered as cases of *vis major*. The principle of the independence of States excludes the possibility of their domestic or foreign policy being made, in case of doubt, the subject of international judicial enquiry " (Transl.).

State is involved in a war. From this premise, it follows logically that a State can also not be held responsible for the consequences of its effort to re-establish order or to combat the enemy by the force of arms. In acting thus, the State is only fulfilling a primordial duty. In this matter, it seems that there exists a quite generally recognised rule: The State is not even responsible for damage caused by the military operations of its own forces." [12]

And in the *Luzon Sugar Refining Co. Case* (1925), which involved a claim for damages suffered in 1899 during the American campaign against the Philippine insurrectionists, it was held that:

" The foreign residents, whose property unhappily chanced to stand in the fields of those operations, have no ground of complaint against the United States which had no choice but to conduct them where the enemy was to be found." [13]

" The rule that neutral property in belligerent territory is liable to the fortunes of war equally with that of subjects of the State applies in the case of civil as well as international war." [14]

Under traditional international law, all damages incidental to military operations is considered as mere *casus fortuitus* for which neither of the belligerents is responsible.[15] Military necessity, whatever its cause or origin, absolves the State from liability for damage resulting therefrom. As, however, the *Rapporteur* on the Spanish Zone of Morocco Claims (1923) pointed out, the absence of liability for the State for damage caused through military operations proceeds juridically from the premise that, as a rule, international tribunals lack jurisdiction to determine responsibility for the existence of a state of war, whether civil or international.[16] But when an international tribunal is expressly empowered to establish this responsibility, there is juridically no obstacle to holding the State liable for the damage caused by its unlawful military

[12] *Rapport III* (1924), *ibid.*, at p. 645. (Transl.)
[13] Brit.-U.S. Cl.Arb. (1910), Nielsen's *Report*, p. 586, at p. 586. See also U.S.-Ven. M.C.C. (1903): *American Electric and Manufacturing Co. Case*, *Ven.Arb. 1903*, p. 35, at p. 36.
[14] U.S.-Ven. M.C.C. (1903): *Volkmar Case*, *Ven.Arb. 1903*, p. 258, at p. 259. See also *Rosa Gelbtrunk Case* (1902), U.S.F.R. (1902), p. 876, at p. 879.
[15] See also Mex.-U.S. Cl.Com. (1868): *Shuttuck Case*, 4 *Int.Arb.*, p. 3668. Brit.-U.S. Cl.Arb. (1910): *Hardman Case* (1913), Nielsen's *Report*, p. 465 (see *infra*, p. 64).
[16] *Supra*, p. 60, particularly note 11.

operations.[17] Indeed, in the Portugo-German Arbitration of 1919, certain German military incursions in 1914 into Portuguese possessions in Africa were found to be unlawful and Germany was held liable for all the proximate consequences of these acts,[18] according to principles governing unlawful acts in general.[19] However this may be, it seems certain that there is, at all events, exemption from responsibility in the case of military operations undertaken by the State to quell internal disorder [20] or to resist external aggression.[21]

[17] *Cf.* Fran.-Germ. M.A.T.: *Franz Case* (1922), 1 T.A.M., p. 781, at p. 785; *Id.*: *Hourcade Case* (1922), *ibid.*, p. 786, at p. 788: "By the terms of Art. 231 of the Treaty (of Versailles), Germany has admitted responsibility for the war and its consequences; . . . it follows that if, according to German municipal law, the war may be invoked as a case of *vis major*, not only by private individuals but also by those States which have taken part in it—a question which it is unnecessary to decide in the present case—the German Government can, in no way, benefit from such a defence in its disputes with allied nationals; . . . it is indeed an undisputed and indisputable principle that no one can invoke, in his own defence, the existence of a fact for which he is himself alone responsible" (Transl.).

Cf. also the I.M.T. at Nuremberg (1945) which, empowered to try individuals accused inter alia of crimes against peace, had to investigate the legality of the wars in which the European Axis Countries were engaged. It found that the German military operations against Poland, Denmark, Norway, Belgium, The Netherlands, Luxembourg, Yugoslavia, Greece, the U.S.S.R., and the U.S. to be aggressive wars (1 *I.M.T.* (*Nuremburg*), pp. 198–216).

[18] Portugo-Germ.Arb. (1919): *Maziua Case* (1928), (1930), 2 UNRIAA, p. 1011. On August 24, 1914, the German garrison at the small frontier post of Sasabara, German East Africa, erroneously believing that Portugal was at war with Germany, attacked the Portuguese garrison across the border at Maziua. On learning of the mistake, the Governor of German East Africa apologized to the Portuguese authorities and offered to restore the arms and munitions captured. Germany admitted responsibility for this unjustified attack (p. 1015). Damages allowed included compensation for injuries to persons and damage to property, both private and public (p. 1018).

Portugo-Germ.Arb. (1919): *Angola Case* (1928), (1930), 2 *ibid.*, p. 1011. A German official and two German officers having been killed in the Portuguese garrison post of Naulilaa, Germany, allegedly in reprisal therefor, sent military expeditions into Angola at several points in November-December, 1914, (p. 1014. The UNRIAA erroneously reports 1915, *cf.* 8 T.A.M., p. 409, at p. 410). Portugal was not held legally responsible for the unfortunate incident at Naulilaa (pp. 1019 *et seq.*), and the German attacks were held unlawful (pp. 1025 *et seq.*). For the computation of the damages which amounted to 47 million gold marks covering both the *Maziua* and the *Angola Cases*, see pp. 1029 *et seq.*; pp. 1068 *et seq.*

[19] See *infra*, pp. 241 *et seq.*

[20] *e.g.*, Neth.-Ven. M.C.C. (1903): *Bembelista Case*, *Ven.Arb. 1903*, p. 900, at pp. 900–1: "His injuries were received in the course of battle and in the rightful and successful endeavour of the Government to repossess itself of one of its important towns and ports. The Government owed a duty to the claimant and to all the inhabitants of Puerto Cabello to become the government in fact of the town in question. And as their repossession of it was resisted by the troops then in charge it became the due course of war to take and carry the intrenchments of the town. It was the misfortune of the claimant that his building was so near to one of the principal intrenchments, where there was the most serious resistance, and the injuries occasioned his property were one of the ordinary incidents of battle."

[21] Mex. U.S. Cl.Com. (1868): *Blumenkron Case*, 4 *Int.Arb.*, p. 3669, at p. 3669: "Neither can the Mexican Government be expected to compensate foreigners

The uncompensated sacrifices demanded of individuals in such circumstances find their juridical justification in the superior interest of the State in ensuring the security and peace of the community.

" The interest of a government, like that of an individual, lies in its preservation . . . To say that a government is . . . responsible for the acts it commits in an attempt . . . to maintain its own existence . . . is a proposition difficult to maintain." [22]

However, as the *Rapporteur* on the Spanish Zone of Morocco Claims (1923) observed, when speaking of the rule that a State is not responsible for damages caused by military operations of its own troops:—

" It is not possible to include within this rule all measures having some connection with military operations, nor is it possible to include therein all acts committed by the troops." [23]

In fact, military operations should be conducted in accordance with the rules and customs of warfare. Acts which are contrary to these rules, although they may be justifiable and advantageous from the military point of view, are considered as unlawful [24] or even criminal.[25] In referring to the Hague Convention IV of 1907 concerning the Laws and Customs of War on Land, the *Rapporteur* said:—

" The principle which it establishes deserves to be retained even in military operations falling outside the scope of a war properly

for damages done to their real property by reason of actual hostilities for the purpose of delivering the country from a foreign enemy."

[22] Ital.-Ven. M.C.C. (1903): *Sambiaggio Case*, *Ven.Arb. 1903*, p. 666, at p. 680. Claims arising out of damage caused by revolution.

[23] *Rapport III* (1924), 2 UNRIAA, p. 615, at p. 645. (Transl.)

[24] See Greco-Germ. M.A.T.: *Coenca Brothers Case* (1927) 7 T.A.M., p. 683, at p. 687. Aerial bombardment without warning held unlawful, being contrary to generally accepted principles of warfare, even though from the military point of view such bombardment should be carried out by surprise.

Cf. also U.S.-Ven. M.C.C. (1903): *American Electric and Manufacturing Co. Case*, *Ven.Arb. 1903*, p. 35, at p. 36: " The general principles of international law which established the non-responsibility of the Government for damages suffered by neutral property owing to imperious necessities of military operations within the radius of said operations, or as a consequence of the damages of a battle, incidentally caused by the *means of destruction* employed in the war *which are not disapproved by the law of nations*, are well known " (Italics added).

[25] The Charter of the International Military Tribunal (Nuremberg), Art. 6 II (b), defines " War Crimes " *stricto sensu* as " violations of the laws or customs of war." The Charter of the International Military Tribunal for the Far East calls them " Conventional War Crimes " (Art. 5 II (b)).

so-called. This being admitted, it must also be remembered that the said Convention . . . makes considerable allowance for military necessity." [26]

A belligerent is liable for damages caused in violation of the rules and customs of warfare [27] and individuals committing the offence may be prosecuted as war criminals.[28] The absence of responsibility of the State is confined to " damages suffered . . . owing to imperious necessities of military operations within the radius of said operations, or as a consequence of the damages of a battle, incidentally caused by the means of destruction employed in the war which are not disapproved by the law of nations." [29] Even in such an event, meritorious cases may create a moral duty on the part of the State to grant an *ex gratia* indemnity.[30]

[26] *Rapport III* (1924) 2 UNRIAA, p. 615, at p. 645. (Transl.)

[27] Hague Convention IV, 1907, Art. 3. The Fran.-Mex. Cl.Com. (1924) (*Caire Case* (1929) *Jurisprudence*, p. 207, at p. 219) was of the opinion that, *de lege lata*, Art. 3 of the Hague Convention IV, 1907, was not applicable *in a general manner* to *all* the acts of the troops of a State (the English summary of the case in *Annual Digest* (1929–30), Case No. 91, at p. 148, goes further than the original French version of the decision would seem to warrant). However, the decision appears, erroneously it is believed, to consider that Art. 3 establishes an objective responsibility (p. 219, particularly note 1). This is due, in turn, to what is regarded as the Commission's erroneous conception of the notion of imputability in international law, hence its exaggerated notion of objective responsibility. See *infra*, pp. 204 *et seq.* Art. 3, it is submitted, is merely declaratory of the ordinary principles of State responsibility for the acts of its agents.

[28] International penal law is still in the embryonic stage. The Charters of the International Military Tribunals (Nuremberg, Art. 6 II (b); Far East, Art. 5 II (b)) define as war crimes all " violations of the laws and customs of war." The Judgment of Nuremberg (1946), while accepting as law the general definition of the Charter, referred more specifically to Arts. 46, 50, 52 and 56 of the Hague Regulations of 1907, and Arts. 2, 3, 4, 46 and 51 of the Geneva Convention of 1929 regarding the treatment of prisoners of war. It held: " That violations of these provisions constituted crimes for which the guilty individuals were punishable is too well settled to admit of argument " (1 *I.M.T. (Nuremberg)*, p. 171, at p. 253). The Tribunal also convicted Dönitz on the count of " war crimes " for violations of the Naval Protocol of 1936 (p. 311 *et seq.*). In this matter, it seems preferable to establish, if possible, an international military criminal code distinct from, and more restrictive than, the rules intended to govern what is in fact the " civil " responsibility of States. *Cf.* Schwarzenberger: " The Problem of an International Criminal Law," 3 C.L.P. (1950) p. 263.

[29] U.S.-Ven. M.C.C. (1903): *American Electric and Manufacturing Co. Case*, *Ven.Arb. 1903*, p. 35, at p. 36.

[30] Brit.-U.S. Cl.Arb. (1910): *Hardman Case* (1913), Nielsen's *Report*, pp. 495, 497: " Notwithstanding the principle generally recognised in international law that necessary acts of war do not imply the belligerent's legal obligation to compensate, there is, nevertheless, a certain humanitary conduct generally followed by nations to compensate the private war losses as a matter purely of grace and favour, when in their own judgment they feel able to do so, and when the sufferer appears to be specially worthy of interest. Although there is no

" ' Military necessity, as understood by modern civilised nations, consists in the necessity of those measures which are indispensable for securing the ends of the war, and which are lawful according to the modern law and usages of war.

" ' Military necessity admits of all direct destruction of life or limb of *armed* enemies, and of other persons whose destruction is incidentally *unavoidable* in the armed contests of the war.' " [31]

The British-United States Claims Arbitral Tribunal (1910) also gave the following definition of military necessity:—

" In law, an act of war is an act of defence or attack against the enemy and a necessity of war is an act which is made necessary by the defence or attack and assumes the character of *vis major*." [32]

" The determination of these necessities ought to be left in a large measure to the very persons who are called upon to act in difficult situations, as well as to their military commanders. A non-military tribunal, and above all an international tribunal, could not intervene in this field save in case of manifest abuse of this freedom of judgment." [33]

While a large discretion is thus left to the State, this must not be abused. Indeed, destruction not justified by military

legal obligation to act in that way, there may be a moral duty which cannot be covered by law, because it is grounded only on an inmost sense of human assistance, and because its fulfilment depends on the economical and political condition of a nation, each nation being its own judge in that respect."

This moral obligation can naturally be transformed into a legal obligation by an agreement between the countries concerned in regard to damages suffered by their nationals as a result of military operations conducted by the other. P.C.A.: *Russian Indemnity Case* (1912) Russia/Turkey, 1 H.C.R. p. 297, at p. 319. See further, *infra*, p. 164, note 4.

[31] Fran.-Ven. M.C.C. (1902): *Brun Case* (1905) Ralston's *Report*, p. 5, at p. 27, quoting *Instructions for the Government of Armies of the U.S. in the Field*, April 24, 1863, paras. 14–15.

[32] *Hardman Case* (1913), *loc. cit.*, at p. 497. Destruction of claimant's personal property through houses being set on fire by American military authorities to prevent the spread of yellow fever threatening the health of American forces who were fighting the Spaniards in Cuba. The British contention was that the act was not a necessity of war, but a measure for better securing the comfort and health of the U.S. troops and therefore the claimant (British) was entitled to compensation. Held: " In the present case, the necessity of war was the occupation of Siboney, and that occupation . . . involved the necessity . . . of taking the said sanitary measures. . . . The presence of the U.S. troops at Siboney was a necessity of war and the destruction required for their safety was consequently a necessity of war " (p. 497).

The *Rapporteur* on the Spanish Zone of Morocco Claims (1923) conceived the notion of military operations, for the consequence of which a State is not responsible, to mean only acts having a tactical object. See Claim No. 44: *Rzini* (*Dar Ben Karrish, Harvest*) *Case* (1924), 2 UNRIAA, p. 615, at pp. 716–7. *Cf. supra*, p. 46, note 55.

[33] Spanish Zone of Morocco Claims (1923): *Rapport III* (1924), 2 UNRIAA, p. 615, at p. 645. (Transl.).

necessity or wanton devastation has long been condemned by international tribunals [34] and is now even regarded as a war crime.[35] In all events, a duty always falls upon States, when conducting military operations to take every care to safeguard the interests of private individuals [36] and of cultural or humanitarian institutions.[37]

[34] Mex.-U.S. Cl.Com. (1868): *Johnston Case* (1874), 4 *Int.Arb.*, p. 3673, at p. 3673: "As the defendants have not proved that the requirements of war rendered that damage necessary, it must therefore be considered to have been unnecessary; and that therefore the claimants are, on account of that damage, entitled to compensation." *Id.*: *Brooks Case*, 4 *Int.Arb.*, p. 3672. Opinion of U.S. Commissioner: "I do not know anything more criminal or more stupid than the wanton destruction of the labours of the farmer by the military who possess the district where he resides" (pp. 3672–73). $4,000 awarded as damages. Fran.-Ven. M.C.C. (1903): *Brun Case* (1905), Ralston's *Report*, p. 5, and precedents cited therein at p. 26.

[35] See Charter of the International Military Tribunal (Nuremberg), Art. 6 II (*b*). By Resolution 95 (I) of December 11, 1946, the General Assembly of the United Nations unanimously "affirms the principles of international law recognised by Charter of the Nürnberg Tribunal and the judgment of the Tribunal."

[36] Spanish Zone of Morocco Claims (1923): Claim 25: *Rzini* (*Beni-Madan, Cattle*) *Case* (1924), 2 UNRIAA, p. 615, at pp. 696–97. In a drive against hostile tribes, Spanish authorities seized and slaughtered 190 head of cattle and sheep belonging to the claimant. *Rapporteur* said: "The responsibility of the Spanish authorities must in this case be admitted . . . because without prejudicing the military operation, it would have been possible, once the animals had been seized, to separate those belonging to peaceful natives from those belonging to the hostile tribe against which the raid was directed. But all the cattle were indiscriminately killed. Whilst the raid, as such, has been recognised as falling within the notion of military operations, . . . it is nonetheless true that the failure to take all measures for safeguarding the interests of peaceful owners and the immediate slaughter of all the captured cattle could not be justified by any military necessity" (p. 696. Transl.).

Greco-Germ. M.A.T.: *Coenca Brothers Case* (1927), 7 T.A.M., p. 683, at p. 687: "It is one of the generally recognised principles of the law of nations that belligerents should respect, as much as possible, the civil population and property belonging to civilians" (Transl.). *Id.*: *Kiriadolou Case* (1930), 10 *ibid.*, p. 100, at p. 103.

Fran.-Ven. M.C.C. (1903): *Brun Case* (1905), Ralston's *Report*, p. 5. See authorities cited at pp. 26 *et seq.* Also Headnote to the decision subsequently prepared by the Umpire: "A city not in revolt, but temporarily occupied by insurgent forces, is entitled to receive from the Government the *utmost care and protection* not inconsistent with the retaking of the town from the insurgent forces, and is subject only to the *inevitable* contingencies attending such an undertaking" (p. 5. Original italics.).

[37] Fran.-Ven. M.C.C. (1903): *Brun Case* (1905), Ralston's *Report*, p. 5, at p. 27: "Even in bombardments it is now deemed necessary to avoid as far as possible injuries to churches, museums, and hospitals, and not to direct the artillery upon the quarter inhabited by civilians, unless it is impossible to avoid them while firing at the fortifications and military buildings."

See Hague Regulations, Art. 27. Hague Convention IX of 1907, Art. 5. See also Hague Convention Concerning the Laws and Customs of War on Land, Preamble: "Until a more complete code of the laws of war can be issued, the High Contracting Parties think it expedient to declare that in cases not included in the Regulations adopted by them, populations and belligerents *remain* under the protection and the rules of the principles of the law of nations, as they result from the usages established between civilised nations, from the *laws of humanity, and the requirements of the public conscience.*" (Italics added.)

D. Conclusions

In the above survey, a single theme seems to emerge from the decisions of various international courts and tribunals. Within the territorial limits of the State's authority, the interest of the community is superior to that of individuals whether national or alien. For the welfare and safety of the community, a State may adopt a variety of measures appropriate to the needs and circumstances of the case, even though such measures may amount to an encroachment upon private rights which ordinarily must be respected. If the State, by any of these measures, should procure a material enrichment of the community at the expense of isolated individuals, or groups of individuals, there is a duty to compensate.[38] Incidental damage to the rights and interests of individuals, however, gives rise to no compensation, although, morally, compensation may be justifiable in certain cases.[39]

By reason of the fundamental importance of national self-preservation, it seems that a State is presumed not to have undertaken obligations towards private individuals in derogation of this vital interest. An organ of the State which acts otherwise is considered to have violated the fundamental law of the State and its act is consequently void.[40] Other obligations towards individuals may also be abrogated by the State whenever the national interest of self-preservation so demands.[41]

With regard to international obligations, the right of the State to adopt measures necessary to ensure the welfare and security of the community in exceptional circumstances cannot be considered as being impaired by general provisions contained in treaties entered into with reference to normal circumstances.[42] But, as States may even renounce their political existence,[43] international tribunals are agreed that a specific treaty provision, intended by the parties to apply even in exceptional circumstances, must always be respected.[44]

Since the State's power to resort to such extraordinary

[38] *Supra*, pp. 47–9, 57–8.
[39] *Supra*, pp. 59, note 8; 64.
[40] *Supra*, pp. 30–1.
[41] *Supra*, p. 55.
[42] *Supra*, pp. 29–30, 33–4, 52–3, 55–6.
[43] *Supra*, p. 29, note 2.
[44] *Supra*, pp. 34, 41, 50, 56, 63–4.

measures is justified only by the necessity of self-preservation, the legality of the measures taken, as regards their nature, extent and duration, is strictly circumscribed by the needs of each particular case.[45] The determination of the existence of the need and the methods best calculated to meet the contingency are, however, left to the discretion of the State.[46] International tribunals only require the State to prove the existence of a contingency warranting the exercise of this discretion. They will, however, intervene in cases of abuse.[47]

In reviewing such measures international tribunals will be guided by current international practice. This practice naturally varies according to time, place, and circumstance; and, with the prevailing trend of greater social integration, the sphere of State activity is constantly being enlarged.[48]

In every case, the State must, however, so far as circumstances permit, take every care to safeguard the interests of private individuals, to respect the human personality and to protect the spiritual values of humanity.[49]

[45] *Supra*, pp. 33, note 3; 38–40, 43–6, 49, 54, 56–7, 59–60, 65–6.
[46] *Supra*, pp. 34–5, 39, 43, 45, 54–5, 65.
[47] *Supra*, pp. 32, note 2; 33, note 3; 36, 38, 39, 44, 46, 59–60, 66.
[48] *Supra*, pp. 39, 57, particularly note 97.
[49] *Supra*, pp. 36, 49–50, 66.

Chapter 2

EXTERNAL APPLICATION OF THE PRINCIPLE

A. Necessity

In the *Faber Case* (C. 1903),[1] the German Commissioner maintained:—

"When a river constitutes the only way of communication, indispensable for the subsistence of another nation, or part of it, its use cannot be entirely prohibited."[2]

But the Umpire held:—

"It certainly is a novel proposition that because one may be so situated that the use of the property of another will be of special advantage to him he may on that ground demand such use *as a right*. The rights of an individual are not created or determined by his wants or even his necessities. The starving man who takes the bread of another without right is none the less a thief, legally, although the immorality of the act is so slight as to justify it. Wants or necessities of individuals cannot create legal rights for them, or infringe the existing rights of others . . ."[3]

Even in this case, however, the Umpire, before arriving at his final conclusion, wanted to be assured that:—

"It is not accurate . . . to say that the Zulia River is indispensable to the existence of Santander, or that it is the only route of communication of Santander through the Republic of Colombia to the sea."[4]

[1] Germ.-Ven. M.C.C. (1903), *Ven.Arb. 1903*, p. 600.
[2] *Loc. cit.*, p. 605.
[3] *Loc. cit.*, pp. 629–30.
An example of the starving man is the *Louise Ménard Case* (1898), in France. The woman, out of hunger, stole from a bakery. She was absolved by the "*bon juge Magnaud*" at the Correctional Court of Château-Thierry (H. Leyret, 1 *Les Jugements du Président Magnaud*, Paris, 1900, pp. 14–15). The decision was upheld in the Court of Appeal of Amiens (*Recueil Sirey* (1899), 2*e partie*, p. 1).
The *jus necessitatis* is, in France, a creation of the courts ("*l'état de necessité*"), while in Germany ("*Notstand*"), Switzerland and Italy ("*lo stato di necessità*"), it has been sanctioned by the written law. As to English law, see Glanville Williams, "The Defence of Necessity," 6 C.L.P. (1953), p. 216.
[4] *Loc. cit.*, p. 624.

The example of the starving man mentioned in the award of the Umpire finds its international counterpart in the case of *The Neptune* (1797) which was decided by the Arbitral Commission established under Art. VII of the Jay Treaty (1794) between Great Britain and the United States.[5]

The *Neptune* was an American vessel laden with provisions bound for Bordeaux from the United States. She was captured by a British frigate in 1795 in pursuance of a general order of April of that year directing the bringing into British ports of all neutral vessels bound with provisions for ports of the enemy.

On being libelled in the High Court of Admiralty the vessel was released, but the cargo was taken over for the British Government, the owners being allowed the invoice price plus a mercantile profit of 10 per cent. This was less than the goods were then worth in London, and much less than they were worth in Bordeaux. The owners claimed the difference between what was paid to them and the price the goods would have fetched at Bordeaux, had they not been seized.

One of the arguments advanced to justify the order of April, 1795, was that it imposed a blockade in order to reduce the enemy by famine. The other argument was that of necessity, since Great Britain was threatened with a scarcity of provisions at the time when the order was made. The first argument was rejected by the majority of the commissioners. As regards the second argument, the Fifth Commissioner, Mr. Trumbull, stated in his opinion that:—

"It only remains to inquire whether there existed at the time any necessity on the part of the captor so pressing as to justify the act.

"The necessity which can be admitted to supersede all laws and to dissolve the distinctions of property and right must be absolute and irresistible, and we cannot, until all other means of self-preservation shall have been exhausted, justify by the plea of necessity the seizure and application to our own use of that which belongs to others. Did any such state of things exist in Great Britain in April, 1795? Were any means employed to guard against an apprehended, rather than an existing, scarcity before the measure in question was adopted? And when a degree of scarcity was felt a few months later in the year was not the obvious and inoffensive

[5] 4 *Int.Adj.*, M.S., p. 372.

measure of offering a bounty on corn imported effectual, and that speedily? It cannot, then, be presumed that the capture in question is any more to be justified by the plea of necessity than it is by that of right, and I must, therefore, conclude that the neutral claimant has in this case suffered loss and damage by reason of an irregular and illegal capture." [6]

Several rules may be deduced from the above case regarding the plea of necessity:—

1. When the existence of a State is in peril, the necessity of self-preservation may be a good defence for certain acts which would otherwise be unlawful.

2. This necessity "supersedes all laws," "dissolves the distinctions of property and rights" and justifies the "seizure and application to our own use of that which belongs to others." Although the language used in the decision is very general, it may perhaps be inferred from the emphasis on property that it is essentially the proprietary rights of others which may be disregarded in case of an irresistible and absolute necessity.

3. This necessity must be "absolute" in that the very existence of the State is in peril.

4. This necessity must be "irresistible" in that all legitimate means of self-preservation have been exhausted and proved to be of no avail.

5. This necessity must be actual and not merely apprehended.

6. Whether or not the above conditions are fulfilled in a given case, is a proper subject of judicial inquiry. If they are not, the act will be regarded as unlawful and damages will be assessed in accordance with principles governing reparation for unlawful acts.

The above rules correspond to those that have been elaborated by various other international tribunals as regards the plea of necessity in relation to treaty obligations.

In his Individual Opinion in the *Oscar Chinn Case* (1934), Judge Anzilotti said: —

"Necessity may excuse the non-observance of international obligations." [7]

[6] *Loc. cit.*, p. 433.
[7] PCIJ: A/B.63, p. 113.

The German agent in the case of *The Wimbledon* (1923), in denying that Germany was invoking the *jus necessitatis*, made the following observation, which helps to elucidate the notion of necessity:—

"There was neither an impossibility for her to comply with the provisions of the Treaty of Versailles, nor a situation absolutely preventing her from fulfilling her obligations." [8]

As regards treaty obligations, therefore, the plea of necessity is equivalent to a plea of impossibility of performance, whether objective or subjective. In the *Serbian and Brazilian Loans Cases* (1929), the Permanent Court of International Justice grouped these two forms of impossibility of performance under the single heading of *force majeure*.[9]

Objective impossibility would no doubt extinguish an obligation, but the Court emphasised that the impossibility must relate to the very substance of the obligation. Consequently, when the obligation specifies that payment should be made in gold francs taken as a standard of value, the impossibility of procuring gold francs *in specie* does not dissolve the obligation.[10]

The extinction of obligations by subjective impossibility was admitted in principle by the Permanent Court of Arbitration in the *Russian Indemnity Case* (1912), in which it held that:—

"The exception of *vis major*, invoked as the first line of defence, may be pleaded in public international law as well as in private law; international law has to adapt itself to political necessities. The Imperial Russian Government expressly admits (Russian Reply, p. 39 and note 2) that the obligation of a State to carry out treaties may give way 'if the very existence of the State is endangered, if the observance of the international duty is . . . self-destructive.'" [11]

[8] PCIJ: Ser.C. 3–I, p. 306. Quotation translated from the French version which is more complete than the English summary.

[9] PCIJ: A.20/21, pp. 39–40, 120. See further, *infra*, pp. 223 *et seq.*

[10] *Ibid.*, at pp. 40, 120.

[11] 1 H.C.R., p. 532, at p. 546. (Transl.)
Cf. Fran.-Turk. M.A.T.: *Cillière Case* and *Lejosne Case* (1927), 7 T.A.M., p. 930, at p. 933 and at pp. 935–6: "According to the present conception of the notion of *vis major*, it is sufficient that the circumstances in which a contract has to be performed are such that in good justice and in all equity, this performance could not be exacted" (Transl.).

But the concept of necessity, or *vis major*, differs considerably from that of national interest [12] and does not signify the mere existence of grave difficulties in the performance of an obligation.[13]

As Judge Anzilotti said in his Individual Opinion, already referred to:—

"The plea of necessity, . . . by definition, implies the impossibility of proceeding by any other method than the one contrary to law." [14]

Finally, Judge Anzilotti also held that the plea of necessity involved an issue of fact. In case of a dispute, the burden of proof is upon the party raising it.[15]

From the above survey it is therefore apparent that the international judicial decisions of the twentieth century are in complete accord with the principles laid down in *The Neptune Case* decided at the end of the eighteenth.[16]

If there is absolutely no conceivable manner in which a State can fulfil an international obligation without endangering

[12] PCIJ: *Oscar Chinn Case* (1934), Ind.Op. by Anzilotti, A/B 63, p. 112: "International law would be merely an empty phrase if it sufficed for a State to invoke the public interest in order to evade the fulfilment of its engagements."

[13] *Russian Indemnity Case* (1912), 1 H.C.R., p. 532, at pp. 546–47: "In support of its plea of *force majeure*, the Sublime Porte has undoubtedly proved that Turkey from 1881 to 1902 was contending with financial difficulties of the utmost seriousness, aggravated by domestic and foreign troubles (insurrections, wars) which forced her to apply a considerable amount of her revenues for special purposes, to submit to the foreign control of part of her finances, and even to grant a moratorium to the Ottoman Bank, and generally to fulfil her obligations only imperfectly or with delay and, even then, at great sacrifice. But, it has been proved, on the other hand, that, during this same period, and especially following the creation of the Ottoman Bank, Turkey was able to obtain loans at favourable rates, to redeem others, and, finally, to pay off an important part of her public debt, estimated at 350 million francs. It would be clearly an exaggeration to admit that the payment (or the raising of a loan for the payment) of the comparatively small amount of about 6 million francs to the Russian claimants, would have imperilled the existence of the Ottoman Empire or seriously compromised its internal or international position. The plea of *force majeure* is, therefore, inadmissible" (Transl.).

Cf. also the rejection of the plea of *force majeure* by the PCIJ in the cases of the *Serbian and Brazilian Loans* (1929), A. 20/21, pp. 39–40, and p. 120. It is only fair to mention, however, that it seems that the parties did not invoke the plea. Mention of economic difficulties after the war was made by the Serb-Croat-Slovene Kingdom under the heading of "Equity" (Ser. C. 16–III, pp. 457 *et seq.*, at p. 470). By Art. II of the special agreement, the P.C.I.J. was informed that considerations of equity would be separately considered after the Court should have rendered its decision. The mention of economic difficulties was even more vague in the Brazilian case (*Cf.* Ser. C. 16–III, pp. 168 and 130–1).

[14] A/B 63, p. 114.

[15] *Ibid.*, p. 113.

[16] *Supra*, pp. 70 *et seq.*

its very existence, that State is justified in disregarding its obligation, in order to preserve its existence.

If, after every conceivable legal means of self-preservation has first been exhausted, the very existence of the State is still in danger, and if there exists only one single means of escaping from such danger, the State is justified in having recourse to that means in self-preservation, even though it may otherwise be unlawful.

In every case, the questions whether such a danger to the very existence of the State really existed, whether there was such a lack of choice of means, and whether there was such a necessity for resorting to the otherwise unlawful means of self-preservation, are all issues of fact. The burden of proof lies with the party invoking the plea of necessity. If the matter is submitted to an international tribunal, the latter is competent to review the facts and circumstances in order to determine whether such a state of absolute and irresistible necessity did in fact exist.

In reaching this conclusion, however, the words of the Umpire in the *Faber Case* (C. 1903) must be borne in mind:—

> "The rights of an individual are not created or determined by his wants or even his necessities. The starving man who takes the bread of another without right is none the less a thief, legally, although the immorality of the act is so slight as to justify it."[17]

The necessity of self-preservation justifies and excuses an otherwise unlawful act, exempting it from the legal consequences normally resulting from acts of this kind. But it does not render the commission of the act a matter of right.[18] The law of necessity is a means of preserving social values. It is the great disparity in the importance of the interests actually in conflict that alone justifies a reversal of the legal protection normally accorded to these interests, so that a socially important interest shall not perish for the sake of respect for an objectively minor right. In every case, a comparison of the conflicting interests appears to be indispensable. At all events, it would appear that it can never be justifiable to endanger the existence

[17] *Ven.Arb. 1903*, p. 600, at p. 630.
[18] *Cf.* The *Neptune* (1797), last sentence in the above quoted passage, *supra*, p. 71. *Cf.* Anzilotti, *supra*, p. 71.

of one State in order to preserve the existence of another. As States are equal, the conflicting interests are thus also of equal importance.[19]

Lastly, it appears from the voluntary action of Great Britain in the case of *The Neptune* (1797) that any material enrichment obtained as a result of the self-preservative act must be compensated.[20]

VESSELS IN DISTRESS

A special application of the plea of necessity in international law relates to vessels in distress, where the principles involved are substantially the same, although perhaps less stringent. The Mexican-United States General Claims Commission (1923) in the *Hoff* (*The Rebecca*) *Case* (1929) stated that:—

> ' The enlightened principle of comity which exempts a merchant vessel, at least to a certain extent, from the operation of local laws has been generally stated to apply to vessels forced into ports by storm, or compelled to seek refuge by vital repairs or for provisioning, or carried into port by mutineers.'' [21]

As to what constitutes necessity justifying such a disregard of local laws, the same Commission added:—

> '' It has been said that the necessity must be urgent. It seems possible to formulate certain reasonably concrete criteria applicable and controlling in the instant case. Assuredly a ship floundering in

[19] *Cf.* England, Queen's Bench Division: *The Queen* v. *Dudley and Stephens* (1884) 14 Q.B.D., p. 273. Self-preservation is no defence to the killing of another shipwrecked person and eating his flesh in order to escape starvation.

[20] *Supra*, p. 70.

[21] *Op. of Com. 1929*, p. 174, at p. 177.

The Commission called it a rule of comity. *Cf.*, however, Brit.-U.S. Cl. Com. (1853): *The Enterprize Case* (1854) (Hornby's *Report*, p. 332); probably the case of reprovisioning which the Mex.-U.S. G.C.C. (1923) had in mind. In that case, the U.S. Commissioner held that: '' The entrance of a vessel into a foreign harbour, when compelled by stress of weather, is a matter of right '' (p. 368), although the Umpire did not specifically deal with this point. The Umpire, however, in another case which was brought before the same Commission, the case of the *Creole* (1855), which was taken into port by mutineers, stated expressly: '' These rights, sanctioned by the law of nations, *viz.*, the right to navigate the ocean and to seek shelter in case of distress or other unavoidable circumstances, and to retain over the ships, her cargo, and passengers, the laws of her own country, must be respected by all nations, for no independent nation would submit to their violation '' (Hornby's *Report*, p. 376, at p. 392).

Cf. the Mex.-U.S. G.C.C. (1923), when speaking of the '' immunity '' of the ship, said: '' Perhaps it may be said in a more concrete and emphatic manner '' (*loc. cit.*, p. 177). Such an involuntary entry is certainly '' *straflos*,'' if indeed not of right. *Cf. infra*, p. 76, note 23.

distress, resulting either from the weather or from other causes affecting management of the vessel, need not be in such a condition that it is dashed helplessly on the shore or against rocks before a claim of distress can properly be invoked in its behalf. The fact that it may be able to come into port under its own power can obviously not be cited as conclusive evidence that the plea is unjustifiable. If a captain delayed seeking refuge until his ship was wrecked, obviously he would not be using his best judgment with a view to the preservation of the ship, the cargo and the lives of people on board." [22]

The above passage also corroborates the view that the object of the principle of self-preservation is essentially to permit a person to have recourse to extraordinary measures to avert an imminent and irresistible danger. Its purpose is preventive. It is, therefore, not necessary to wait until the danger has materialised and the harm has been done.

Moreover, the concluding sentence of the above quotation shows that necessity is not an independent notion. It rests upon the principle of self-preservation. When applied to a vessel, it aims at the preservation of the ship, the cargo, and the lives of the people on board.

This point is further illustrated by the following passage which makes it clear that the principle of necessity cannot be invoked to justify actions taken for reasons of pure convenience:—

" A mere matter of convenience in making repairs or in avoiding a measure of difficulty in navigation cannot justify a disregard of local laws." [23]

[22] *Loc. cit.*, p. 178.

[23] *Hoff (The Rebecca) Case* (1929), *loc. cit.*, at p. 178. *Cf.* England, High Court of Admiralty: *The Eleanor* (1809), Edw., p. 135, at p. 161.

When the Mex.-U.S. G.C.C. (1923) spoke of " disregard of local laws," it must not be taken to mean a total disregard of the local laws, but only that the vessel should not be made to suffer for having made an involuntary entry. The Commission itself had earlier spoken only of " the enlightened principle of comity which exempts a merchant vessel, *at least to a certain extent*, from the operation of local laws. . . ." (*loc. cit.*, p. 177. Italics added.)

The cases of the *Enterprize*, the *Hermosa* and the *Creole* before the Brit.-U.S. Cl.Com. (1853) (Hornby's *Report*, pp. 332–395) show, on the other hand, that the exemption is not solely from customs regulations. Slavery was then abolished in G.B. and colonies, but still permitted in the U.S. and under international law. The freeing of slaves on board these American ships which, sailing between American ports, entered British harbours in distress was held unlawful. *Cf. Id.*: *The Lawrence* (1855), *ibid.*, p. 397, where ship engaged in African slave trade, then prohibited by American, British and international law, claim was dismissed.

With regard to the determination of the existence of the necessity and the choice of means, the Commission, having pointed out that the ship, in a crippled condition, had been contending with a storm for three days, stated:—

"In such a case a captain's judgment would scarcely seem subject to question. It may also be concluded from the evidence in the case that a well grounded apprehension of the loss of the vessel and cargo and persons on board prompted the captain to turn south to Tampico." [24]

Thus, where a prima facie case existed, the decision of the person who had to act in such circumstances may be presumed to have been well founded. But an international tribunal is also competent to draw its own conclusions from the facts of the case. In so doing, it only seeks to ascertain whether at the crucial moment, there was a good reason to believe that a state of vital danger existed.

Another important condition governing the law of necessity, as the Commission has pointed out, is that the person who invokes it must be in good faith. *Fraus omnia corrumpit.*[25] It can hardly be doubted that this last condition also governs the entire application of the principle of self-preservation in inter-State relations.

B. Self-Defence

I. ON THE HIGH SEAS

For the purpose of self-defence, a State may be authorised to overstep its territorial limits and interfere with navigation of other States on the high seas. As Judge Moore observed in his Dissenting Opinion in the case of *The Lotus* (1927):—

"No State is authorised to interfere with the navigation of other States on the high seas in time of peace *except . . . in extraordinary cases of self-defence* (*Le Louis* (1817) 2 Dodson, 210, 243–244)." [26]

[24] *Hoff (The Rebecca) Case* (1929), *loc. cit.*, at p. 178.

[25] *Ibid.*, at p. 178: "Clearly an important consideration may be the determination of the question whether there is any evidence in a given case of a fraudulent attempt to circumvent local laws."

Cf. The Eleanor (1809), Edw., p. 135, at p. 161: "Then, again, where the party justifies the act upon the plea of distress, it must not be a distress, which he has created himself, by putting on board an insufficient quantity of water or of provisions for such a voyage, for there the distress is only a part of the mechanism of the fraud, and cannot be set up in excuse for it."

[26] PCIJ: A. 10, p. 69. Italics added.

In the case of the *Le Louis* (1817), to which Judge Moore referred in support of his statement, Lord Stowell said:—

"I can find no authority that gives the right of interruption to the navigation of States in amity upon the high seas, excepting that which the rights of war give to both belligerents against neutrals. This right, incommodious as its exercise may occasionally be to those who are subjected to it, has been fully established in the legal practice of nations, having for its foundation the necessities of self-defence, in preventing the enemy from being supplied with the instruments of war, and from having his means of annoyance augmented by the advantages of maritime commerce. Against the property of his enemy each belligerent has the extreme right of war. Against that of neutrals, the friends of both, each has the right of visitation and search, and of pursuing an inquiry whether they are employed in the service of his enemy, the right being subject, in almost all cases of an inquiry wrongfully pursued, to a compensation in costs and damages . . .

"If it be asked why the right of search does not exist in time of peace as well as in war, the answer is prompt; that it has not the same foundation on which alone it is tolerated in war—the necessities of self-defence."[27]

Although formally the distinction is between time of peace and time of war, in substance the question whether a State has a right to interrupt navigation of friendly States on the high seas depends upon whether the conditions justifying the valid exercise of the right of self-defence do or do not exist.[28]

It seems, therefore, that Judge Moore has drawn the logical conclusion from the judgment of Lord Stowell in holding that,

[27] England, High Court of Admiralty: *The Le Louis Case* (1817), 2 Dodson, p. 210, at p. 243–5. Capture of a French vessel engaged in slave trade by British cruiser on the high seas.

[28] *Fur Seal Arbitration* (1893), G.B./U.S. 1 *Int.Arb.*, p. 755. Oral argument of U.S. counsel: "What is said upon the other side? They agree that all these things may be done. What do they say? Well, they say that they cannot be done in time of *peace*; that you cannot defend yourself by the exercise of force on the high seas in time of peace. . . . There is no substance in that. The right exists in time of peace just as well. Whenever the necessity arises, the right arises, whether it be in time of war or time of peace. . . . In point of fact, the principal occasions, and the most frequent occasions, for the exercise of this right *happen to occur* in time of war, and, therefore, the instances in which it is exercised, and the rules which govern its exercise, are found in belligerent conditions far more than in conditions of peace. The absence of the *occasion* is the reason why we find less discussion of these rights in time of peace, and a want of rules for regulating them; but, nevertheless, the occasion may arise, and when it does arise, then the power must be put in force" (p. 868. Original italics).

in special circumstances, self-defence would justify interference with shipping of other States on the high seas even in time of peace. Indeed, Lord Stowell also recognised that:—

"This right . . . has been distinctly admitted not to exist generally in time of peace . . . Wherever it has existed, it has existed upon the ground of repelling injury, and as a measure of self-defence." [29]

The words "repelling injury" should be noted; for the exercise of the right of self-defence, which requires no compensation for the damage it may cause, is only justified in repelling or forestalling an unjustified attack.

1. *In Time of Peace*

A case where a State, if not actually at peace, was likewise not at war in the technical sense, but nevertheless exercised the right of capture on the high seas on the plea of self-defence, came before the Spanish-United States Claims Commission (1871).[30]

The American brig *Mary Lowell* left New York early in 1869 with a cargo of arms and ammunition, the destination given being Vera Cruz in Mexico. En route, she put into Ragged Island, reporting herself to be in distress. While there she was watched by the Spanish man-of-war *Andaluza*, in consequence of information that her cargo was destined for the insurgents in Cuba. On March 15, 1869, when the *Mary Lowell* left Ragged Island "for a neighbouring harbour of greater security," she was seized by the *Andaluza* on the high seas and conducted to Havana where she was condemned together with her cargo.

The Umpire held in two successive awards that:—

"As the cargo, consisting of arms, ammunition, and other military supplies, was admittedly intended by its owner, A. A. Arango, for the benefit of the insurgents against the Spanish Government, and as the brig was allowed by C. H. Campbell, either wilfully or negligently, to fall into the hands of parties actively interested in promoting the insurrection, the claimants forfeited their right to the protection of the American flag, and are estopped

[29] *The Le Louis* (1817), *loc. cit.*, at p. 246.
[30] *The Mary Lowell* (1879), 3 *Int.Arb.*, p. 2772.

from asserting any of the privileges of lawful intercourse in time of peace and any title to individual benefit of indemnity as against the acts of the Spanish authorities done in self-defence." [31]

While this case only concerns hostile acts of alien individuals, it cannot be doubted that the principle applies equally to hostile acts of a foreign State, with the additional consequence that the assailant State will be completely estopped from complaining about the consequences of acts done in self-defence by the other State.

2. *In Time of War*

It has already been seen that in time of war the necessities of self-defence create for the belligerents a number of rights over neutrals on the high seas.[32] In fact, the decision in the *Eastern Extension, Australasia and China Telegraph Co., Ltd., Case* (1923) seems to indicate that all belligerent rights are based upon the principle of self-defence. It spoke of:—

" [The] right of legitimate defence which forms the basis of the rights of any belligerent nation." [33]

[31] *Ibid.*, at pp. 2774–5. It is true that in the second award reaffirming the first, the Umpire pointed out that: " The Umpire must be understood as applying the rule of estoppel only against the private claims of C. H. Campbell and A. A. Arango, as claimants of an indemnity for their own individual account, . . . The Umpire cannot be legitimately called upon to treat this as a case of the United States against Spain having for its direct object a suitable reparation for the offended dignity of their flag. In such a case the regularity of the capture would constitute the principal question to be considered, the personal situation of the owners of the property becoming subordinate " (pp. 2776–7). But the attitude of the U.S. in acquiescing in this decision and considering it as finally disposing of the dispute would seem to indicate that they accepted the Spanish action as legal.

Cf. The Virginius Incident (1873) (Moore, 2 *Dig.*, pp. 895 *et seq.*, 967, 980; also 65 B.F.S.P. (1873–4), pp. 98–229), where the case differs only in that the crew and other persons on board were summarily court-martialled and some executed, including Americans, British and Cubans. In this case the American request for a salute of the American flag was dropped when it was proved that the ship carried the American flag illegally. In *The Mary Lowell Case*, it must be remembered that the Umpire decided that she " forfeited the right to the protection of the American flag."

The British attitude towards *The Virginius Incident* confirms that the Spanish action in *The Mary Lowell Case* was lawful or, at least, not unlawful. In his instruction to the British Minister in Madrid directing him to make a claim for the British crew that were executed, the British Foreign Secretary stated: " Much may be excused in acts done under the expectation of instant danger in self-defence by a nation as well as by an individual. But, after the capture of the *Virginius* and the detention of the crew was effected, no pretence of imminent necessity of self-defence could be alleged " (65 B.F.S.P. (1873–4), p. 217). The second sentence also confirms that acts in legitimate self-defence should be of a purely preventive character.

[32] *The Le Louis* (1817), *supra*, p. 78.

[33] Brit.-U.S. Cl.Arb. (1910), Nielsen's *Report*, p. 40, at p. 76.

Such belligerent rights being absolute rights, the Tribunal decided that no compensation was legally due in respect of their exercise.[34]

The case was concerned with the cutting of submarine cables belonging to a neutral company linking a belligerent territory with a neutral possession. At first sight, it might be wondered whether, in such a case, there had been any improper attack or injury upon the belligerents for which the neutral was responsible. If there were not, it would appear that either this is, properly speaking, not a case of self-defence, or that the proposition made above that self-defence is permissible only against an unjustified attack, or threat of attack, requires qualification.[35] This, however, is not the view taken by international law. Apart from the fact that in the case in question the Tribunal found that the claimant company possessed the character of an enemy public service,[36] it also held that all acts of neutrals using the high seas "to afford assistance to the enemy either by carrying contraband, by communicating with blockaded coasts, or by transporting hostile despatches, troops, enemy agents, and so on" are "*impressed with a hostile character*," although it added that in such cases "the neutrals do not, properly speaking, lose their neutral character." [37]

This construction is confirmed and further illustrated by the decision of the United States Court of Claims in the case of the sloop *Ralph* (1904), which concerned the seizure of a contraband vessel on her return voyage:—

"The transportation of contraband articles to one of the belligerents is in itself an assault for the time being upon the other belligerents, in the fact that it may furnish them with the weapons of war and thereby increase the resources of their power as against their adversary; and for that reason, upon the broad ground of self-preservation incident to nations as well as to individuals, the parties against whom the quasi-assault is made have the right to defend themselves against the threatened blow by seizing the weapon before it reaches the possession and control of their enemy." [38]

[34] *Ibid.*, at p. 76.
[35] *Supra*, p. 79.
[36] *Loc. cit.*, p. 79.
[37] *Loc. cit.*, p. 76. Italics added.
[38] USA, 39 *U.S. Court of Claims*, p. 204, at p. 207. In this case the seizure of the vessel on its return voyage after carrying contraband was held illegal, since

In the light of the above interpretation, it is easy to understand why the rights of belligerents over neutrals on the high seas can be said to be based upon the principle of self-defence. Any act or installation on the high seas which is calculated to assist the enemy is stamped with a hostile character and considered to be an assault, or instrument of assault, against the belligerent State, thus justifying the taking of appropriate measures of self-defence in respect of such act or installation. The proposition that self-defence presupposes an improper attack is thus confirmed rather than disproved.

In considering the wide extent of these belligerent rights, it is necessary not to lose sight of the fact, which the British-United States Claims Arbitral Tribunal (1910) recalled in the case of the *Eastern Extension, Australasia and China Telegraph Co., Ltd.* (1923), that the high seas are considered as *res nullius* or *res communis*.[39] Another tribunal has said: "The rights of war may be exercised on the high seas, because war is carried on upon the high seas."[40] Indeed it follows from the "characteristic feature of the legal situation pertaining to those parts of the globe, which, like the high seas or lands without a master, cannot or do not yet form the territory of a State"[40a] that in this space there is no one to whom the State can appeal for the protection of its rights and safety. Of necessity, the duty falls upon the State itself. Referring to neutral shipping

the paramount purpose of seizing a contraband vessel and its cargo is preventive, as in self-defence generally. When the danger has passed, self-defence loses its *raison d'être*.

PCIJ: *The Wimbledon* (1923), D.O. by Anzilotti and Huber, A. 1, p. 42: "Commerce in and transport of contraband, although not necessarily affecting the neutrality of States, is regarded under the law of nations as unlawful because it assumes the guise of peaceful commerce for warlike purposes."

Cf. also *The Le Louis* (1817), *supra*, p. 78.

See also the unratified Declaration of London, 1909, Art. 46: "A neutral vessel will be condemned, and in a general way receive the same treatment as would be applicable to her if she were an enemy merchant vessel: (1) If she takes a direct part in the hostilities. (2) If she is under the orders or control of an agent placed on board by the enemy government. (3) If she is in the exclusive employment of the enemy government. (4) If she is exclusively engaged at the time either in the transport of enemy troops or in the transmission of intelligence in the interest of the enemy." Rule applied by Greco-Germ. M.A.T.: *Marouli (The Kyma) Case* (1928), 8 T.A.M., p. 345; *Id.*: *Costomenis (The India) Case* (1929), *ibid.*, p. 848; *Id.*: *Embiricos (The Eirini) Case* (1930), 10 *ibid.*, p. 104.

[39] *Loc. cit.*, p. 76.

[40] Chil.-U.S. Cl.Com. (1892): *The Itata*, 3 *Int.Arb.*, p. 3067, at p. 3071. Seizure of vessel in foreign territorial waters. Sentence appears in a quotation from a decision of the U.S. Supreme Court.

[40a] PCA: *Palmas Case* (1928), 2 H.C.R. p. 84, at p. 92.

in the First World War, the Greco-German Mixed Arbitral Tribunal held, in the *Kyriakides Case* (1928):—

" In those cases where the ships of neutral commerce wish to protect themselves against German submarines, they should appeal to their own government in order to obtain a convoy for their flag." [41]

Thus, by implication, force may be used to repel any unlawful attack on the high seas.

II. IN FOREIGN TERRITORY

The situation is different with regard to acts of self-defence carried out in the territory of another State. Juridically all the rights of a State within the territory of another State are protected by the latter. As a corollary to its right to display the activities of a State within its territorial limits, each State is subject to " the obligation to protect within the territory the rights of other States, in particular their right to integrity and inviolability in peace and in war, together with the rights which each State may claim for its nationals in foreign territory." [42]

" ' A State owes at all times a duty to protect other States against injurious acts by individuals from within its jurisdiction.' " [43]

For example, no State may tolerate the organisation of marauders along its borders for the purpose of invading a friendly nation.[44] A State may not even use or permit the use of its territory in such a manner as to cause serious injury by fumes in or to the territory of another or to persons or property situated therein.[45] Moreover, an elaborate set of rules has grown up regarding the duties of a neutral State in

[41] 8 T.A.M., p. 349, at p. 351. Transl. Torpedoing of neutral vessels under belligerent convoy.

[42] PCA: *Palmas Case* (1928), 2 H.C.R., p. 84, at p. 93.

[43] Trail Smelter Arbitration (1935): *Award II* (1941), 3 UNRIAA, p. 1905, at p. 1963, quoting with approval Eagleton's *Responsibility of States*, 1928, p. 80. PCIJ: *The Lotus* (1927) S.O. by Moore, A. 10, p. 88: " It is well settled that a State is bound to use due diligence to prevent the commission within its dominions of criminal acts against another nation or its people."

[44] See Spanish Zone of Morocco Claims (1923): Claim 28: *Haj Mohamed Harrej (Tangier, horses) Case* (1924), 2 UNRIAA, p. 615, at pp. 699–700.

[45] Trail Smelter Arbitration (1935): *Award II* (1941), *loc. cit.*, p. 1965.

time of war.[46] Normally, therefore, a State need not and, indeed, should not defend its rights in the territory of another State by its own action, but should only call upon the latter to afford the necessary protection.

Even in foreign territory, however, a State may sometimes be permitted to take "warlike measures, strictly and purely defensive, in case of an exigency, which admit of no delay," in the words of the Supreme Judicial Court of Massachusetts in the case of *Commonwealth* v. *William P. Blodgett* (1846).[47] In that case, some soldiers in the service of the state of Rhode Island, penetrated into the state of Massachusetts, without prior permission from the latter, and arrested several rebels who had been taking refuge there. The soldiers were tried in Massachusetts and the Court, in directing the jury that the arrest of the rebels would be a criminal offence if the facts were proved, qualified its directions thus:—

"If there existed a necessity, for the defence or protection of the lives and property of the citizens of Rhode Island, or for the defence of the State of Rhode Island, that the defendants should do the acts complained of in the indictment, or if there was probable cause to suppose, at the time, the existence of such a necessity, and the jury found such necessity, or probable cause, they were to acquit them."[48]

Indeed, as the International Military Tribunal at Nuremberg stated in its Judgment (1946):—

"It must be remembered that preventive action in foreign territory is justified only in case of 'an instant and overwhelming necessity for self-defence, leaving no choice of means, and no moment of deliberation' (*The Caroline Case*, Moore's *Digest of International Law*, II, 412)."[49]

The *Caroline Incident* (1837),[50] to which the Tribunal referred, occurred on the night of December 29–30, 1837, the

[46] See, *e.g.*, *Jay Treaty* (Art. VII) Arbitration (1794), 4 *Int.Adj.*, M.S. (*Compensation for Losses and Damages caused by the Violation of neutral Rights, and by the Failure to perform neutral Duties, Mixed Commission under Art. VII of the Treaty between Great Britain and the U.S. of November 19, 1794*), 1931, and *The Alabama* (1872), 1 *Int.Arb.*, p. 495.

[47] 12 Metcalf, p. 56, at p. 82.

[48] *Ibid.*, at p. 84.

[49] 1 *I.M.T.* (*Nuremberg*), p. 171, at p. 207. See *infra*, pp. 88 *et seq.*

[50] Moore, 2 *Dig.*, pp. 412–4; 3 *Int.Arb.*, pp. 2419–28; 26 B.F.S.P. (1837–8), pp. 1372–7; 29 *ibid.* (1840–1), pp. 1126–1142; 30 *ibid.* (1841–2), pp. 193–203; R. Y. Jennings, *The Caroline and McLeod Cases*, 32 A.J.I.L. (1938), p. 82.

United States and Great Britain being then at peace. Certain British soldiers in Canada crossed the Niagara River, which formed the international boundary, boarded by force the American ship *Caroline* lying by Schlosser in United States territory, set the steamer on fire, cut her loose, and sent her adrift over the Niagara Falls.[51]

This was during the Canadian Rebellion of 1837. It appears from the documents that, for some time and in many parts of the United States, Canadian rebels and United States citizens were actively advocating and organising aid to the insurgents. The movement was particularly strong along the Canadian border and the local American authorities were unable effectively to enforce the laws of neutrality.[52] The climax was reached when some 1,000 men, well armed, coming mostly in small groups from the American side of the Niagara River, entrenched themselves on Navy Island, on the Canadian side of the border. On the eve of the incident, the *Caroline,* flying American colours, made several voyages to Navy Island "landing passengers and freight" and returned finally to berth at Schlosser where during the evening some more "passengers" came on board for the night. It was towards midnight that the above incident took place.

The dispute arising out of the incident was not finally settled until 1842, after a special plenipotentiary, Lord Ashburton, had been sent from Great Britain.[53] In a Note to the British Plenipotentiary, the American Secretary of State, Mr. Webster, set out the legal principles governing the case, which appear to have been admitted by the British, and in which the passage quoted by the International Military

[51] Some injuries were caused, two cases being fatal, by shots fired while the occupants were escaping from the vessel during the mêlée.

[52] See letter from the Mayor of Buffalo to the President, Dec. 14, 1837: "The civil authorities have no adequate force to control these men" (H.Ex.Doc. 74, 25 Cong. 2 sess., quoted in 3 *Int.Arb.*, p. 2426); Report of the Marshal of the U.S. for the Northern District of New York, Dec. 27, 1827 to the effect that warrants had been issued for the arrest of the men, but could not be served (H.Ex.Doc. 64, 25 Cong. 2 sess., quoted *op. cit.*, p. 2426); President Van Buren's message to Congress of Jan. 5, 1838, after the incident, admitting that the existing laws were insufficient to cope with hostile invasions from the U.S. of the territory of neighbouring and friendly nations, and requesting full powers for the executive in the matter (H.Ex.Doc. 64, 25 Cong. 2 sess., quoted *op.cit.*, p. 2427).

[53] Ramifications of the incident were not finally disposed of, however, until the Brit.-U.S. Cl.Com. (1853) rendered its decision on the *McLeod Case* (1855) (Hornby's *Report*, p. 428. See also 3 *Int.Arb.*, p. 2419).

Tribunal first appeared.[54] In this Note, Secretary of State Webster challenged Her Majesty's Government to show

"a necessity of self-defence, instant, overwhelming, leaving no choice of means, and no moment for deliberation. It will be for it to show, also, that the local authorities of Canada, even supposing the necessity of the moment authorised them to enter the territories of the United States at all, did nothing unreasonable or excessive; since the act, justified by the necessity of self-defence, must be limited by that necessity, and kept clearly within it. It must be shown that admonition or remonstrance to the persons on board the *Caroline* was impracticable, or would have been unavailing; it must be shown that daylight could not be waited for; that there could be no attempt at discrimination between the innocent and the guilty; that it would not have been enough to seize and detain the vessel; but that there was a necessity, present and inevitable, for attacking her in the darkness of the night, while moored to the shore, and while unarmed men were asleep on board, killing some and wounding others, and then drawing her into the current, above the cataract, setting her on fire, and, careless to know whether there might not be in her the innocent with the guilty, or the living with the dead, committing her to a fate which fills the imagination with horror. A necessity for all this, the Government of the United States cannot believe to have existed."[55]

In his reply, the British Plenipotentiary sought to show point by point that such a necessity did in fact exist, after recalling the inability of the American authorities to prevent the organisation of forces hostile to Britain in American territory.[56] Having also received an expression of regret from the British Plenipotentiary on behalf of the British Government, the United States Secretary of State declared the incident closed. He, furthermore, expressed the satisfaction of the President that there was agreement between the two countries on the principle of the inviolability of the territory of independent States, except in cases of self-defence, where the "necessity of that self-defence is instant, overwhelming

[54] The Note had first been sent to the British Minister Fox, on April 24, 1841 (29 B.F.S.P., p. 1129, at p. 1138). But it was sent again to the British Special Plenipotentiary Ashburton by Webster in his Note of July 27, 1842, as enclosure I (30 B.F.S.P., pp. 193 *et seq.*). It was Ashburton who answered it on July 28, 1842 (30 B.F.S.P., pp. 195 *et seq.*).

[55] 29 B.F.S.P., p. 1129, at p. 1138.

[56] Ashburton to Webster, July 28, 1842 (30 B.F.S.P., pp. 195–200).

and leaving no choice of means, and no moment for deliberation." [57] It was from this diplomatic note that the International Military Tribunal (Nuremberg) took its quotation.

The rule of law evolved from the *Caroline Incident* (1837), which has long been regarded as the *locus classicus* of the principle of self-defence in international law,[58] thus received a further confirmation from the Judgment of Nuremberg (1946).

In case of an "instant and overwhelming necessity," a State is thus allowed to take defensive measures against hostile acts of private individuals in the territory of a friendly foreign State, when the latter is unable to afford the necessary protection to its rights. *A fortiori* a State may also take the appropriate and necessary defensive measures against hostile acts emanating from the foreign State itself, provided that such acts are unlawful and that no pacific or other lawful means exist for preventing or suppressing them. It may use force to repel an overt and unlawful attack by another State.[59] The State acting in self-defence is not responsible for injuries thus caused to the wrongful attacker, or for incidental damage to individuals of third States, either in its own territory or in the territory of the offending State, or on the high seas.[60]

As regards hostile acts of one State against another State within the territory of a third State, the situation of a neutral in time of war may be considered. It has already been said that the rights of a State within the territory of another State, including the right to integrity and inviolability, are in principle under the protection of the territorial sovereign. Either belligerent has a right to expect that no hostile act will

[57] Webster to Ashburton, August 6, 1842 (Moore, 2 *Dig.*, p. 412. For full text, see 30 B.F.S.P., pp. 201–2).

[58] It was referred to in many international judicial proceedings, *e.g.*, in *The Mary Lowell Case* (1879) by the Spanish Government (3 *Int.Arb.*, p. 2774), by both sides in the *Fur Seal Arbitration* (1893) (1 *Int.Arb.*, p. 755, at pp. 841, 895 *et seq.*). See also in the latter case, p. 894, where counsel for G.B. adopted the Webster-Ashburton formula to measure the case of the U.S. Counsel for the U.S. referred to it in the *Kelly Case* (1930), before the Mex.-U.S. G.C.C. (1923) and it was examined by the Commission at some length (*Op. of Com., 1931*, p. 82, at p. 92).

[59] See for instance Portugo-German Arbitration (1919): *Angola Case* (1928, 1930), 2 UNRIAA, p. 1011. Germany unlawfully invaded Portuguese Angola. No question was raised as to the legality of the military defence by Portugal. On the contrary, Germany was held responsible inter alia for the additional expenses incurred by Portugal in expediting the arrival of a military convoy at the colony (pp. 1070–1), death of officers and men killed in action (pp. 1072–3), etc.

[60] See *supra*, pp. 53 *et seq.*, 60 *et seq.*, 79 *et seq.*

emanate from neutral territory. Should the neutral be unable or unwilling to protect this right of the belligerents, the latter may take the necessary measures in self-defence.

Examining the legality of the German air raid on Salonika in January, 1916, the Greco-German Mixed Arbitral Tribunal considered that:—

"... the occupation of Salonika by the armed forces of the Entente in the Autumn of 1915, at a time when Greece was not yet a party to the war, constitutes a violation of that country's neutrality; ... It is unnecessary to consider whether the Hellenic Government protested against the said occupation or whether it consented to it, either expressly or impliedly; ... In either case, the occupation of Salonika was, as regards Germany, an unlawful act, which authorised her to resort to all measures of war necessary for her own defence, even upon Greek soil." [61]

The Tribunal added:—

"The right of Germany to defend herself against the occupation of Greek territory by forces of the Entente did not relieve her of the duty of observing the rules laid down by international law." [62]

Attention may be drawn to two points in this decision. First the act of self-defence is justified only by the existence of an unlawful act in regard to the belligerent State concerned. Secondly, the measures of war permitted under such circumstances are measures necessary for the defence of that State.

One of the legal problems which arose at the trial of the "German Major War Criminals" (1945–1946) was whether or not the taking of preventive measures in a neutral country is permissible when it is certain that the neutral is on the point of being, but is not yet, invaded by the enemy. The question arose in connection with the German invasion of Norway launched on April 9, 1940, for which the defendant Erich Raeder was charged with criminal responsibility.

Counsel for the defendant invoked "the right of self-defence," [63] and argued that the object of the German invasion

[61] *Coenca Brothers Case* (1927), 7 T.A.M., p. 683. at pp. 686–7. (Transl.).
[62] *Ibid.*, at p. 687. (Transl.) The Tribunal had in mind principally the rules of warfare.
[63] "*Das Recht der Selbsterhaltung*," "*le droit de défence personnelle*" (18 *I.M.T.* (*Nuremberg*), p. 417 (July 17, 1946)).

was to forestall an imminent British invasion of Norway. " Documents which were subsequently captured by the Germans are relied on to show that the Allied plan to occupy harbours and airports in Western Norway was a definite plan, although in all points considerably behind the German plans under which the invasion was actually carried out. These documents indicate that an altered plan had been finally agreed upon on March 20, 1940, that a convoy should leave England on April 5, and that mining in Norwegian waters would begin the same day; and that on April 5 the sailing time had been postponed until April 8." [64]

" Thus," defence counsel contended, " factual evidence of imminent neutrality violations existed from the point of view of international law; and neutrality violation had indeed been already committed to a certain extent as by mine-laying. This was the point where Germany, in accordance with the international concept of the right of self-defence, was entitled to resort to equivalent counter measures, that is, to occupy Norway in order to prevent the impending occupation by other belligerent States." [65]

" Preventive counter measures are permissible, and an impending violation of neutrality, which can be expected with certainty, is considered equal to a completed violation of neutrality."[66]

In its Judgment, the International Military Tribunal (Nuremberg) chose not to express a definite opinion on this issue, basing its decision on a lack of causal connection between the Allied plan and the German invasion. It held that:—

" When the [German] plans for an attack on Norway were being made, they were not made for the purpose of forestalling an imminent Allied landing, but, at the most, that they might prevent an Allied occupation at some future date." [67]

Referring to the Allied plans for the occupation of bases in Western Norway, the Tribunal said:—

[64] I.M.T. (Nuremberg) (1945): *France, U.S.S.R., U.K., U.S.A.* v. *Hermann W. Göring and others* (" *German Major War Criminals Case* ") (1946), 1 *I.M.T. (Nuremberg)*, p. 171, at p. 208. British (" Plan R.4 ") and German (" Weser Exercise ") military plans regarding Norway during the Second World War are described in T K. Derry's *The Campaign in Norway*, London, H.M.S.O., 1952, Chapter 2. Defence counsel at Nuremberg referred to the Allied plan as the " Stratford Plan."

[65] 18 *ibid.*, p. 419 (July 17, 1946).

[66] Defence counsel's contention (*ibid.*, at p. 413).

[67] " *German Major War Criminals Case* " (1946), 1 *I.M.T. (Nuremberg)*, p. 171, at p. 207.

" But these plans were not the cause of the German invasion of Norway. Norway was occupied by Germany to afford her bases from which a more effective attack on England and France might be made, pursuant to plans prepared long in advance of the Allied plans which are now relied on to support the argument of self-defence." [68]

As the Germans, at the time of their invasion of Norway, had no definite information regarding the so-called " Stratford Plan," of which they learned only subsequently through captured documents, and did not even consider an Allied invasion of Norway imminent,[69] the Tribunal was no doubt right in applying a principle of logic as well as of law that something which is not known at the time of an action or decision, but only learned of subsequently, cannot be invoked as a motive for such action or decision.[70] But by its failure to refute categorically the German contention that an impending violation of neutrality by one of the belligerents, which could be expected with certainty, was equivalent to an actual violation entitling the other belligerent to take preventive military measures in the neutral's territory, and furthermore by the very fact of basing this point of its decision on the lack of causal connection between the impending violation by one of the belligerents and the actual violation by the other, the Tribunal laid itself open to the serious charge that in principle it admitted the German contention.

This German contention was anticipated and contested by the prosecution. Sir Hartley Shawcross, the British Chief Prosecutor, speaking of the German allegations concerning the impending Allied invasion of Norway said:—

" I do not propose to argue the question whether or not these allegations were true or false. That question is irrelevant to the issues before this Court. Even if the allegations were true—and they were patently false—they would afford no conceivable justification for the action of invading without warning, without

[68] *Ibid.*, at p. 208.
[69] This was the finding of the I.M.T. (Nuremberg) (*ibid.*, at p. 208).
[70] The same principle was applied by the P.C.A. in the case of *The Carthage* (1913), France/Italy, 1 H.C.R., p. 556, at p. 559: " The despatch from Marseilles, relating certain remarks by the mechanician of the said Duval, did not reach the Italian authorities until after the *Carthage* had been stopped and taken to Cagliari and could not, therefore, have been the reason for [' *motiver* '] these measures " (Transl.).

declaration of war, without any attempt at mediation or conciliation. Aggressive war is none the less aggressive war because the State which wages it believes—rightly or wrongly—that other States might, in the future, take similar action. The rape of a nation is not justified because it is thought she may be raped by another. Nor even in self-defence are warlike measures justified except after all means of mediation have been tried and failed, and force is actually being exercised against the State concerned." [71]

It is submitted that the view of the prosecution is substantially correct. Indeed, if the German contention were correct, it would lead to the untenable conclusion that whilst the violation of the neutrality of a State is unlawful, it becomes lawful if both belligerents are bent on violating it, merely on the ground that the object of each side is to forestall the action of the other.

Moreover, the German contention appears to be incompatible with the Webster-Ashburton Rule on self-defence, accepted in principle by the Nuremberg Tribunal. In this connection, it must be remembered that the impending violation of a State's neutrality, even if its ultimate object is to injure the opposing belligerent, constitutes primarily a direct threat to the neutral State, and only a secondary and indirect threat to the rights of the opposing belligerent. Such a secondary and indirect danger cannot be said to create that " instant and overwhelming necessity " of self-defence required by the Rule. Furthermore, as has already been pointed out, the right of the belligerent to expect the neutral State to maintain its neutrality and to prevent its territory from being used for warlike purposes by the other belligerent, is a right primarily under the protection of the neutral State. If this right should thus become indirectly threatened, it is always possible to remind the neutral of its duty. The latter must be presumed willing and able to fulfil its international obligations. Until the neutral has definitely proved itself unwilling or unable to do so by the tangible fact that its territory is actually being used for belligerent purposes by one of the belligerent parties, and there remains no alternative but for the opposing party to undertake its own defence against hostile acts emanating from that

[71] 2 *I.M.T.* (*Proceedings*), p. 74 (Dec. 4, 1945); or 3 *I.M.T.* (*Nuremberg*), p. 129.

territory, it cannot be said that there is "no choice of means." Moreover, besides the protection afforded by the legal sanctity of neutrality and the neutral State's own forces, it is always open to the belligerent, whose enemy is about to invade a neutral State, to protect the latter's neutrality from violation by all lawful measures of warfare directed against its enemy, for instance, by destroying the concentration of troops massed for the invasion. It appears, therefore, that the impending violation of the neutrality of a State by one of the belligerents can in no wise be considered as creating an "instant and overwhelming necessity for self-defence, leaving no choice of means, and no moment of deliberation," thus authorising the prior invasion of the neutral State by the other belligerent.[72]

The attempt to justify the German invasion of Norway on the ground of self-defence is perhaps a typical example of the abuses to which the principle of self-preservation may sometimes give rise. A clear refutation of the German contention by the International Military Tribunal (Nuremberg) would, therefore, have rendered a great service to international law by clarifying the notion of self-defence.

III. SELF-DEFENCE AS A JURIDICAL CONCEPT

1. *Meaning*

Self-defence, in law, possesses a technical meaning and denotes the recourse by a person to means not normally permitted by law for his own protection against an imminent danger under conditions which the law prescribes. In some international decisions, therefore, the expression "legitimate

[72] For the same reasons, the present writer is unable to endorse the view of Charles de Visscher ("Des lois de la guerre et la théorie de la nécessité," 24 R.G.D.I.P. (1917), p. 74), who gave the example of a belligerent which was able to prove that its enemy was about to invade a neutral country that was evidently incapable of defending its neutrality. He said: "No one would challenge its right, in the absence of any other means of defence, to forestall the aggression threatening it by occupying the neutral territory which its enemy was about to turn into a base of military operations" (pp. 76–77. Transl.). He added, however, that: "The justification of this act is not to be found, as the German doctrine wrongly maintains, in an alleged right of self-preservation (*Selbsterhaltungsrecht*) or of necessity (*Notrecht*); it resides solely in the *unlawful* character of the aggression which has to be averted" (p. 77. Transl.). The discussion in the text already presupposes that the occupation or use of the neutral territory by either of the belligerents would be unlawful.

defence" instead of merely "self-defence" is to be found.[73] When exercised under conditions prescribed by law, self-defence is a matter of right. The Charter of the United Nations recognises it as an "inherent right." [74]

2. *Object*

International tribunals sometimes have occasion to recognise the right of individuals to resort to self-defence for the preservation of their lives.[75] In so far as States are concerned, as set out in the court's directions to the jury in the *Blodgett Case* (1846), self-defence has for its object the protection of the State itself and the lives and property of its nationals.[76] In any event, self-defence must be confined to the defence of acknowledged rights of the State.

The malady of international relations is due in no small measure to the claim that States may defend by force such of their "interests" as are "important enough to be defended." [77] But as was pointed out by Lord Russell of Killowen, who was counsel for Great Britain in the *Fur Seal Arbitration* (1893), the inevitable upshot of such a claim is war,[78] and he rightly said: "That is not international law, or international right." [79]

[73] *e.g.*, Brit.-U.S. Cl.Arb. (1910): *Eastern Extension, Australasia and China Telegraph Co., Ltd. Case* (1923), Nielsen's *Report*, p. 40, at p. 76, *supra*, p. 80. The use of the expression is probably due to the fact that the President of the Tribunal was a French jurist. In France and many other Latin countries, the expression is legitimate defence, just as the Canonists spoke of *defensio legitima*.

[74] Art. 51. The Spanish text uses an identical expression and speaks of "*el derecho inmanente*." The Chinese and the French texts speak of "natural right," while the Russian text uses the expression "imprescriptible right."

See also U.S. Court of Claims: *The Sloop Ralph* (1904), *supra*, p. 81. *Cf.* Span.-U.S. Cl.Com. (1871): *The Mary Lowell* (1872), *supra*, p. 80, note 31.

[75] Portugo-German Arbitration (1919): *Naulilaa Case* (1928), 2 UNRIAA, p. 1011, at p. 1025.

[76] 12 Metcalf, p. 56, at p. 84; *supra*, p. 84.

[77] *Cf.*, *e.g.*, U.S. contention in the *Fur Seal Arbitration* (1893), 1 *Int.Arb.*, p. 755, at pp. 839–40: "It [the U.S. Government] asserts that the right of self-defence on the part of a nation is a perfect and paramount right to which all others are subordinate, and which upon no admitted theory of international law has ever been surrendered; that it extends to all the material interests of a nation important to be defended; that in the time, the place, the manner, and the extent of its execution it is limited only by the actual necessity of the particular case; that it may, therefore, be exercised upon the high sea as well as upon the land, and even upon the territory of other and friendly nations, provided only that the necessity for it plainly appears." Counsel for the U.S. pursued his theory to its logical conclusion (pp. 835–54), which, by its very extravagance, only serves as condemnation of the theory itself.

[78] *Ibid.*, at p. 894–5.

[79] Oral Argument delivered by Sir Charles Russell (as he then was): "I may be asked, finally: May there not be cases in which, although it may not be

It is lawlessness. The award of the Tribunal in the *Fur Seal Arbitration* (1893), which rejected such an extravagant contention [80] and which resulted in the payment of damages for unjustified measures taken allegedly in self-defence [81] may be said to have pronounced the doom of this dangerous doctrine.

3. *Conditions Governing its Existence and Exercise*

(a) *Instant Danger*:—The existence of an "instant and overwhelming" danger to the safety of the State or the lives or property of its nationals is the condition *sine qua non* of legitimate defence.[82] In the words of the decision in the case of the sloop *Ralph* (1904):—

"When the act is accomplished, damage suffered, and the danger passed, then the incidents of self-defence cease." [83]

This condition explains the essentially preventive and non-retributive character of self-defence. Its purpose is limited to

possible to formulate the interests of a nation under any recognised head of law, municipally or internationally regarded; yet may there not be cases in which there may be great interests of a nation which yet call for and morally justify that nation in acting, and acting in assertion of those interests and in defence of them? Yes; there are such cases; but what are they? These are cases which rest upon the very same principle upon which nations have been driven, sometimes justly, sometimes unjustly, to defend territory which they have acquired, or to acquire territory in which they have by international law no right, but which, either in pursuit of a great ambition, or in the gratification of racial antipathy, or under the influence of a great potentate, they choose to think is necessary for the well-being and safety of the nation. But that is not international law, or international right. That is war, and is defended as war, and justified as war alone" (*ibid.*, at p. 894, see also pp. 894–5). *Cf.* Brierly, *The Outlook for International Law*, 1944, pp. 32 *et seq.*, for a discussion of the relation between the "vital interests" of the subjects of the law, particularly powerful subjects, and the law itself. The free pursuit of what each State considers to be its "vital interest" would indeed throw us back, as Brierly says, to the "law of the jungle" (p. 38).

[80] See the award of the Tribunal on the last of the five points submitted to it, denying the U.S. any right of protection to the fur seals in the Behring Sea beyond the ordinary 3-mile limit (*loc. cit.*, p. 949). See more particularly the rejection of the alternative draft to this part of the award submitted by the American members of this Tribunal, whereby they wished to alter the award into saying that the U.S. had no *special* right "beyond the rights that all nations have, under the international law, in respect of self-protection and self-defence" (pp. 919 and 920).

[81] By a convention of 1896, a Mixed Commission was set up to deal with damages arising out of the seizure of British vessels in the Behring Sea before the submission of the dispute to arbitration, in the light of the award rendered by the Fur Seal Tribunal. By an award of Dec. 17, 1897, a total sum of $473,151.26 was allowed for the various claims (2 *Int.Arb.*, pp. 2123–31).

[82] *Cf.* Counsel for G.B. in the *Fur Seal Arbitration* (1893) where he pointed out that the true basis of all exceptional acts of self-defence or self-preservation rests upon "the genuine emergency of danger" (1 *Int.Arb.*, p. 755, at p. 892).

[83] 39 *U.S. Court of Claims*, p. 204, at p. 207.

averting the instant danger threatening the safety of the State or its nationals. Acts committed in excess of what is necessary for that purpose are unlawful.[84]

(b) *Unjustifiable Character of the Danger*:—The danger must be unlawful or unjustified. It is this character of the danger which purges the unlawful means employed to avert it of its illegality.[85]

(c) *Absence of Lawful Means of Protection*:—Another condition governing the existence of the right to resort to extraordinary means for self-defence is that the desired object of averting the imminent danger cannot, in the circumstances, be achieved by lawful and pacific means. In other words, there should be "no choice of means." It is not a case of necessary or legitimate self-defence if the danger can be averted by such lawful means as admonition, protest or diplomatic representation.[86] It is only when such means are impracticable or have proved unavailing that the State is justified in resorting to means which would otherwise be unlawful.

This requirement explains the greater stringency governing the case of self-defence in the territory of a friendly State than on the high seas. For while on the high seas the duty of protecting one's rights falls primarily on the State itself,[87] in the territory of another the duty falls primarily on the territorial sovereign.[88] From this point of view, acts of self-defence in the territory of a friendly nation are permissible only when the prevention of the danger emanating from that territory admits of no delay,[89] or when the local sovereign has proved either

[84] See *The Sloop Ralph* (1904), *supra*, 81, note 38. In *The Caroline Incident* (1837–42), the British Law Officers of the Crown thus advised the Foreign Secretary in their opinion dated March 25, 1839: "We feel bound to suggest to your Lordship that the grounds on which we consider the conduct of the British authorities to be justified is that it was absolutely necessary as a measure of precaution *for the future* and not as a measure of retaliation *for the past*. What had been done previously is only important as affording irresistible evidence of what would occur afterwards. We call your Lordship's attention to this distinction as it is very important to be alluded to in any communication which your Lordship may make to the American Minister" (Record Office, F.O. 83/2207).

[85] *Cf. supra*, pp. 79, 80, 81–82, 88, 89, 92, note 72.

[86] *Supra*, pp. 86, 91. *Cf.* also 1 *Int.Arb.*, p. 894.
These lawful means for averting an impending danger also include the offer of arbitration and, for members of any collective organisation providing means for the pacific settlement of disputes, the recourse to such means.

[87] *Supra*, pp. 82 *et seq.*

[88] *Supra*, pp. 83 *et seq.*

[89] *Supra*, pp. 84 *et seq.*

unable or unwilling to afford the necessary protection,[90] and still on the basis that no other lawful means exist for compelling that State to fulfil its obligations.

(d) *Reasonableness in its Exercise*:—In the *Blodgett Case* (1846), the Court recognised that it would be impracticable to "attempt drawing any exact line of distinction as to the measures which such necessary defence would warrant . . . ; because it must depend much on the circumstances of each case."[91] But "the act, justified by the necessity of self-defence, must be limited by that necessity, and kept clearly within it."[92] Consequently, there should be "nothing unreasonable or excessive."[93] In short the exercise must be in good faith.[94]

4. *Self-Defence as a Justiciable Issue*

The International Military Tribunal (Nuremberg), in the trial of the "*German Major War Criminals*," held in its Judgment (1946) that:—

"Whether action taken under the claim of self-defence was in fact aggressive or defensive must ultimately be subject to investigation and adjudication if international law is ever to be enforced."[95]

[90] See *supra*, pp. 87, 88 *et seq.*, 91. It seems clear that in *The Caroline Incident* (1837–42), the U.S. Government implicitly admitted its failure to protect the rights of Great Britain. In the Note of July 27, 1842, of Webster to Ashburton, in which he enclosed the Note already mentioned above (*supra*, p. 86) he also enclosed the following extract from a message of the U.S. President to Congress, of Dec. 7, 1841: "This Government can never concede to any foreign Government the power, except in a case of the most urgent and extreme necessity, of invading its territory, either to arrest the persons or destroy the property of those who may have violated the municipal laws of such foreign Government, or have disregarded their obligations arising under the law of nations. The territory of the United States must be regarded as sacredly secure against all such invasions, until they shall voluntarily acknowledge inability to acquit themselves of their duties to others" (30 B.F.S.P., p. 194). It is perhaps too much to expect any Government to make a voluntary acknowledgment of its inability to acquit itself of its duties, but the fact of enclosing this extract was a hint which Ashburton did not fail to take; for in his reply he first of all mentioned the failure of the U.S. Government to suppress the activities complained of. *Cf. supra*, p. 85, note 52.

[91] 12 Metcalf, p. 56, at p. 84.

[92] Webster's Note (29 B.F.S.P., p. 1136, at p. 1138).

[93] *Ibid.* *Cf.* also *The Virginius Incident* (*supra*, p. 80, note 31 *in fine*).

[94] See *infra*, pp. 132 *et seq.*

[95] 1 *I.M.T.* (*Nuremberg*), p. 171, at p. 208. Used in the legal, and not the military or tactical, sense of these words, aggressive self-defence is indeed a contradiction. What the I.M.T. meant, therefore, was that whether or not an act carried out allegedly in self-defence fulfilled the legal conditions governing legitimate self-defence could and must ultimately be subject to judicial investigation in case of dispute.

In this case, it examined and rejected the plea that Germany in invading Norway on April 9, 1940, acted in self-defence.[95a]

C. Self-Help

In the preceding section, it was seen that legitimate self-defence is of a strictly preventive character.[96] There can be no self-defence against an unlawful *fait accompli*, unless it continues to present a grave threat to the safety of the State. In the absence of an effective system of collective protection against wrongful acts, these measures of self-defence cannot always be said to ensure full protection of a State's rights.

The Permanent Court of Arbitration in the *North Atlantic Coast Fisheries Case* (1910) enumerated the sanctions of traditional international law:—

"Such sanctions are, for instance, appeal to public opinion, publication of correspondence, censure by parliamentary vote, demand for arbitration and the odium attendant on a refusal to arbitrate, rupture of relations, reprisals, etc." [97]

The only sanction that needs mention here is reprisal, by reason of the exceptional power that it confers upon a State.

In the *Angola Case* (1928, 1930), the Portugo-German Arbitral Tribunal examined the question of reprisals and found that:—

"The most recent doctrine, especially the German doctrine, defines reprisals in the following terms:—

"*Reprisal* is a measure of self-help (*Selbsthilfehandlung*) taken by the injured State in reply to an act contrary to the law of nations on the part of the offending State—*after summons which proves unavailing*. Its effect is to suspend temporarily the observance of a particular rule of the law of nations in the relations between two States. It is *limited* by the experiences of humanity and by the rules of good faith, applicable in international relations. *It would be illegal if a previous act, contrary to international law*, had not provided its justification. Its object is to compel the offending State to make reparation for the injury or to return to legality, by avoiding further offences.

[95a] See *supra*, p. 90.
[96] *Supra*, p. 80, note 31 *in fine*; p. 81, note 38, p. 95, especially note 84.
[97] 1 H.C.R., p. 146, at p. 167.

" This definition does not require that the act of reprisal should be strictly *proportionate* to the first unlawful act. On this point, authors, unanimous until a few years ago, begin to be divided in opinion. The majority regard a certain proportion between the offence and the act of reprisal as a necessary condition to the legality of the latter. Others, amongst more recent writers, no longer require this condition. As regards the new trend in international law which is undergoing transformation pursuant to the experiences of the last war, it certainly tends to restrict the notion of legitimate reprisal and to forbid any excess." [98]

The rules governing this form of self-help among States are, therefore, as follows:—

(a) " The first condition—*sine qua non*—of the right to take reprisals is a justification provided by a previous act contrary to the law of nations." [99]

(b) " Reprisals are not permissible except against the offending State. It is, indeed, possible that legitimate reprisals taken against an offending State may affect the nationals of an innocent State (*e.g.*, the bombardment of a town, carried out in reprisal for a similar act, may cause casualties among nationals of neutral States, against whom the reprisal was not directed. J. Hatschek, *Völkerrecht*, p. 408, III). But this is an indirect and involuntary consequence which the injured State would always endeavour to avoid in practice or to limit as much as possible." [1]

(c) " The reprisal is only lawful if it is preceded by a summons which proves to be of no avail." [2]

(d) " The use of force is only justifiable by its being necessary." [3]

(e) " Even if one were to concede that the law of nations does not require the reprisal to be approximately proportionate to the offence, reprisals out of all proportion to the act which had prompted them ought certainly to be considered as excessive and hence unlawful." [4]

If the above conditions were fulfilled, it would seem from the Portugo-German Arbitration (1919) that a State might even

[98] 2 UNRIAA, p. 1011, at pp. 1025–26. (Transl.) Italics of the Tribunal. German military expedition in 1914 into Portuguese (neutral) territory in Africa allegedly in reprisal for the Naulilaa incident. Legal conditions for reprisal held not fulfilled. Germany held liable for damage caused by her unlawful act.

[99] *Ibid.*, at p. 1027. (Transl.)

[1] *Id.*: *The Cysne* (1930), 2 UNRIAA, p. 1035, at p. 1057. (Transl.)

[2] *Angola Case* (1928), *loc. cit.*, p. 1027. (Transl.)

[3] *Ibid.* (Transl.)

[4] *Ibid.*, at p. 1028. (Transl.)

be permitted to adopt military measures against a country with which it is formally at peace. Such a state of things would in fact differ little from a state of war.[5] Indeed, war itself may be regarded as the extreme form of self-help. The Permanent Court of Arbitration, in the *Norwegian Claims Case* (1922), speaking of the First World War, observed:—

"Belligerents and neutrals alike were fearful for their existence. The hardships of neutrality were felt so deeply by the United States themselves that they declared war on Germany as the only means of defence against its ' repeated acts of war against the government and people of the United States of America.' " [6]

War, the *ultima ratio regum*, is the last means of national self-preservation.

D. Conclusions

While the case of necessity (*l'état de nécessité, Notstand*), by its very exceptional character stands in a class by itself, the above survey has shown that it is possible to deduce certain basic principles governing the use of extraordinary measures by a State for its self-preservation, either in self-defence or in self-help. These basic principles will now be briefly summarised.

The cardinal point to be noted is that, for these measures to be legitimate, they must be taken for an essentially defensive and preventive purpose, although, in their actual application, they may assume an offensive and even punitive character. Their purpose must be either to avert an imminent injury or, by exacting reparation for an unredressed wrong, to prevent the occurrence of further unlawful acts. It is not possible to determine in advance the appropriate measures in each contingency, but no otherwise unlawful measures should be resorted to, unless and until all pacific and lawful means of protection are proved to be of no avail. " The use of force is justifiable only by its being necessary." In its attempt at self-preservation, the State should be guided by the principles of good faith and the dictates of humanity. In particular, there should be " nothing unreasonable or excessive," going beyond

[5] *Cf.* Mex.U.S. G.C.C. (1923): *Kelly Case* (1930), *Op. of Com. 1931*, p. 82.
[6] 2 H.C.R., p. 40, at p. 75.

Annex 5

J. Viñuales, "Due Diligence in International Environmental Law: A Fine-Grained Cartography", in *Due Diligence in the International Legal Order* (H. Krieger et al. eds. 2020) (excerpt)

Due Diligence in the International Legal Order

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Annex 5

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the court set the bar to the highest 'possible solicitude'), does not amount to strict liability. In fact, the court found that for some specific vessels manufactured in the UK, the latter had met the requirements of due diligence, despite the occurrence of undesirable results. None of these points are obvious, even today, and they are all significant for international environmental law as it presently operates.

A second consideration arising from this case is the significance of representations by the aggrieved state (the US representative had informed the UK government that vessels were being built for possible use in the Civil War), which should have triggered 'in due time' at least some 'effective' measures of prevention. Thus, action by a possibly aggrieved state (a state at risk), although not a requirement, may catalyse the duty of due diligence or, more specifically, may at the very least be instrumental in setting the time for action.

A third consideration is the fact that subsequent measures could have cured the initial negligence, although the UK failed to take such action or did so in a manner 'so imperfect as to lead to no result, and therefore cannot be considered sufficient to release Great Britain from the responsibility already incurred'.[4] The latter point suggests that the duty of due diligence is a continuous rather than a discreet one: due diligence must be constantly exercised. This is important from a litigation perspective.

As a fourth and final consideration, the formulation of the due diligence rule in Article VI of the compromis makes it clear that a state's failure to effectively control the actions of 'all persons within its jurisdiction' may be a breach of the duty of due diligence. This simple point is significant because it clearly covers the actions of private persons and makes due diligence relevant for extraterritorial situations, much like in today's discussions of human rights extraterritoriality and their link to environmental principles. The duty of due diligence therefore finds a solid basis in the *Alabama Claims* arbitration. Its contribution to the clarification of the duty of due diligence thus warrants comparison with the *Trail Smelter* case, at the very least to highlight areas of convergence and divergence.

2.2 From *Alabama* to *Trail Smelter*

It must be mentioned that the *Alabama* precedent was invoked before the *Trail Smelter* tribunal and duly noted by it.[5] Significantly, the latter tribunal recognised the *Alabama* decision as the start of a relevant line of precedents—although it eventually relied on the domestic practice of Switzerland and the US, as both were federal systems and had faced disputes among 'quasi-sovereign' entities. This was

[4] Ibid., 130.

[5] *Trail Smelter Arbitration*, Decisions of 16 April 1938 and 11 March 1941, vol. III, UNRIAA, 1905-1982, 1963.

Annex 6

N. Oral, "Environmental Protection as a Peremptory Norm of General International Law: Is It Time?", *Peremptory Norms of General International Law (Jus Cogens): Disquisitions and Disputations* (D. Tladi ed. 2021)

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Disquisitions and Disputations

Edited by

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CHAPTER 20

Environmental Protection as a Peremptory Norm of General International Law

Is It Time?

Nilufer Oral

1 Introduction

The concept of peremptory norms of general international law (*jus cogens*) is directly tied to the post-World War II international order built in the aftermath of the horrors of crimes committed against humanity. The post-World War II period saw the introduction of new legal norms such as the crime of genocide, as codified in the 1948 Convention on the Prevention and Punishment of the Crime of Genocide.[1] Most notable was the work of the International Law Commission to introduce the concept of peremptory norms of general international law (*jus cogens*) in the draft text that would become Article 53 of the Vienna Convention on the Law of Treaties (VCLT).[2] Peremptory norms of general international law are norms that have hierarchical superiority to other norms of international law as they reflect fundamental values of the international community and cannot be derogated from unless by a norm having similar qualities.

In 2015, the International Law Commission decided to include the topic of peremptory norms of general international law (*jus cogens*) into its programme of work and appointed Mr. Dire Tladi as Special Rapporteur.[3] The Commission adopted a set of draft conclusions at its first reading in 2019 together with commentaries, which includes a non-exhaustive list of peremptory norms of general international law (*jus cogens*).[4] The list was limited to peremptory norms that were previously identified by the Commission and provided that

1 1948 Convention on the Prevention and Punishment of the Crime of Genocide.

2 1969 Vienna Convention on the Law of the Treaties.

3 The original title of "*Jus Cogens*" was changed to "Peremptory norms of general international law (*Jus Cogens*) at the sixty ninth session of the International Law Commission.

4 Draft Conclusions on Peremptory Norms of general international law (jus cogens), adopted by the Commission on first reading, *Report of the International Law Commission,* Seventy First Session, General Assembly Official Records (A/74/10)(2019), at Chapter V.

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it "[w]ithout prejudice to the existence or subsequent emergence of other peremptory norms of general international law (*jus cogens*)."[5] The matter of ensuring the list would not preclude the emergence of new peremptory norms was important. In this context, among the possible candidates is environmental protection.

The question is whether we have come to that point in the evolution of international law to recognize that the destruction of the natural world – the environment[6] – should be recognized as a peremptory norm of general international law (*jus cogens*). The importance of protecting the environment, its natural resources, wildlife, and the global commons for the overall welfare of humanity has been recognized for decades, formally first commemorated during the historic 1972 United Nations Conference on the Human Environment held in Stockholm, Sweden.[7] Since 1972, destruction of the environment on a global scale has accelerated, despite the proliferation of global and regional instruments alongside national laws addressing different environmental concerns. As detailed in the Chapter, recent scientific reports on climate change and the loss of biodiversity highlight the threat to the international community as a whole if such widespread harm to the environment continues.

The topic of environmental protection and peremptory norms of general international law has received somewhat limited attention in scholarly literature. As will be shown, the notion that certain environmental crimes could rise to the same level of *jus cogens* norms such as the prohibition of crimes against humanity, dates back to the early work of the International Law Commission.

This Chapter will begin, in the next section, by a brief description of the nature of peremptory norms of general international law (*jus cogens*). This brief description is followed by an overview of the Commission's work on the environment as an international crime. That section will cover, first, former article 19 of the Draft Articles on State Responsibility, and second, the Draft Code of Crimes against the Peace and Security of Mankind and its definition of crimes against humanity. Thereafter, the Chapter will outline certain key provisions of the current work of the International Law Commission on peremptory norms of general international law (*jus cogens*). This Chapter will then seek to provide examples in areas of environmental protection that give

5 *Id.* Draft Conclusion 23.

6 Recognizing that there is no universally accepted definition, the term "environment" will be used in this Chapter to mean natural resources, habitats, ecosystems, biodiversity, wildlife and the global commons.

7 Report of the United Nations Conference on the Human Environment, Stockholm, (A/Conf.48/14/Rev.1) (1972).

support to the recognition of the protection of the environment, under certain circumstances, as a peremptory norm of general international law (jus cogens). Finally, the Chapter will conclude that nearly fifty years after the 1972 Stockholm Declaration and the recognition by the Commission that harm to the environment was at the same level as other crimes against humanity, the situation has only worsened. The time has come to revisit the work started by the Commission decades ago and begin the process to determine the criteria for when harm to the environment constitutes a violation of a peremptory norm of general international law.

2 The Nature of Peremptory Norms of International Law (*Jus Cogens*)

The concept of peremptory norms of international law (*jus cogens*), that is a set of non-derogable norms binding on all States regardless of their consent, found prominence following the horrific war crimes committed during World War II and the resulting widespread human suffering.[8] The international community coalesced and adopted landmark instruments of international law reflecting certain fundamental values of humanity, such as the UN Charter and the 1948 Genocide Convention.[9] However, the notion that certain fundamental values in international law lay beyond the traditional principle of *jus dispositivum* of sovereign States were brought into the mainstream of international law by the work of the International Law Commission in its work on the Law of Treaties, which was ultimately codified in the Article 53 of the VCLT. The International Law Commission served as the architect of this landmark treaty and the concept of *jus cogens*.

The notion that legal norms of international law could be "non-derogable" falls afoul of the strict positivist view that sees international law as direct emanation of the sovereign will, *jus dispositivum*.[10] Whereas, the idea of

8 Alfred Verdross first introduced the concept of peremptory norms (jus cogens) in Alfred Verdross "Forbidden Treaties in International Law" (1937) 31 *American Journal of International Law* 571, at 572.

9 1951 Convention on the Prevention and Punishment of the Crime of Genocide.

10 *See* the debate in the legal literature between the proponents of legal positivism and natural law theory: Alfred Verdoss "*Jus Dispositivum* and Jus Cogens in International Law" (1966) 60 *American Journal of International Law* 55; Dan Dubois "The Authority of Peremptory Norms in International Law: State Consent or Natural Law?" (2009) 78 *Nordic Journal of International Law* 133; Levan Alexidze "Legal Nature of *Jus Cogens* in Contemporary International Law" (1983) 172 *Recueil des Cours de la Académie de Droit International* 219, at 259–263; Bruno Simma, "From Bilateralism to Community Interest in International Law" (1994) 250 *Recueil des Cours de la Académie de Droit International*

peremptory norms is firmly ensconced in the legal tradition of natural law and the notion that there are certain fundamental values that are beyond the malleable will of sovereign States. At the very heart of peremptory norms is the role of fundamental values and the interests of the international community as a whole. As Justice Cançado Trinidad writes, peremptory norms create a *jus gentium*, an international law for humankind.[11] The International Law Commission described the obligations related to peremptory norms for State responsibility as necessarily affecting the vital interests of the international community as a whole and may entail a stricter regime of responsibility than otherwise would apply to internationally wrongful acts.[12] It is within this context that we must place protection of the environment as it has evolved over time to occupy its place as a fundamental value essential to protection of the vital interests of the international community, alongside prevention of genocide, torture, apartheid and others. This is not at all a new or radical proposal. In the 1970s, the International Law Commission had placed the environment alongside these norms to be recognized as international crimes and that were against the peace and security of mankind.

3 Preservation of the Environment and International Crimes in the Work of the International Law Commission

3.1 *Articles of State Responsibility*

The Commission devoted some 52 years to the preparation and adoption of the landmark 2001 Articles on State Responsibility. During the 1970s, after the debate on eighth report of Roberto Ago, the International Law Commission adopted Draft Article 19 which provides a list of international crimes and international delicts that would trigger State responsibility.[13] Draft Article 19(2) defined an international crime as:

221, 289–293; Lauri Hannikainen *Peremptory Norms (Jus Cogens) in International Law* (Finnish Lawyers' Publishing Company, 1988), at 207.

11 Antônio Augusto Cançado Trindade *International Law for Humankind: Towards a New Jus Gentium: The Hague Academy of International Law Monographs* (3rd revised Edition, Brill/Nijhoff, 2020).

12 See generally, Chapter III of Part Two of the Articles on the Responsibility of States for Internationally Wrongful Acts, *Report of the International Law Commission,* Fifty-Third Session, General Assembly Official Records (A/56/10) (2001), at Chapter IV.

13 Draft Article 19 of the Draft Articles on State Responsibility provisionally adopted in 1976, *Report of the International Law Commission*, Twenty-Eighth Session, General Assembly Official Records (A/31/10) (1976), at 95. The Commissions consideration of Draft Article is discussed in this volume in Helmut Philipp Aust "Legal Consequences of Serious Breaches

> An internationally wrongful act which results from the breach by a State of an international obligation so essential for the protection of fundamental interests of the international community that its breach is recognized as a crime by that community as a whole, constitutes an international crime.

Although Draft Article 19 does not explicitly refer to *jus cogens,* the reference to "fundamental interests of the international community" and recognition by the "community as a whole" echoes the language of Article 53 of VCLT on peremptory norms (*jus cogens*) as well as Draft Conclusion 3 of the ILC Draft Conclusions of 2019, the latter making express reference to fundamental interest. The list of international crimes listed in Draft Article 19(3) included "a serious breach of an international obligation of essential importance for the safeguarding and preservation of the human environment, such as those prohibiting massive pollution of the atmosphere or of the seas."[14]

There was little controversy in the Commission to include crimes against the environment among the list of international crimes. The Commission adopted Article 19 *in toto* at the first reading in 1976.[15] The list of international acts that constituted serious breaches of the peace and security of mankind in Article 19 also included, the prohibition of aggression;[16] violations of the right to self-determination such as the prohibition of forced colonialism;[17] serious breaches on a widespread scale of an international obligation of essential importance for safeguarding the human being, such as the prohibition of slavery, genocide, and apartheid.[18] Notably, these were also the crimes listed in the Draft Code of Offenses Against the Peace and Security of Mankind as discussed below, some of which found their way into the Rome Statute. Moreover, the right of self-determination, prohibition against apartheid, slavery, genocide are recognized as peremptory norms of general international law (*jus cogens*).[19] The inclusion of the "safeguarding and preservation of the human

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of Peremptory Norms in the Law of State Responsibility: Observations in the Light of the Recent Work of the International Law Commission" (Chapter 9).

14 Draft Article 19(3)(d) of the 1976 Draft Articles on State Responsibility (above note 13).

15 *Id.*

16 *Id.,* Draft Article 19(3)(a).

17 *Id.,* Draft Article 19(3)(b).

18 *Id.,* Draft Article 19(3)(c).

19 See, as regards the prohibition of genocide as a rule of *jus cogens*, *Armed Activities on the Territory of the Congo (New Application: 2002) (Democratic Republic of the Congo v. Rwanda)*, Jurisdiction and Admissibility, *ICJ Reports* 2006, p.32 para. 64. See also, as regards the prohibition of apartheid and racial discrimination, *Case Concerning Barcelona Traction, Light and Power Company, Limited, ICJ Reports* 1970, p. 3, at para. 34 (noting the prohibition's

environment, such as those prohibiting massive pollution of the atmosphere or of the seas" is quite relevant for this reason.

In the Commentary to Draft Article 19(3), the Commission explains the post-World War II view for recognizing two completely different regimes of responsibility in international law. The first would "apply in the case of a breach by a State of one of the obligations whose fulfilment is of fundamental importance to the international community as a whole" listing as examples, the obligations to refrain from acts of aggression, genocide and apartheid.[20] By contrast, the Commentary explains that the second regime entails the failure of the State "to fulfil an obligation of lesser and less general importance."[21] At the time, the members of the Commission supported the view that certain acts by the State that resulted in massive harm to the natural environmental were in the first group of serious crimes of "fundamental importance to the international community as a whole" – in other words *peremptory norms* (jus cogens).

When identifying the separate category of "particularly serious wrongs", distinguished from the "range of less serious wrongs", which included the prohibition of crimes such as genocide, apartheid and other inhuman practices of that kind, and the notion of the right to self-determination, the Commission also included the protection of the environment. The Commission provided the contextual reasons that

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erga omnes character); *A v. Department of Economic Affairs*, Judgment of the Swiss Federal Supreme Court, 23 January 2008, at para. 8.2; *Committee of US Citizens Living in Nicaragua and Others v. President Reagan and Others*, Judgement of the United States Court of Appeals for the District of Columbia, 14 October 1988, at 717; *Sarei and Others v. Rio Tinto*, Judgment of the United States Court of Appeals for the Ninth District, 25 October 2011, at 19378. See as regards the right to self-determination, *East Timor (Portugal v. Australia)*, *ICJ Reports* 1995, p. 90, at para. 29 (as to its *erga omnes* character); 2 BVR 1038/01, Judgement of the German Federal Constitutional Court, of 26 October 2004 (describing the right to self-determination as a rule of *jus cogens*). See, as regards the prohibition of torture as a rule of *jus cogens*, *Questions relating to the Obligation to Prosecute or Extradite (Belgium v. Senegal)*, Judgment, *ICJ Reports* 2012, p. 422, at para. 99; *Prosecutor v. Anto Furundžija*, Judgment of the International Tribunal for the Former Yugoslavia, 10 December 1998, at paras. 153-156; *Al-Adsani v. the United Kingdom*, Judgment of the European Court of Human Rights, 21 November 2001, at para. 61. See as to the prohibition of slavery, João Ernesto Christófolo *Solving Antinomies between Peremptory Norms in Public International Law* (Schulthess, 2016), at 216 ("The prohibition of slavery is placed among the first undisputable peremptory norms that emerged in contemporary international law").

20 Para 6 of the Commentary to Draft Article 19 of 1976 Draft Articles on State Responsibility (above note 13).

21 *Id.*

> the requirements of economic and social development on all sides and the marvellous achievements, but also the terrible dangers, of scientific and technological progress have led States to realize the imperative need to protect the most essential common property of mankind and, in particular, to safeguard and preserve the human environment for the benefit of present and future generations. [22]

According to the Commission, States had cast the need to safeguard and preserve the human environment as an "imperative need". Following its eloquent explanation of the need for a separate category of crime, the Commentary enters into a detailed discussion of the emergence and codification of the concept of *jus cogens* in Article 53 of the VCLT and the importance of the preservation of the environment.[23] While a bit lengthy, the words of the Commission written in 1976 are even more relevant in 2020 and should be quoted in full:

> The risks to which the environment is exposed by man armed with his present resources are well known: the pollution, by one means or another, of vast areas of the atmosphere, the sea and the land; the destruction of fauna over huge areas in the oceans, and thus of essential sources of food for whole populations; the transformation of fertile regions into arid and unproductive land; the spread of poisons, bacteria and other chemical agents fatal to man or animals; modifications of weather and climate; and the degradation of groundwater supplies and of the quality of drinking water and irrigation water. These are just examples, for what can happen is beyond imagination. Frequent meetings of scientists and diplomats have been sounding the alarm on this subject for many years, and increasing efforts are being made, in particular, in the United Nations to bring about an obligation upon States to refrain from certain practices and also to see to it that their subjects observe certain prohibitions.[24]

The following final statement leaves no doubt that the Commission viewed the preservation of the human environment to have all the attributes of a peremptory norm of international law.

> In view of the foregoing, it seems undeniable that the existing rules of general international law on the subject and those which will of necessity

22 *Id.*, at para.15.

23 *Id.*, at paras. 16-19.

24 *Id.*, at para. 32.

> be added to them in the future are bound to be regarded to a great extent as "peremptory" rules by the international community as a whole. It seems equally undeniable that the obligations flowing from these rules are intended to safeguard interests so vital to the international community that a serious breach of those obligations cannot fail to be seen by all members of the community as an internationally wrongful act of a particularly serious character, as an "international crime", a crime no less reprehensible than some of those which are the subject-matter of the legal instruments already mentioned.[25]

In the Fourth Report, on State Responsibility, the Special Rapporteur, Mr Riphagen, observed that while the international community as a whole may recognize certain acts of a State as international crimes, he acknowledged the lack of consensus on issues such as the appropriate punishment.[26] He provided examples of serious crimes that were in "fields of 'fundamental interests of the international community' ", which included "the safeguarding and preservation of the human environment" in addition to "safeguarding the human being " or "safeguarding the right of self-determination of peoples.[27]

Some twenty years later Draft Article 19 and its list of international crimes would disappear from the Articles on State Responsibility having proven controversial and divisive.[28] In the early years that Draft Article 19 was discussed, there was no objection to including the safeguarding and preservation of the human environment as a serious international crime alongside the other listed international crimes.[29] Some of the key sources of debate over Draft Article 19 included the definition of "crimes", the distinction between "crimes" and "delicts",[30] doubts over the notion of criminal responsibility of a State,[31] as well

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25 *Id.*, at para. 32.

26 Fourth Report of the Special Rapporteur (Willem Riphagen) on State Responsibility: The Content, Forms and Degrees of International Responsibility (A/CN.4/366 and Add.1 and Add.2) (1983), at para. 58.

27 *Ibid.*

28 See James Crawford "Revising the Draft Articles on State Responsibility" (1999) 10 *European Journal of International Law* 435; Georges Abi-Saab "The Uses of Article 19" (1999) 10 *European Journal of International Law* 339.

29 *Report of the International Law Commission,* Fiftieth Session, General Assembly Official Records (A/53/10) (1998), at paras. 243-245.

30 *Id.*, at paras. 243-245 and paras. 260-262.

31 There was disagreement on whether penal liability and sanctions for serious international breaches could be imposed on States or should only be imposed on individuals as States are not susceptible to such criminal liability or penal sanctions. *Id.*, at paras.

as the consequences of an international crime.[32] The concept of State crime, which proved to be the most debated aspect of Draft Article 19 was replaced with the concept of "Serious breaches under Peremptory norms" in the 2001 version of the Draft Articles on State Responsibility.[33] The final version as adopted under article 40 had transformed the international crimes and delicts under Draft Article 19 into a serious breach by a State of an obligation arising under a peremptory norms of general international law.[34] The Commission offers examples such as the prohibition against torture, intransgressible rules of international humanitarian law, and the respect of self-determination as examples of peremptory norms.[35] Although, the protection of the environment is not mentioned, the Commission did go on to stress these were not meant to be exhaustive and that Article 53 of the VCLT had contemplated the emergence of new peremptory norms of international law.[36]

248-260. See also Seventh Report by Special Rapporteur (Gaetano Arangio-Ruiz) on State Responsibility (A/CN.4/469) (1995), at para. 122.

32 Members who opposed the retention of Draft Article 19 considered that "the consequences of international crimes of States simply should not be covered by the draft on State responsibility," because "the acts qualified as examples of crimes in Article 19 ... were of such a nature as to fall into one or other of the situations envisaged in Article 39 of the Charter of the United Nations as conditions for Security Council action under Articles 40 and the following. In other words, the identification of crimes and their substantive and procedural consequences would fall totally under the provisions of Chapter VII of the Charter. Consequently, to provide for crimes in a convention on State responsibility would, according to that theory, be superfluous and contrary to the Charter." See, the introduction of the Report by the Special Rapporteur (Arangio-Ruiz) on State Responsibility (A/CN.4/SR.2436) (1996), at para. 4. The 1980 Draft Articles adopted at first reading included Part IV on international crimes and provides for consequences in Article 51 and 52. Part 1 of the Draft Articles adopted by the ILC on first reading at its thirty-second session, in 1980, and titles and texts of Parts 2 and 3 of the Draft Articles as provisionally adopted by the Drafting Committee on first reading at the forty-eighth session, in 1996. There was also the concern that the international system at the time lacked a prosecutorial institution such as a criminal court endowed with necessary jurisdiction over States. See Seventh Arangio-Ruiz Report (above note31), at para. 122.

33 Chapter III of Part Two of the Articles on State Responsibility (above note 12).

34 *Id.*, Article 40 provides as follows "(1) This chapter applies to the international responsibility which is entailed by a serious breach by a State of an obligation arising under a peremptory norm of general international law. (2) A breach of such an obligation is serious if it involves a gross or systematic failure by the responsible State to fulfil the obligation".

35 *Id.*, para 5 of the Commentary to Article 40.

36 *Id.*, Para 6 of the Commentary to Article 40.

3.2 *From the Code of Offenses against the Peace and Security of Mankind to the Rome Statute*

The General Assembly in 1981 gave the Commission a mandate to continue its work on the Draft Code of Offenses against the Peace and Security of Mankind, originally commenced in 1947.[37] Mr. Doudou Thiam, the Special Rapporteur,[38] in his Second Report, identified two categories of offenses against the peace and security of mankind: the first were those that were already recognized in the 1954 draft Code and the second were those recognized by the international community since 1954.[39] In the latter category, the Special Rapporteur included "acts causing serious damage to the environment".[40] The first set of draft articles prepared by the Special Rapporteur in his Fourth Report in 1986, included as a crime against humanity "[a]ny serious breach of an international obligation of essential importance for the safeguarding and preservation of the human environment".[41] In his Seventh Report, still under the groupings of crimes against humanity, the Special Rapporteur introduced changes that limit the scope to "intentional" and "serious" harm to the human environment.[42] After discussions at the Drafting Committee, Draft Article 14(6) became Draft Article 26, which under the chapeau of "[w]ilful and severe damage to the environment" provided that "[a]n individual who wilfully causes or orders to cause widespread, long-term and severe damage to the natural environment shall, on conviction thereof, be sentenced [to ...]."[43]

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37 At its thirty-ninth session in 1987, the International Law Commission amended the title of the English text of the "Draft Code" from "Draft Code of Offenses Against the Peace and Security of Mankind" to "Draft Code of Crimes against the Peace and Security of Mankind. (U.N. Doc. A/43/10) (1988).

38 Draft Code of Offences Against the Peace and Security of Mankind, UN General Assembly Resolution 36/106 (1981).

39 Second Report of the Special Rapporteur (Doudou Thiam) on the Draft Code of Offences against the Peace and Security of Mankind (A/CN.4/377 and Corr.1) (1984), at paras. 15- 45.

40 *Id.*, at para. 79. The offenses included were colonialism, apartheid, the taking of hostages, mercenarism, the threat or use of violence against internationally protected persons, serious disturbance of the public order of the receiving country by a diplomat or an internationally protected person, and the taking of hostages organized or encouraged by a State.

41 Draft Article 12(4), proposed in the Fourth Report of the Special Rapporteur (Doudou Thiam) on the Draft Code of Offences against the Peace and Security of Mankind (A/CN.4/398 and Corr.1-3) (1986), at 86.

42 The revised Draft Article 14(6) included in the category of crimes against humanity "[a]ny serious and intentional harm to a vital human asset, such as the human environment." Seventh Report of the Special Rapporteur (Doudou Thiam) on the Draft Code of Crimes against the Peace and Security of Mankind (A/CN.4/419 & Corr.1 and Add.1) (1989), at para. 30.

43 A/CN.4/SER.A/1991/Add.l (Part 2), at 107.

The additional qualifications of "wilfulness" and that the damage be "widespread, long-term and severe " limited the scope of the threshold for the proposed environmental crime.

According to the report of the Chair of the Drafting Committee, these changes were met with an overall favourable response in the Commission.[44] Only one member expressed opposition to the inclusion of crimes against the environment believing that the time had not come to incorporate crimes against the environment into the Draft Code.[45] The Commission on first reading adopted Draft Article 26 with the inclusion of environmental harm as a crime. While the requirement of "criminal intent" was a subject of debate, for the limited purpose of this analysis, the important point is the overall recognition of environmental crime as a crime against the peace and security of mankind. Unfortunately, this provision would not survive the second reading. Ultimately, the final draft adopted by the Commission in 1996 limited the role of environmental destruction to the context of a war crime (article 20).[46] It was later reflected in the list of war crimes adopted under article 8(2)(b)(iv) of the Rome Statute.[47]

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44 Draft Code of Crimes against the Peace and Security of Mankind adopted by the Drafting Committee: Parts One and Two; articles 1-26 – reproduced in A/CN.4/SR.2236 to SR.2237 and SR.2239 to 2241' Statement of Drafting Committee Chair Pawlak (A/CN.4/419 and Add.1), at para. 30.

45 See Pellet (A/CN.4/SR.2430) (1996), "though he was not opposed to the idea, which was probably defensible politically, but not in law, of making serious and wilful offences against the environment a crime".

46 Article 20(g) of the Draft Code of Crimes against the Peace and Security of Mankind, *Report of the International Law Commission*, Forty-Eighth Session, (A/51/10) (1996), provided as follows: "In the case of armed conflict, using methods or means of warfare not justified by military necessity with the intent to cause widespread, long-term and severe damage to the natural environment and thereby gravely prejudice the health or survival of the population and such damage occurs." Para 15 of the Commentary to Draft Article 20, explains that it would apply in the case of both international and non-international armed conflict, the latter being the main contribution in contrast to the "more limited scope of application of Protocol I to international armed conflict."

47 See Art8(2)(b)(iv) 1998 Rome Statute of the International Criminal Court provides as follows: "Intentionally launching an attack in the knowledge that such attack will cause incidental loss of life or injury to civilians or damage to civilian objects or widespread, long-term and severe damage to the natural environment which would be clearly excessive in relation to the concrete and direct overall military advantage anticipated."

4 Crimes against the Environment and the Concept of Ecocide

The notion of environmental crimes dates back to the 1970s and the use of Agent Orange during the Vietnam War.[48] During this period the concept of ecocide was introduced very much inspired by the Genocide Convention. At that time ecocide was linked to war, or in Falk's words, "environmental warfare".[49] Scientist, Richard Galston, is recognized as having coined the term "ecocide" during a panel at the "War Crimes and the American Conscience" conference in 1970. He defined ecocide as follows:

> After the end of World War II, and as a result of the Nuremburg trials, we justly condemned the wilful destruction of an entire people and its culture, calling this crime against humanity genocide. It seems to me that the wilful and permanent destruction of environment in which a people can live in a manner of their own choosing ought similarly to be considered as a crime against humanity, to be designated by the term ecocide.[50]

Professor Falk, in his seminal journal article published in 1973, proposed an international convention on the crime of ecocide that would apply in peacetime and wartime.[51] His draft convention saw ecocide as a crime under international law and defined it as an act committed with the intent to disrupt or destroy in whole or in part, a human ecosystem through various means, including use of weapons of mass destruction, herbicide, bombs, bulldozing equipment, weather modification techniques and the forcible removal of people and animals.[52] In 1976, the UN General Assembly approved the Convention on Environmental Modification Techniques, which entered into force in 1978.[53]

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48 Richard A Falk "Environmental Warfare and Ecocide – Facts, Appraisal, and Proposals" (1973) 4 *Bulletin of Peace Proposals* 80; David Zierler *Invention of Ecocide: Agent Orange, Vietnam, and the Scientists Who Changed the Way We Think About the Environment* (University of Georgia, 2011).

49 *Id.*, at 84.

50 Zierler (above note 7), at 19.

51 *Id.*, at Appendix I.

52 *Id.*, at Article II.

53 1976 Convention on the Prohibition of Military or any Other Hostile Use of Environmental Modification Techniques, to date has only garnered 78 ratifications, including the United States.

Its scope of application, however, is limited to environmental modification techniques[54] used during military or other hostile activities.[55]

5 Current Work of the International Law Commission on Peremptory Norms of General International Law (*Jus Cogens*)

The First Report of the Special Rapporteur Mr. Dire Tladi on peremptory norms (*jus cogens*) was submitted in 2016 and in 2019, the Commission completed the first reading of 23 draft conclusions and one annex. The Draft Conclusions as provisionally adopted by the Commission used the definition of peremptory norms of general international law found in Article 53 of the VCLT.[56] However, the scope of the work of the Commission on peremptory norms of general international law is much broader than the VCLT as it encompasses other sources of international law and consequences for the breach of a peremptory norm of general international law beyond the law of treaties. Where the VCLT applies to treaties, the Draft Conclusions, as adopted thus far, recognize customary international law to be the most common basis for peremptory norms of general international law (*jus cogens*), followed by treaty provisions and general principles of law.[57]

Draft Conclusion 4 identifies two criteria of a peremptory norm of general international law. The first, that it is a norm of general international law; and second it is accepted and recognized by the international community of States as a whole as a norm from which no derogation is permitted and which can be modified only by a subsequent norm of general international law having the same character. Draft conclusion 7(1) emphasizes that "[i]t is the acceptance and recognition by the international community of States as a whole *that is relevant* for the identification of peremptory norms". Paragraph 2 of Draft Conclusion 7, states that "[a]cceptance and recognition by a very large majority of States is

54 Article 11 defines the term "environmental modification techniques" as " any technique for changing – through the deliberate manipulation of natural processes – the dynamics, composition or structure of the Earth, including its biota, lithosphere, hydrosphere and atmosphere, or of outer space."

55 Article 1 provides "Each State Party to this Convention undertakes not to engage in military or any other hostile use of environmental modification techniques having widespread, long-lasting or severe effects as the means of destruction, damage or injury to any other State Party."

56 Draft Conclusion 2 of the Draft Conclusions on Peremptory Norms (above note 5).

57 *Id.,* at Draft Conclusion 5.

required for the identification of a norm as a peremptory norm of general international law (jus cogens)" but that "acceptance and recognition by all States is not required." The key element lies in the recognition by a very large number of States (but not all States) that a general norm of international law non-derogable. In addition, Draft Conclusion 8 lists a wide array of materials that can serve as evidence to support the criteria of peremptory norm of general international law. These include public statements made on behalf of States; official publications; government legal opinions; diplomatic correspondence; legislative and administrative acts; decisions of national courts; treaty provisions; and resolutions adopted by an international organization or at an intergovernmental conference.

The function of the "international community as a whole" is one of the defining aspects of peremptory norms. In her thoughtful article on the topic of peremptory norms and the environment, Kornicker focused on the paramount role community interests play "in the creation of fundamental international norms" stating "that the protection of the global environment is the prototype of a state community interest."[58] She also identified four criteria in order for a norm to have the status *jus cogens*:

> First, the object and purpose of the norm must be the protection of a state community interest. Second, the norm must have a foundation in morality. Third, the norm must be of an absolute nature. Fourth, the vast majority of states must agree to the peremptory nature of the international norm.[59]

Morality and fundamental values are defining aspects of peremptory norms. While peremptory norms had not yet entered into the legal lexicon, in its advisory opinion on whether reservation could be made by a State to the Genocide Convention, the Court quoting from the 1946 UN Genocide Declaration described genocide as:

> a crime under international law" involving a denial of the right of existence of entire human groups, a denial which shocks the conscience of mankind and results in great losses to humanity, and which is contrary to moral law and to the spirit and aims of the United Nations (Resolution 96 (1) of the General Assembly, December 11th 1946).[60]

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58 Eva M Kornicker Uhlmann, "State Community Interests, Jus Cogens and Protection of the Global Environment: Developing Criteria for Peremptory Norms" (1998) 11 *Georgetown International Environmental Law Review* 101, at 102.

59 *Id.*, at 104.

60 *Reservations to the Convention on the Prevention and Punishment of the Crime of Genocide*, Advisory Opinion, *ICJ Reports* 1951, p. 23.

The Commission also debated the notion of "morality" as an underlying feature of peremptory norms. The Special Rapporteur did refer to the "moral foundations" of peremptory norms in the original draft commentary to the Draft Conclusions, which sparked a lively debate about the commentary within the Commission.[61] Some members expressed their view that reference in the commentary to moral foundations might re-open the debate about positivism versus natural law.[62] The outcome of this debate was that the Commission decided to refer to the protection of fundamental values of the international community.[63]

The Commission also agreed that it was not all States but a very large majority that must recognize the general norm as having a peremptory norm character of being non-derogable. The question how to determine when a general norm has transformed into a peremptory norm? Draft Conclusion 8 provides for a wide array of sources as evidence of acceptance and recognition.[64] However, there is no indication as to what language or intent meets the acceptance and recognition criteria. For example, what determined that the crime of genocide to be a peremptory norm? The 1948 Convention on the Prevention and Punishment of the Crime of Genocide was developed before the adoption of article 53 of the VCLT and before the Commission had completed its work on the Law of Treaties. Consequently, no reference is made to any concept of a peremptory norm (*jus cogens*), in other words that the crimes addressed enjoy a hierarchical superior and non-derogable status. The general rule of international law accepted the principle of the consensual basis of treaty-making by States. This was affirmed by the International Court of Justice in its 1951 Advisory Opinion on the Genocide Convention.[65] While not having the benefit

61 (A/CN.4/SR.3500) (2019).

62 *Id.*, p 8 (Park). During the same meeting the present author expressed support for maintaining reference to moral values in the Commentary. *Id.*, at p. 9.

63 Para 7 of the Commentary to Draft Conclusion 3 of the Draft Conclusions on Peremptory Norms (above note 4) as adopted during the first reading reads as follows: "It will be noted from the discussion above that courts and scholarly writers have employed different terms to signify the relevance of values. For example, the phrases "fundamental values" and "interests", or variations thereof, have been employed interchangeably. These different choices of words, however, are not mutually exclusive and they indicate the important normative and moral background of the norm in question."

64 Draft Conclusion 8(2) of the Draft Conclusions on Peremptory Norms (above note 4) lists the following as materials that provide evidence of the peremptory character of a norm: public statements made on behalf of States; official publications; government legal opinions; diplomatic correspondence; legislative and administrative acts; decisions of national courts; treaty provisions; and resolutions adopted by an international organization or at an intergovernmental conference.

65 *Reservations to the Genocide Convention*, Advisory Opinion, *ICJ Reports* 1951, p. 15, at 21.

of a crystallized understanding of *jus cogens*, the Court offered two reasons why the Convention was an exception to the otherwise well-established principle of the consensual basis of treaties.[66] The first concerned the principles underlying Convention as ones that are recognized by States as binding, even in the absence of a conventional obligation. The Court referred to the special characteristics of the Convention and the crime of genocide in particular, which was found by the General Assembly to be contrary to moral law and to the spirit and aims of the UN.[67] The second was the universal character of both of the condemnation of genocide and of the co-operation required "in order to liberate mankind from such an odious scourge" as expressed in the Preamble to the Convention. The Genocide Convention was therefore intended by the General Assembly and by the contracting parties to be definitely universal in scope.[68] Although the Court did not recognise the prohibition of genocide as a rule of *jus cogens* in the 1951 Advisory Opinion, the Court expressly reaffirmed the status of the rule as *jus cogens* in citing the same passage from 1951 Advisory Opinion in the 2006 judgment in *Armed Activities on the Territory of the Congo*.[69] Since then, the prohibition of genocide as a *jus cogens* norm has been reaffirmed in subsequent cases before the Court and other international criminal tribunals.[70]

The International Law Commission included a separate annex of a non-exhaustive list of peremptory norms of international law (*jus cogens*). The listed norms are not to prejudice the existence or subsequent emergence of other peremptory norms of general international law (*jus cogens*).[71] The list was limited only to those norms that the Commission had identified already in the past. It is important to highlight that this list is intended to be merely illustrative and non-exhaustive for both other existing peremptory norms of

66 *Id.*, at 21–22.

67 UN General Assembly Resolution 96 (I) (A/RES/96(I)) (1946).

68 *Id.*, at 23.

69 See *Armed Activities on the Territory of the Congo* (above note 19), at para. 64.

70 *Case Concerning Application of the Convention on the Prevention and Punishment of the Crime of Genocide* (*Bosnia and Herzegovina v. Serbia and Montenegro*), *ICJ Reports* 2007, p. 43, at para. 162; *Application of the Convention on the Prevention and Punishment of the Crime of Genocide* (*Croatia v. Serbia*), *ICJ Reports* 2015, p. 3, at para. 88. See also decisions by international criminal tribunals, *Prosecutor v. Zoran Kupreškić et al.*, Judgment of the Trial Chamber of the International Tribunal for the Former Yugoslavia, 14 January 2000, at para. 520; *Prosecutor v. Radislav Krstić*, Judgment of the Trial Chamber of the International Tribunal for the Former Yugoslavia, 2 August 2001, at para. 541; *Prosecutor v. Clément Kayishema and Obed Ruzindana,* Judgment of the International Tribunal for Rwanda, 21 May 1999, at para. 88.

71 See Draft Conclusion 23 of the Draft Conclusions on Peremptory Norms (above note 4).

international law (*jus cogens*) and also to keep the door open for emerging norms, such as those that might involve environmental protection.[72] During the debate on the proposed list of peremptory norms several members referred to the Commission's previous work on Draft Article 19 of the Draft Articles on State Responsibility on first reading in 1976, which had included the formulation "serious breach of an international obligation of essential importance for the safeguarding and preservation of the human environment, such as those prohibiting massive pollution of the atmosphere or of the seas" as an international crime.[73]

Over forty-five years have passed since the Commission first began the discussion to include the preservation and safeguarding of the environment in a separate category of international norms requiring enhanced status of protection such as a serious crime or a peremptory norm of international law.

5 Protection of the Environment as a Fundamental Value and Interest of the International Community as a Whole

Finally, the question is whether environmental protection should now be assessed as a possible peremptory norm? The key to this answer lies in meeting the two-prong criteria of being (1) a norm of general international law that is accepted and recognized by the international community of States as a whole; and (2) from which no derogation is permitted. If we look at the broader context, environmental concerns have been on the international agenda for decades and the object of collective action in many ways. The first expression of the collective international concern can be found in the 1972 Stockholm Declaration. It was endorsed by all attending Governments, 113 Member States of the United Nations, and proclaimed that the "protection and improvement of the human environment is a major issue which affects the wellbeing of peoples and economic development throughout the world" and declared that that protection "is the urgent desire of the peoples of the whole world and the duty of all Governments."[74] This widespread acknowledgement for protection of the environment by the international community has been reiterated over the decades, and in particular through a series of global summits that followed the

72 *Id.*, Para 1-2 of Commentary to Draft Conclusion 23. See also statements of Oral (A/CN.4/SR.3460), at 6.

73 See statement of Murase (A/CN.4/SR.3459) (2019), at 12.

74 Report of the United Nations Conference on the Human Environment (above note 7), at para. 2.

Stockholm Conference[75] each ending with consensus-based declarations.[76] These consensus-based global declarations demonstrate the extent of the recognition by the international community as a whole of the importance and need to protect and preserve the environment.

In addition, the broad recognition by the international community for certain environmental concerns is found in the expression of the principle of the common concern of humankind adopted in conventions that enjoy universal ratification such as the Convention on Biodiversity,[77] the United Nations Framework Convention on Climate Change,[78] and the 2015 Paris Agreement.[79] The collective expression for the duty to protect certain species has been recognized in one of the oldest environmental treaties, the Convention on International Trade in Endangered Species of Wild Fauna and Flora.[80] It has attained near-universal status with 183 ratifications and provides the framework for governments to reach consensus on determining which species are threatened with extinction and prohibit trade.[81] These instruments demonstrate that collectively States recognize their common interests and shared fundamental values in the protection of biological diversity, the climate system, endangered species and the marine environment. Thus, there can be no doubt that the protection of the environment constitutes a general norm of international law recognized by the international community as a whole, thereby fulfilling the first prong. There are literally hundreds of instruments, binding and non-binding, international and national, attesting to this fact. The challenge lies in fulfilling the second prong.

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75 United Nations Conference on Environment and Development (UNCED), Earth Summit,Rio de Janeiro- Brazil, 3-14 June 1992; World Summit on Sustainable Development (WSSD), Johannesburg Summit, Johannesburg- South Africa, 26 August – 4 September 2002; United Nations Conference on Sustainable Development, Rio+20, Rio de Janeiro - Brazil, 20-22 June 2012.

76 The 1992 Rio Declaration; the 2002 Johannesburg Declaration; and the 2012 Rio +20 The Future We Want.

77 1992 United Nations Convention on Biological Diversity, 196 States that have ratified the Convention affirmed that the conservation of biological diversity is a common concern of humankind.

78 1992 United Nations Framework Convention on Climate Change, acknowledging that climate change is a common concern of humankind.

79 2015 Paris Agreement, acknowledging that climate change is a common concern of humankind.

80 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora.

81 *Id.*

Among scholars, there are differing views where there exists any general principle of international environmental law that has achieved the status of a peremptory norm.[82] For example, in 1995 Singleton-Cambage observed that:

> Currently, environmental rights and responsibilities are not recognized as having this [peremptory norm] legal status, despite the fact that global environmental preservation represents an essential interest of all individuals within the entire international society. Sufficient time has not yet passed to enable environmental issues to evolve to this status of international law.[83]

Whereas, writing back in 1977 Marjorie Whiteman (a legal advisor to Eleanor Roosevelt) offered her own projected list identifying certain matters presently outlawed or needing to be outlawed by world consensus under international law (*jus cogens*) that included Contamination of the air, sea, or land with a view to making it harmful or useless to mankind.[84] Kadelbach, presenting a list of primary rules that are both peremptory norms and obligations *erga omnes,* included the protection of the environment from severe and lasting degradation. However, Kotzé notes that lack of details such as which measures are included, what the threshold would be and also the geographical area that such norms apply.[85]

6 Potential International Environmental Norms of a Peremptory (Jus Cogens) Character

Without doubt, the most important and challenging part of the equation is determining the second prong of being recognized by the international

82 Ulrich Beverlin and Thilo Marauhn *International Environmental Law* (Hart, 2011), 287; Patricia Birnie, Alan Boyle, Catherine Redgwell *International Law and the Environment* (3rd Edition, Oxford, 2009), at 109–110; Krista Singleton-Cambage "International Legal Sources and Global Environmental Crises: the Inadequacy of Principles, Treaties and Custom" (1995) 2 *ILSA Journal of International Comparative Law* 171–187, at 185; For a detailed overview of the different scholarly views on international environmental norms and *jus cogens*, see Louis J Kotzé "The Human Right to a Healthy Environment" in John H. Knox and Ramin Pejan (eds.) *The Human Right to a Healthy Environment* (Cambridge, 2018), at 136–154.

83 *Id.*

84 Marjorie M Whiteman "Jus Cogens in International Law, With a Projected List" (1977) 7 *Georgian Journal of International Comparative Law* 609–626, 626.

85 Kotzé see (above note 82), at 249.

community as a non-derogable norm that can only be modified by a similar type of norm. However, it is fair to observe that to date no international environmental law norm has been recognized expressly as being of a *jus cogens* character. Nevertheless, this does not prevent the development of new norms. It is beyond the scope of this chapter to engage in a detailed examination of specific norms of international environmental that may or may not qualify as peremptory norms. Instead, this part will examine how the current state of environmental threats to the global community highlight the need for the emergence of such norms.

Since the 1970s, environmental degradation has been recognized as a threat to the well-being of humanity. Despite the countless instruments adopted by States, binding and non-binding, establishing obligations, standards or goals for certain destructive actions to be stopped, States continue to engage in activities that defy their own statements and commitments. In particular, as examined below the need to address climate change, loss of biological diversity, the increased number of species becoming extinct or threatened with extinction and the depletion of living natural resources are of existential importance for many around the world. Each of these provide the scientific foundation to establish international environmental peremptory norms.

6.1 *Climate Change*

Climate change poses a threat to the well-being and security of the world which is recognized by not only by scientists but also by militaries worldwide.[86] Scientific reports leave no doubt that global temperatures are rising due to human activities with potential catastrophic impacts on millions of people around the world. The IPCC Fifth Report, adopted by governments by consensus, stated with high confidence that atmospheric concentrations

86 See for example Office of the Under Secretary of Defence for Acquisition and Sustainment, *Report on Effects of a Changing Climate to the Department of Defense* (2019), describing the effects of climate change as a national security concern. available at https://climate-andsecurity.files.wordpress.com/2019/01/sec_335_ndaa-report_effects_of_a_changing_climate_to_dod.pdf (accessed 21 October 2020); United Kingdom Department of Defence *Global Strategic Trends: The Future Starts Today 6th edition*,2019 available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/771309/Global_Strategic_Trends_-_The_Future_Starts_Today.pdf (accessed 21 October 2020); and North Atlantic Treaty Organization, *NATO's Strategic Concepts*, 2010 available at https://www.nato.int/nato_static_fl2014/assets/pdf/pdf_publications/20120214_strategic-concept-2010-eng.pdf (accessed 21 October 2020).

of carbon dioxide, methane and nitrous oxide from human activities are at unprecedented levels for at least the last 800,000 years."[87] The impacts of climate change can be catastrophic to humanity and in particular to communities in developing countries. Rising sea levels is one vivid example of the physical effects of climate change. According to the 2019 IPCC Special Report on the Ocean and Cryosphere in a Changing Climate,[88] it is virtually certain that global mean sea level is rising and will accelerate.[89] Over 680 million people (nearly 10 percent of the global population in 2010) live in low-lying coastal areas, providing homes to approximately 28 percent of the global population, with around 11 percent living on less than 10 m above sea level.[90] Sixty-five million people live in Small Island Developing States.[91]

6.2 *Biological Diversity and Extinction*

In 2019, some 130 governments adopted the first Global Assessment of Biodiversity and Ecosystem Services (2019). It is a landmark study conducted by 150 selected experts from all regions of the world.[92] It is the first such study carried out by an intergovernmental body.[93] According to the Global Assessment, some 25 per cent of species or around one million species already face extinction in the coming decades unless action is taken to reduce the intensity of drivers of biodiversity loss. Without such action, there will be a further acceleration in the global rate of species extinction, which is already at least tens to hundreds of times higher than it has averaged over the past 10 million years

87 Intergovernmental Panel on Climate Change *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, 2015, at 151 available at https://www.ipcc.ch/site/assets/uploads/2018/05/SYR_AR5_FINAL_full_wcover.pdf (accessed 22 October 2020).

88 M Oppenheimer, BC Glavovic *et al.* "Sea Level Rise and Implications for Low-Lying Islands, Coasts and Communities" in HO Pörtner, DC Roberts *et al* (eds.) *IPCC Special Report on the Ocean and Cryosphere in a Changing Climate* (IPCC, 2019) 3–119.

89 *Id.*, at paras. 4.2.2.1.1 and 4.2.2.2.

90 N Abram, A Gattuso, L Prakash *et al.* "Framing the Context of the report" in HO Pörtner, DC Roberts *et al* (eds.)(above note 87) available at https://www.ipcc.ch/srocc/chapter/chapter-1-framing-and-context-of-the-report/. (22 October 2020).

91 *Ibid.*

92 Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), "Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services" in *Global Assessment Report on Biodiversity and Ecosystem Services* (IPBES, 2019).

93 *Id.*, at 2.

(A5).[94] The enormous loss of wildlife has also been documented in the 2020 WWF Living Planet Report, according to which since 1970 there has been on average a loss of 68 percent of the population of mammals, birds, fish, amphibians and reptiles.[95]

6.3 *Illegal Unreported and Unregulated Fishing*

Overfishing and the depletion of fish stocks, including destructive fishing practices, is a long-standing global problem.[96] There are two aspects to this problem. The first concerns "lawful" overfishing allowed by States. This also entails fishing activities conducted in the high seas and beyond the reach of national regulations other than the flag State. The second concerns illegal, unreported and unregulated activities. Despite existing instruments, both binding and non-binding, sustainable fisheries has not been achieved. Fish stocks continue to be overfished[97] and other marine species continue to be threatened due to destructive fishing practices, such as bottom trawling and long-line fishing and all legally done. Subsidies provided by governments further encourage unsustainable and destructive fishing practices.[98] Moreover, there is a close connection between violations of human rights and environmental crimes. Indeed, by 2009 the UN General Assembly (UNGA) had already noted potential connections between international organized crime and illegal fishing in certain regions of the world.[99] Most notably are the IUU activities that take place on the high seas subject only to the jurisdiction of questionable flag States.

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94 *Ibid.*

95 World Wildlife Fund (WWF) *Living Planet Report 2020: Bending the Curve of Biodiversity Loss* (WWF, 2020).

96 Mary Ann Palma, Martin Tsamenyi and William Edeson *Promoting Sustainable Fisheries The International Legal and Policy Framework to Combat Illegal, Unreported and Unregulated Fishing* (Brill, 2010).

97 See Food and Agriculture Organization of the United Nations (FAO) *The State of World Fisheries and Aquaculture: Opportunities and Challenges* (FAO, 2014).

98 Christophe Bellmann, Alice Tipping & Rashid Sumaila "Global trade in fish and fishery products: An overview" (2015) 69 *Marine Policy* 181; Jaemine Lee "Subsidies for Illegal Activities? – Reframing IUU Fishing from the Law Enforcement Perspective" (2019) 22 *Journal of International Economic Law* 417.

99 See Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments, UN General Assembly Resolution 64/72 (A/RES/64/72)(2009).

6.4 *Potential Peremptory Norms*

The scholarship examining peremptory norms and the environment proposed different approaches to develop such norms, such as extending existing norms in other fields, notably human rights, and applying these to protection of the environment.[100] Kotzé provides a detailed overview of the different possibilities of the integrated rights approach ranging from existing norms of armed conflict, human rights and genocide.[101] It is also possible to select certain recognized norms of international environmental law, such as the no harm principle (*sic utere tuo ut alienum non laedas*)[102] and determine which should be in the class of non-derogable peremptory norms.

One can also go beyond traditional and general international environmental law norms, such as the no harm rule, and identify more specific norms. One example can be found in the Paris Agreement. For the first time, in article 2 of the Paris Agreement, States agreed to a collective and measurable objective of holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change. Each State, with no exception, is required to submit every five years nationally determined contribution that provides the measures to be adopted in contributing to achieving this objective that are to be ambitious and represent progression over time. Could the duty to mitigate greenhouse gas emissions progressively over time translate into a peremptory norm from which no State can derogate?

The actions of States that allow for over-fishing that leads to the depletion of fish stock or the failure of States to regulate fishing activities within and beyond their national jurisdiction resulting in the depletion of fish stocks could be reassessed within the context of mass destruction of environmental resources giving rise to a serious breach of a peremptory norm of international law under article 40 of the Articles on State Responsibility. A similar approach could be adopted towards activities sanctioned by the State that result in or lead to the largescale destruction of biological diversity. Of course, these are broad concepts that required detailed examination and fine-tuning, but the process should begin to assess which activities and at which threshold should

100 Lynn Berat, "Defending the Right to a Healthy Environment: Toward a Crime of Geocide in International Law" (1993) 11 *Boston University International Law Journal* 327–348; See Kotzé above note 82), at 136–154.

101 Kotzé (above note 82), at 260–264.

102 *Id.*, at 265.

harm to the environment be considered as a violation of peremptory norm of general international law.

7 Conclusion

Since the early days of the work of the Commission on the Draft Articles on State Responsibility and the Code on Crimes against the Peace and Security of Mankind, the environmental threat to the vital interests of the international community have only increased. Ample scientific evidence exists showing the multiple threats to the livelihoods of millions of people from the widespread destruction of the environment. The purpose of this Chapter was to raise the question of whether the time has come to consider the protection of the environment as a peremptory norm of general international law (*jus cogens*). Admittedly, it is a very complex topic and would be overly ambitious to claim to have laid out an exhaustive legal analysis. However, in light of the current work of the International Law Commission, and the efforts to prepare a non-exhaustive list of peremptory norms of general international law (*jus cogens*) that have already been identified by the Commission, it seems timely to examine the status of protection of the environment.

As outlined in the historical overview of the work of the Commission in this Chapter, crimes against the environment had been included as an international crime in the controversial Article 19 of the Draft Articles of State Responsibility and as a crime against humanity in the Draft Code of Offenses against the Peace and Security of Mankind. Notably, crimes against the environment were listed alongside acts the prohibition of which are now recognized as peremptory norms of general international law, such as the prohibition against apartheid, genocide and torture. There was, especially in the early years, support in the Commission for recognizing environmental crimes as part of these two important undertakings by the Commission. Remarkably, the eloquent words of the Commission written in 1976 in relation to environmental degradation foresaw that existing rules of general international law on the subject and those which will of necessity be added to them in the future are bound to be regarded to a great extent as peremptory rules by the international community as a whole.

Since 1976, this call to recognize that the environment as a peremptory norm of general international law is even greater now. The international community has a whole has recognized protection of biodiversity and climate change common concerns of human kind in universally ratified conventions. The existential threat to the international community is documented in many scientific reports that have been adopted by the international community as a

whole. The 2019 IPBES report has laid out the dire state of loss of biodiversity and threats of species extinction. The already depleted fish stocks continues to decline, very much aided and abetted by State actions through subsidies or laws that continue to allow for overfishing. Scientific reports on climate change are unequivocal on the threats to the livelihoods of human around the world. Even the Covid-19 pandemic that has ravaged the global community is linked to the destruction of wildlife.

It may be that at the time when the Rome Statute was adopted the time had not yet crystallized to include crimes against the environment as crimes against humanity. But this view seems to have changed within the Office of the Prosecutor of the ICC as reflected in the 2016 Policy Statement on Case Selection and Prioritization.[103] Likewise, the breach of existing obligations for the preservation of the environment *essential for the protection of fundamental interests* should now be recognized as a serious breach of a peremptory norm of general international law (*jus cogens*) under the Articles of State Responsibility.

In conclusion, the discussion that the International Law Commission began in the early 1970s concerning the place of protection of the environment as a norm enjoying a hierarchically superior status in relation to other norms should resume and ultimately define the scope and application of a peremptory norm of general international law (*jus cogens*) for protection of the environment. Some fifty years after the 1972 Stockholm Declaration and the recognition by the Commission that harm to the environment was at the same level as other crimes against humanity, the situation has only worsened with existential consequences for the international community as a whole. It seems that the time has come to revisit the work started by the Commission decades ago and start the process to determine the criteria for when harm to the environment constitutes a violation of a peremptory norm of general international law.

103 See ICC Office of the Prosecutor, "Policy paper on case selection and prioritisation", 15 September 2016.

Annex 7

"Article 192: General Obligation", *United Nations on the Law of the Sea 1982: A Commentary* (M. Nordquist et al. eds.), Vol. IV (2002) (excerpt)

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UNITED NATIONS CONVENTION ON THE LAW OF THE SEA 1982

A COMMENTARY

Volume IV

Articles 192 to 278
Final Act, Annex VI

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(Source 12), article 3 of which proposed:

> States and the Authority have the obligation to protect and preserve the quality and the resources of the marine environment in accordance with the provisions of these articles.

Article 1 of a series of draft articles on a zonal approach to the preservation of the marine environment (Source 13) repeated the formula of the Canadian proposal in Sub-Committee III (Source 3), and, dropping the footnote, read simply:

> States have the obligation to protect and preserve the marine environment.

The common text which emerged from informal meetings on item 12, and from the work of the drafting and negotiating group established in conjunction with those meetings (Source 14), more closely reflected the approach adopted by Working Group 2, and read:

> States have the obligation to protect and preserve the marine environment, (in accordance with the provisions of these articles.)

The phrase in parentheses was to be considered in light of other texts prepared by Working Group 2.

192.7. At the third session (1975), continued informal negotiations led to consensus on the Canadian formula, which in the ISNT/Part III (Source 15) was modified to read:

> States have the obligation to protect and preserve all the marine environment.

That text was further amended in the RSNT (Source 16) by dropping "all" before "the marine environment," and in that form eventually became article 192 in the ICNT/Rev.1 (Source 18). Thereafter, it remained unchanged in all six languages of the Convention.

192.8. Article 192 is addressed to "States" and not merely to "States Parties." The use of "States" *simpliciter* is characteristic of Parts XII, XIII and XIV, all originating in the Third Committee, but it also appears frequently in Parts II to X, which originated in the Second Committee. The implication is either that the provision in question is in the nature of a codification of the law, or that it deliberately seeks to provide for rights or obligations for third States within the meaning of the Vienna Convention on the Law of Treaties of 1969,[4] or, without fitting neatly into either category, proclaims in general and universal terms what is regarded as the right or the duty of every State as a general principle of international law. Article 192 would appear to fall into the latter category, explicitly proclaiming in positive terms, as a general principle of law, that all States have the obligation to

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[4] Vienna Convention on the Law of Treaties (1969), articles 34 to 38; in 1155 UNTS 331; UKTS No. 58 (1980), Cmnd. 7964; 63 Am. J. Int'l L. 875 (1969); 8 ILM 679 (1969).

protect and preserve the marine environment, and implicitly (in negative terms) the obligation not to degrade it deliberately (or perhaps even carelessly). This is the first occasion on which a disposition of this character has been included in a general international treaty of a comprehensive and universal scope.

That this is enunciated as a general principle follows also from use of the phrase "have the obligation." Article 193, on the other hand, uses the word "duty" instead of "obligation." The Drafting Committee noted the difference between these two provisions, and inquired whether the words "obligation" and "duty" carried the same legal meaning.

> If the answer is in the affirmative, should there be only one word throughout the text to express the notion of duty? Of course, there may be other criteria, for example, usage which may determine in each instance the choice of word. It should be pointed out that this issue arises in a different manner in the other languages.[5]

On that basis the Drafting Committee called for further consideration by the language groups, at the same time recommending that "harmonization was preferable noting, for example, the problems of harmonization and linguistic concordance in articles 192 and 193." The Drafting Committee went on to report that the French language group had expressed a preference for *obligation* in French, but could agree to any other harmonization solution.

At the resumed ninth session (1980), the Chairman of the Third Committee proposed substituting "duty" for "obligation" in both the title and the text of article 192, as part of a series of drafting changes intended to clarify the provisions within the Committee's terms of reference.[6] This proposal, however, was not accepted by the Third Committee. Although the words "obligation" and "duty" do not necessarily bear the same meaning in all contexts, comparison of the authentic texts here indicates that no substantive distinction should be drawn between the words "obligation" and "duty" for the purposes of Part XII.[7] On the other hand the expression in article 192 that States "have the obligation" stands in contrast to the word "shall" used elsewhere in Part XII.

192.9. The thrust of article 192 is not limited to the prevention of prospective damage to the marine environment but extends to the "preservation of the marine environment." Preservation would seem to require active measures to maintain, or improve, the present condition of the marine environment (see generally para. XII.13 above). The phrase "protection and preservation of the marine environment" is used consistently in Part XII, following the

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[5] A/CONF.62/L.40 (1979), section XXIV, XII Off. Rec. 95, 103 (Chairman, Drafting Committee).

[6] A/CONF.62/C.3/L.34 and Add.1 and 2 (1980), Annex, article 192, XIV Off. Rec. 185 (Chairman, Third Committee).

[7] Thus: the French text uses *obligation* in articles 192 and 193, and the Spanish text uses *obligación* in both articles, while both the Arabic and Russian texts employ the same word or root. The Chinese text parallels the English text, and uses the equivalent of "obligation" in article 192 and "duty" in article 193.

harmonization recommendations of the Drafting Committee,[8] which were given effect in the ICNT/Rev.2 (Source 19). This may be contrasted with the language used in Part XI, the articles of which refer generally to ensuring effective protection for the marine environment from harmful effects which may arise from activities in the Area. Article 145, paragraph 6, is specific, referring to "the protection and *conservation* of the natural resources of the Area and the prevention of damage to the flora and fauna of the marine environment" (emphasis added). Article 155, paragraph 2, refers to ensuring the "protection of the marine environment." Articles 162, paragraph 2(w), and 165, paragraph 2(k), refer to measures to "prevent serious harm to the marine environment." Furthermore article 290, in Part XV, deals with provisional measures considered appropriate to, *inter alia*, "prevent serious harm to the marine environment."

192.10. All disputes relating to the interpretation or the application of Part XII come fully within the scope of Part XV (articles 279 to 299), and Annexes V, VI, VII and VIII of the Convention; there are no special dispute settlement provisions relating exclusively to Part XII.[9] Article 297, paragraph 1 reads:

> 1. Disputes concerning the interpretation or application of this Convention with regard to the exercise by a coastal State of its sovereign rights or jurisdiction provided for in this Convention shall be subject to the procedures provided for in section 2 in the following cases:
>
> (a) when it is alleged that a coastal State has acted in contravention of the provision of this Convention in regard to the freedoms and rights of navigation, overflight or the laying of submarine cables and pipelines, or in regard to other internationally lawful uses of the sea specified in article 58;
> (b) when it is alleged that a State in exercising the aforementioned freedoms, rights or uses has acted in contravention of this Convention or of laws or regulations adopted by the coastal State in

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[8] At the resumed eighth session (1979), the Drafting Committee recommended the use of the phrase "protection and preservation of the marine environment" throughout the Convention "except in Part XI." See A/CONF.62/L.40 (1979), section XXI, XII Off. Rec. 95, 102; See also A/CONF.62/L.56 (1980), Annex B, section XXI, XIII Off. Rec. 94, 96 (both by the Chairman, Drafting Committee). See further the "Recommendations of the Co-ordinators of the Language Groups to the Drafting Committee" in CG/WP.16 (1981, mimeo.), at 54. This expression is also found in articles 21, 56 and 123, emanating from the Second Committee.

[9] In the early stages, and particularly in the Sea-Bed Committee phase, various proposals contained provisions for the settlement of disputes, notably article XIII of the draft articles of Canada (Source 3), and article XXIV of the United States draft articles (Source 7). This aspect, however, does not appear to have been discussed in Working Group 2 of Sub-Committee III of the Sea-Bed Committee, or in the informal meetings of the Third Committee devoted to this item. In the ISNT/Part III (Source 15), article 44 was a formal dispute settlement provision providing that any dispute with respect to the interpretation or application of the provisions on the preservation of the marine environment should be resolved by the general dispute settlement procedures contained in the Convention. This was maintained in Article 47 of the RSNT/Part III (Source 16) but was dropped without comment from the ICNT (Source 17).

Annex 8

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A Commentary

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That a legal effect was intended can be seen from the fact that Part XII is an integrative part of the Convention and starts with the very clear wording of Art. 192. This prominent position of Art. 192, as the opening provision to the environmental part of the Convention, reflects its great significance. If this provision were only meant to be a political statement, the negotiating parties would rather have left it solely at another position e. g. at the Preamble, where the protection and preservation of the environment is also mentioned recognising thus the importance of the subsequent legal regime in Part XII.[42] Recourse may be had to supplementary means of interpretation, including the preparatory work of the treaty and the circumstances of its conclusion, in order to confirm the meaning resulting from the application of Art. 31. The drafting documents show that the ambition of the conference was to establish general principles and obligations to protect the marine environment as a guiding concept for the law of the sea.[43] Therefore, Art. 192 needs to be understood as a legally binding commitment, a principle, and not only a political obligation.[44] The content of the general obligation in Art. 192 is further detailed in the subsequent provisions of Part XII including Art 194, as well as by reference to specific obligations set out in other international agreements, as envisaged in Art. 237 of the Convention.[45]

20 Yet, there are still opposing views[46] interpreting the drafting documentation as if Art. 192 was simply intended to be a political statement and therefore without any legal effect. In particular, Paper No. 3 submitted by Working Group 2[47] with its restricting asterisk footnote shaped the view that Art. 192 has no legal effect on its own but needs further specification.[48] To counter this view, it should be pointed out that the restricting supplementary notes in the draft proposals[49] did not find their way into the text of the Convention. In the end, the Drafting Committee decided to put specific emphasis on the environmental duty by codifying it in a single article, while the subsequent Art. 193 is aimed at balancing this obligation with the right of States to exploit their natural resources.[50]

21 **b) Art. 192 as Customary Law.** The Stockholm Declaration recommended that:

> 'the rights and powers exercised must be consistent with the State's primary responsibility for marine environmental protection in the areas concerned: they should be subject to international rules and standards and to review before an appropriate international tribunal'.[51]

The negotiating States also stressed that the environmental articles should be supported by a strong measure of *opinio juris*[52] and shall represent an agreed codification of existing principles which have become part of customary law.[53] *Opinio juris* may become binding as a matter of customary law, if there is sufficiently general acceptance by non-parties or by parties acting in a manner evidencing a belief that the treaty rules represent customary law.[54] In 1989, according

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[42] *Cf. South China Sea Arbitration* (note 5), para. 939.

[43] *Cf.* Third Committee UNCLOS III, 3rd Meeting, UN Doc. A/CONF.62/C.3/SR.3 (1974), OR II, 311 (para. 34); Sea-Bed Committee, Decisions of the United Nations Conference on the Human Environment (5–16 June 1972) Relating to the Preservation of the Marine Environment and Marine Pollution, UN Doc. A/AC.138/SC.III/L.17 (1972), 11(Recommendation 92).

[44] *Cf. Proelss* (note 32), 77.

[45] *Cf. South China Sea Arbitration* (note), para. 942.

[46] *Hafner* (note 12), 366 *et seq.*; *Michael Winkler*, Ökologische Intervention im internationalen Recht? 'Neue Weltordnung' und Umweltschutz in staatsfreien Räumen, Natur und Recht 17 (1995), 57, 58.

[47] See *supra*, MN 14.

[48] *Hafner* (note 12), 366 *et seq.*

[49] Working Group 2 Paper No. 3 (note 35).

[50] *Ibid.*

[51] Decisions of the UNCHE (note 43), 11.

[52] *Opinio juris* is the belief that an action was carried out because it was a legal obligation. It is also the second element (along with State practice) necessary to establish a legally binding custom.

[53] *Birnie/Boyle/Redgwell* (note 26), 387; it has also become consensual that the obligation of Art. 192 itself has become part of customary law; GA, Law of the Sea – Protection and Preservation of the Marine Environment: Report of the Secretary-General, GA Res. 44/461 of 18 September 1989, 4 (para. 29).

[54] *Churchill/Lowe* (note 28), 6.

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to a report of the UN Secretary General to the General Assembly, Art. 192 was generally regarded as a statement of customary international law with regard to the environmental responsibility of States towards the oceans. The Secretary General further stated that the wording used in the provision reflects its non-discretionary nature and the importance placed upon the issue by the international community, and that a State breaching its obligation to protect and preserve the marine environment would be in breach of international law.[55] Moreover, the provisions on the protection of the marine environment are considered by many States to reflect general applicable principles or rules of customary law.[56] However, reducing the scope on teleological grounds, this simply implies that States (and international organisations in a comparable way) do have a general duty to protect the marine environment,[57] whereas complicated and technical regulations cannot easily convert into customary law. In this sense, and according to a teleological interpretation, Art. 192 forms part of customary law.[58] International customary law is, in principle, binding upon all States.[59]

As a fundamental duty, Art. 192 is kept general to create the necessary flexibility to bring national and regional environmental law in line with international law.[60] Principles have, compared to rules, a higher moral character and therefore create a link between ideals and legal rules.[61] Without doubt, Art. 192 has such a moral character, a fundamental meaning, which is why the majority assigns an *erga omnes* quality to the provision.[62] *Erga omnes* obligations are obligations of a State towards the international community as a whole which, by their very nature, are the concern of all States and in whose fulfilment all States have a legal interest.[63] Therefore, provisions with *erga omnes* character can generally be enforced by the State community as such. Prerequisite for both, obligations *erga omnes* and *opinio juris*, is an ascertainable interest (common concern or common areas) of the community of States in each concrete and individual case.[64] Multilateral treaties and customary law deriving from treaties concerned with the protection of the global environment or of areas of common interest or concern, create obligations whose intended beneficiaries are the international community.[65] The International Law Commission recognised that all States have a collective and individual interest in the enforcement of such treaties.[66] Thus, any State will have standing to sue for breach or non-compliance. This also applies to the duty to protect and preserve the marine environment of areas beyond national jurisdiction.[67] As it may be seen

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[55] GA Res. 44/461 of 18 September 1989.

[56] *Philippe Sands*, Principles of International Environmental Law, vol. I (1995), 294. As evidenced by the reference in the preambular paragraph of the 1992 OSPAR Convention which recalls the relevant provisions of customary law reflected in Part XII of the UNCLOS.

[57] *Peter Ehlers*, Meeresfreiheit und aquitoriale Ordnung – zur Entwicklung des Seerechts, in: Wilfried Erbguth (ed.), Stand und Entwicklung im Seerecht, Umweltrecht, Städtebaurecht, Raumordnungs- und Fachplanungsrecht (2013), 15, 17.

[58] Similar *Birnie* (note 12), 22. *Sands* (note 56), 294; *Jon M. Van Dyke*, Giving Teeth to the Environmental Obligations in the Law of the Sea Convention, in Donald R. Rothwell/Alex G. Oude Elferink (eds.), Oceans Management in the 21st Century: Institutional Frameworks and Responses (2004), 167.

[59] *Kimball* (note 24), 27; *Churchill/Lowe* (note 28), 6; An *opinion iuris* then again rises to the level of a *jus cogens* norm when the principle it embodies has been universally accepted, through consistent practice by most States. *Cf.* ICJ, *Case concerning Right of Passage over Indian Territory* (Portugal *v.* India), Merits, Judgment of 12 April 1960, ICJ Reports 1960, 6, 123 *et seq.*

[60] *Cf.* regarding the nature of principles: *Jonathan Verschuuren*, Principles of Environmental Law (2003), 134 *et seq.*

[61] *Ibid.*, 145: Verschuuren also points out that there is no strict separation between principles on one side and rules on the other.

[62] *Cf. Proelss* (note 32), 79; *Birnie/Boyle/Redgwell* (note 26), 387; *Jonna Ziemer*, Das gemeinsame Interesse an einer Regelung der Hochseefischerei (2000), 217 *et seq.*

[63] *Cf. Jochen A. Frowein*, Obligations Erga Omnes, MPEPIL, para. 1, available at: http://www.mpepil.com; *cf.* ICJ, *Case of Barcelona Traction, Light and Power Company, Limited* (Belgium *v.* Spain), Judgment of 5 February 1970, ICJ Reports (1970), 3, 32 (para. 33).

[64] *Barcelona Traction Case* (note 63), 32 (para. 33).

[65] *Cf. Birnie/Boyle/Redgwell* (note 26), 234.

[66] *Ibid.*

[67] *Ibid.*

in many provisions of the UNCLOS[68], even States that have not joined specialised environmental agreements have to respect with due diligence the substance and directing function of the obligation resulting from Art. 192, even in fields of application where there are still no specialised agreements, such as the use of genetic marine resources.[69]

3. 'Protect and Preserve'

23 The UNCLOS places with Art. 192 the general obligation on all States to protect and preserve the marine environment. The wording of Art. 192 to 'protect and preserve' already indicates its comprehensive meaning which goes far beyond the prevention of substantive pollution, which in many cases is subject to (at least) national criminal law. The wide-ranging obligation rather requires the prevention of suspected negative changes of the marine environment through its use, as well as taking active measures to preserve the ocean as an ecosystem and to minimise pollution.[70]

24 Art. 192 not only concerns the protection of the marine environment from future damage but also the preservation of it. Preservation goes beyond protection. Preservation in the sense of maintaining or improving its present condition[71] is an active long-term process of maintaining and even improving the environmental status of the sea, but, unlike conservation, it does not permit consumptive use by humans.[72] Because of the inclusion of the term 'preservation', it is not enough to only prevent damages, as was previously the case.[73] Art. 192 entails the positive obligation to take active measures to protect and preserve the marine environment, and by logical implication, entails the negative obligation not to degrade the marine environment.[74] However, the greatest protection (e. g. for fragile ecosystems) would be achieved if States renounced the use of the ocean as such.[75] This can be implemented by the establishment of Marine Protected Areas[76] with an effective management including so-called 'no take', 'no go' and 'no time' areas. If these MPAs are combined in a network, an even higher standard of protection can be reached as by scattered MPAs. It is questionable why the word 'restore' has not been included in this article, since the establishment of an obligation to restore the ocean would be the logical measure to ensure compensation for earlier unsustainable use. Taking a look at the drafting documents, it seems like this aspect was not considered at the time of the negotiations.[77] However, later legislative documents like the European 'Marine Strategy Framework Directive' and other regional agreements do explicitly include 'restore' in their provisions.[78]

4. 'Marine Environment'

25 In contrast to other terms, 'marine environment' is not expressly defined in Art. 1 (1)(4). However, Art. 1 (1)(4), dealing with the 'pollution of the marine environment', allows a

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[68] See Art. 208 (3), 211 (2)(5), 217 (1), 218 219, 220 (1), 222.

[69] *Ehlers* (note 57), 18.

[70] *Cf. Günther Jaenicke*, Die Dritte Seerechtskonferenz der Vereinten Nationen, ZaöRV 38 (1978), 438, 441 *et seq.*; *Peter Kersandt*, Rechtliche Vorgaben und Defizite bei Schutz und Nutzung der Nordsee (2010), 219; *Proelss* (note 32), 77 *et seq.*; Nordquist/Rosenne/Yankov (note 1), 40 (MN 192.9); *South China Sea Arbitration* (note 5), para. 941.

[71] *South China Sea Arbitration* (note 5), para. 941.

[72] *Niels West*, Marine Affairs Dictionary: Terms, Concepts, Laws, Court Cases and International Conventions and Agreements (2004), 479.

[73] *Cf.* GA Res. 2750 (XXV) (C) of 17 December 1970; *Jaenicke* (note 70), 441 *et seq.*

[74] *South China Sea Arbitration* (note 5), para. 941.

[75] *Hafner* (note 12), 368.

[76] See *Czybulka* on Art. 194 MN 31–36.

[77] *Cf. Ehlers* (note 52), 17; In the recent *South China Sea Arbitration* (note 5), the Tribunal discussed the possibilities of restoration (and transplantation) of the damaged coral reefs, claimed by Chinese scientist, but rejected the idea because restoration 'is not likely to succeed', if stressors persist, and restorative activities are 'extremely expensive' (para. 982 (d)).

[78] EC Directive 2008/56 of 17 June 2008, OJ 2008 L 164, 19.

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5. 'eliminating the effects of pollution and preventing or minimizing the damage'

The obligation to eliminate the effects of pollution and prevent or minimize pollution damage is activated in the event of a pollution emergency of the kind referred to in Art. 198. States should endeavour in the first instance to eliminate the effects of pollution by taking those steps necessary to contain a pollution emergency, and where possible neutralize the effects of pollutants in the marine environment. Where it is not possible to prevent pollutants escaping into the environment, then efforts are to be made to prevent or minimize the damage those pollutants cause. However, States must be mindful of the obligation under Art. 195 not to transfer damage or pollution from one area to another when taking measures to prevent, reduce and control pollution of the marine environment.[10] 10

6. 'contingency plans'

Art. 199 requires States to develop and promote contingency plans for responding to pollution incidents in the marine environment. The content of such contingency plans is not specified in the UNCLOS. However the level of contingency planning required will turn on the nature of the pollution threat. 11

The general obligation in Art. 199 has been elaborated and extended by a number of multilateral agreements, including e. g. the 1990 Convention on Oil Pollution Preparedness, Response and Cooperation (OPPRC Convention), and the 2000 Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances (OPRC-HNS Protocol). The OPPRC Convention was agreed under the auspices of the IMO in the aftermath of the Exxon Valdez disaster in Alaska in 1989. It seeks to bolster flag and coastal state readiness and planning for potential pollution incidents, and requires parties to provide assistance to States affected by pollution. The OPPRC Convention requires its parties to formulate oil pollution plans for their vessels and for their ports and offshore terminals. 12

Article 200
Studies, research programmes and exchange of information and data

States shall cooperate, directly or through competent international organizations, for the purpose of promoting studies, undertaking programmes of scientific research and encouraging the exchange of information and data acquired about pollution of the marine environment. They shall endeavour to participate actively in regional and global programmes to acquire knowledge for the assessment of the nature and extent of pollution, exposure to it, and its pathways, risks and remedies.

Bibliography: Patricia Birnie, Law of the Sea and Ocean Resources: Implications for Marine Scientific Research, IJMCL 10 (1995), 229–251; Myron H. Nordquist/Shabtai Rosenne/Alexander Yankov (eds.), United Nations Convention on the Law of the Sea 1982: A Commentary, vol. IV (1991)

Documents: UNCHE, Report of the United Nations Conference on the Human Environment, UN Doc A/CONF.48/14/Rev. 1 (1972), 73–74 (Annex III, General Principles for Assessment and Control of Marine Pollution); UNEP/IOC, An Assessment of Assessments: Findings of the Group of Experts Pursuant to GA Res. 60/30 (2009)

[10] See *Czybulka* on Art. 195.

Annex 9

R.Wolfrum, "Article 1", *The Charter of the United Nations: A Commentary* (Bruno Simma et al. eds., 3rd ed. 2012), Vol. I (excerpt)

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The discussion at the Conference and the summary of the Rapporteur[42] show the objective pursued by the drafters of Art. 1 (2). The term 'equality of peoples' was meant to underline that no hierarchy existed between the various peoples. To this extent, the prohibition of racial discrimination was transferred from the national level to the level of international relations. Apart from that, the principle of equality of peoples and the right to self-determination are united. With this, it is assured that no peoples can be denied the right to self-determination on the basis of any alleged inferiority. The reference to self-determination encompasses the principle of self-government, but does not justify secession.[43] Finally, the principle of self-determination was formulated as a basis for friendly relations among nations. Thus, according to the drafters of the Charter, a hierarchy of principles existed in that the right of self-determination should be pursued so long as it does not disturb friendly relations among nations.[44]

The principle of self-determination acquired its final shape through the practice 25
of the UN. This will be analysed by Oeter in a separate chapter which follows the Commentaries on Arts 1 and 2.[45]

Paragraph 3 differs greatly from the corresponding Dumbarton Oaks text. Whereas 26
the latter only provided for the achievement of international cooperation in solving international economic, social, and other humanitarian problems, the present text is much more explicit, although not substantially different. It was already proposed by the four inviting powers,[46] and merely underwent drafting changes during the course of the San Francisco Conference. In connection with para 3, a suggestion was made to draft, or to include an already drafted bill of rights of nations and individuals. It was, however, decided that such a task should be left to the Organization. The operative parts of the Charter to which Art. 1 (3) refers are Chapters IX and X.

The text of Art. 1(4) is taken from the Dumbarton Oaks Proposals with only one draft- 27
ing change. Paragraph 4 emphasizes the necessity of consensus among the member States (and especially among the permanent members of the SC) as a basis for action achieved through the Organization.[47] To that extent, para 4 has a double meaning.[48] It refers, first, to the decision-making process in the UN organs[49] and its underlying philosophy, while at the same time envisaging the transformation of the society of States into a community of States.[50] Such a transformation is facilitated by the sharing of common goals, as well as by the means through which these goals are to be achieved (cooperation, development of friendly relations based upon certain principles, settlement of disputes, and adjustment of disputes and situations in conformity with the principles of international law and justice).

[42] UNCIO VI, 455, Doc 944, I/1/34.
[43] UNCIO VI, 296, Doc 343, I/1/16.
[44] CP (2nd edn)/Cassese, 43; CPF/Dobelle, 339.
[45] Compare also D Thürer and T Burri, 'Self-Determination' MPEPIL, vol IX (OUP 2012) 113–18.
[46] UNCIO VI, 448, 455, Doc 944.
[47] GHS, 35.
[48] CP (2nd edn)/Dupuy, 67 speaks of a double Utopia; cf also Bennouna who, without using the term utopia, still alludes to two different meanings, CPF/Bennouna, 379ff.
[49] See Wolfrum on Art. 18 MN 30; Simma, Brunner, and Kaul on Art. 27 (2nd edn) MN 111–116, cf also Zimmermann on Art. 27 MN 161f.
[50] F Tönnies, *Gemeinschaft und Gesellschaft* (8th edn, Buske 1935) 180f.

Annex 10

L. Boisson de Chazournes & J. Rudall, "Co-Operation", *The UN Friendly Relations Declaration at 50: An Assessment of the Fundamental Principles of International Law* (J. Viñuales ed. 2015) (excerpt)

The UN Friendly Relations Declaration at 50

AN ASSESSMENT OF THE FUNDAMENTAL PRINCIPLES OF INTERNATIONAL LAW

Edited by

JORGE E. VIÑUALES

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6

Co-Operation

Laurence Boisson de Chazournes and Jason Rudall

'Alone we can do so little; together we can do so much.'[1]

I INTRODUCTION

Co-operation is a cornerstone principle of contemporary international law. It is difficult to overstate its reach as it finds expression in many different areas of international legal relations. That said, its gravitation to the heart of international law has been a relatively recent phenomenon. The Declaration on Principles of International Law concerning Friendly Relations and Co-operation among States in accordance with the Charter of the United Nations of 1970 has played an important role in this transition.

Co-operation has gradually gained prominence over the course of the twentieth century, with a clear emphasis on the obligation to co-operate in the aftermath of the Second World War. This led some to consider that international law has evolved from a law of co-existence to a law of co-operation.[2] Wolfgang Friedmann observed that States were increasingly resorting to co-operation, as opposed to conflict, to achieve their objectives. Today, co-operation finds application in matters of peace and security, human rights, international economic relations and international environmental law, amongst many others. While other principles of international law, such as the prohibition on the use of force, the duty of non-intervention and the sovereign equality of States are conceived in a negative sense – that is, they are aimed at restraining certain behaviour – the principle of co-operation is aimed at promoting certain behaviour.[3] Wolfgang Friedmann noted that the development of international co-operation was part of a changing structure in international law 'from an essentially negative code of rule abstention to positive rules of co-operation'.[4] Being positive in nature, the duty to co-operate serves as a tool for the

[1] Attributed to the American author and political activist Helen Keller. See Joseph P Lash, *Helen and Teacher: The Story of Helen Keller and Anne Sullivan Macy* (Da Capo Press, 1980) 489.

[2] See eg Wolfgang Friedmann, *The Changing Structure of International Law* (Stevens, 1964); Georges Abi-Saab, 'Cours général de droit international public (Volume 207)' in *Collected Courses of the Hague Academy of International Law* (Brill, 1987); Georges Abi-Saab, 'Whither the International Community?' (1998) 9 *European Journal of International Law* 248; Pierre-Marie Dupuy, 'International Law: Torn between Coexistence, Co-operation and Globalization: General Conclusions' (1998) 9 *European Journal of International Law* 278.

[3] Piet-Hein Houben, 'Principles of International Law Concerning Friendly Relations and Co-Operation among States' (1967) 61 *American Journal of International Law* 703, 721.

[4] Friedmann (n 2) 62.

Annex 11

The Law of International Responsibility (J. Crawford et al. eds. 2010) (excerpts)

The Law of International Responsibility

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Chapter 20

ATTRIBUTION OF CONDUCT TO MULTIPLE STATES AND THE IMPLICATION OF A STATE IN THE ACT OF ANOTHER STATE

CHRISTIAN DOMINICÉ

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The situations or circumstances in which one or more States may be held responsible for an internationally wrongful act are many and diverse.[1] As suggested by the title of this Chapter, it is convenient to distinguish between circumstances where the internationally wrongful act is attributable to more than one State and circumstances where one State is implicated in the unlawful act of another State.

The first category, where two or more States are jointly responsible, comprises two situations which are completely different. On the one hand, when States act together in an unlawful manner towards a third State, they are co-authors of an internationally wrongful act. This would be the case where two States used force together against a third State. On the other hand, there is a plurality of responsible States when one State incurs responsibility for an internationally wrongful act and by virtue of this, a second State also incurs

[1] See eg J Crawford, Second Report on State Responsibility, 1999, A/CN.4/498, para 159.

responsibility, but for the breach of a distinct norm, one that is different to that breached by the first State. This is particularly the case in respect of obligations of prevention (for instance, where there is a failure to exercise due diligence).

This Chapter does not deal with questions concerning the possible joint responsibility of States members of an international organization for the acts of that organization.[2]

1 Plurality of States jointly responsible

(a) States which are co-authors of an internationally wrongful act

(i) Joint action

If two or more States together take joint action to the detriment of a third State, they are co-authors of any internationally wrongful act derived from their joint action. A joint military operation, for instance, if contrary to the prohibition on the use of force, constitutes an internationally wrongful act implicating a plurality of authors. This was the argument of Yugoslavia in the claim filed before the International Court of Justice against 10 member States of NATO,[3] although the claims also raised the question of the possible responsibility of NATO. The case of *Certain Phosphate Lands in Nauru* may also be mentioned.[4] The responsibility invoked in that case was that of the three States entrusted with the administration of Nauru before its accession to independence. Also, within the framework of a multilateral treaty (for example, a convention concerning the regime of an international watercourse and the use of installations built on it), if two or more States agree to cause injury to a third State, those two States may be considered as co-authors of the internationally wrongful acts resulting from their acts.

Even if there are not numerous examples of joint responsibility in the cases, it is clear that joint responsibility does arise in practice.[5] It is necessary in this respect to avoid terminological analogies with expressions used in national legal systems.[6] The international legal regime of responsibility establishes that in the case of a plurality of responsible States, the injured State can invoke the responsibility of each of them, provided that the injured State does not obtain compensation greater than the injury sustained.[7] It is thus important for the injured State to know whether there are in fact multiple responsible States.

The question of attribution thus acquires particular importance. There must be a joint conduct, carried out by a single action. In other words, it is not necessary that each of the States perform the internationally wrongful act in its entirety. It is sufficient that each State's contribution to the joint action be attributable to it according to the usual rules of attribution and that such contribution constitute an element of the unlawful act (this

[2] See P Klein, Chapter 22.

[3] See *Legality of Use of Force, Request for the Indication of Provisional Measures, Order of 2 June 1999, ICJ Reports 1999*, p 124 (*Yugoslavia v Belgium*); ibid, p 259 (*Yugoslavia v Canada*); ibid, p 363 (*Yugoslavia v France*); ibid, p 422 (*Yugoslavia v Germany*); ibid, p 481 (*Yugoslavia v Italy*); ibid, p 542 (*Yugoslavia v the Netherlands*); ibid, p 656 (*Yugoslavia v Portugal*); ibid, p 761 (*Yugoslavia v Spain*); ibid, p 826 (*Yugoslavia v United Kingdom*); ibid, p 916 (*Yugoslavia v United States*).

[4] *Certain Phosphate Lands in Nauru (Nauru v Australia), ICJ Reports 1992*, p 240.

[5] I Brownlie, *State Responsibility Part I* (Oxford, Clarendon Press, 1983), 189.

[6] See J Crawford, Third Report on State Responsibility, 2000, A/CN.4/507, para 263, note 489, eg joint and several responsibility.

[7] See art 47 ARSIWA.

would be the case where a State provides only certain elements of the logistics of a military operation).

(ii) Action through a joint organ

Two or more States may find it useful to constitute a joint organ for specific activities or to undertake certain action, without creating an international organization (for example, this may be used for research laboratories or the establishment of telecommunications). An arbitral tribunal, such as the one constituted by Iran and the United States, may also be characterized as a common organ rather than an international organization.[8]

Such a joint organ, like each of the States that have constituted it, may act in violation of the international obligations of these States: for example, it may engage in breaches of sovereignty, pollution, and standards of international labour law. The conduct of the joint organ is attributable to each of the States that have created it, for it acts on their behalf. This also results from the principle established in ARSIWA article 5. Since there is a plurality of responsible States, the rule established in article 47 ARSIWA is applicable to the benefit of the injured State.

(iii) Other situations

Joint responsibility may result from a relationship of mandate, in the sense that if the agent commits an unlawful act in the execution of its mandate, it will certainly incur the responsibility for its act, but its principal will also incur responsibility for it. Thus in *Certain Phosphate Lands in Nauru*, if the Court had had to determine the responsibility for the alleged unlawful conduct, the fact that Australia had acted alone, as an agent of the administering powers, would not have relieved the United Kingdom and New Zealand of their responsibility.[9]

Apart from this case, there do not seem to be any other situations which would lead to a plurality of co-author States. However, it must be emphasized that the implication of a State in the unlawful act of another may become a case of joint responsibility, depending on the circumstances. For instance, a State which provides military assistance to another State may become a co-author in an internationally wrongful act if the character of the assistance provided amounts to true participation in the act.

(b) Plurality of responsible States for different breaches

(i) Responsibility for the act of another State

The internationally wrongful act of a State may in certain circumstances trigger the international responsibility of another State, based on an autonomous or distinct legal obligation. The *Corfu Channel* case is a typical example.[10] Since it was not possible to demonstrate that Albania had itself laid the mines that caused injury to the British vessels, Albania could not be held responsible for this unlawful act. But the Court held Albania responsible for the damage—all of the damage—because it had failed to inform the British vessels of the presence of mines, when it was under the obligation to provide this information. In this case, it may be observed that Albania was not the author of the initial unlawful act, but of another

[8] Cf *Iran-US Claims Tribunal v AS*, Supreme Court of the Netherlands, 94 *ILR* 321, 323.
[9] *Certain Phosphate Lands in Nauru (Nauru v Australia), ICJ Reports 1992*, p 240, 258–259 (para 48).
[10] *Corfu Channel, Merits, ICJ Reports 1949*, p 3.

breach of international law, which was only revealed by the initial unlawful act. It may also be observed that this responsibility entails an obligation of full reparation of the damage suffered by the injured State.

Analogous situations can be found, primarily in relation to obligations of prevention. Without a doubt, such obligations are more often invoked in cases concerning acts of individuals which violate the obligations of the territorial State.[11] But it is equally possible that the unlawful act be the act of a State. For instance, an assault against a diplomatic mission or one of its members, of a foreign State carried out in the territory of a third State, can generate the responsibility of the author State and that of the territorial State, if the latter has failed to comply with its obligation of prevention. Two States thus have responsibility for the same injury, but the second State has breached an international norm different from that which gave rise to the responsibility of the first State. In these circumstances, there are two distinct attributions of international responsibility, which arise pursuant to the general rules on attribution.

(ii) Legal consequences

The plurality of responsibilities envisaged here entails that each of the responsible States is under an obligation to provide full reparation for the injury, provided that the injured State does not obtain compensation greater than the injury sustained. One or more of the responsible States may have recourse to the other responsible States to ensure equitable distribution of the burden. Article 47 ARSIWA is also applicable in this case, even though the States concerned are not co-authors. It is worth emphasizing here that this provision corresponds to practice and may be considered as the codification of customary law. Indeed, it has already been noted that in the *Corfu Channel* case, Albania was required to pay full reparation for the damage caused by the British vessels, even when it was not responsible for the laying of the mines.[12] One can imagine that if all States concerned could be pursued through judicial processes, the principal burden of the reparation ought to fall on the author of the principal breach.

2 The implication of a State in the act of another State

(a) General points

According to the nature of the relationship, factual or legal, between a third person and the author of an unlawful act, that third person may also incur responsibility for the unlawful act. In internal legal systems and in the field of criminal law, this is known as complicity.[13]

International legal scholarship has addressed the question of the implication of a State in the unlawful act of another State,[14] on the basis of several different notions, including that of complicity.[15] It is evident from these works that there must be a distinction made

[11] See the first phase in *United States Diplomatic and Consular Staff in Tehran, ICJ Reports 1980*, p 3.

[12] *Corfu Channel, Assessment of the amount of compensation due from the People's Republic of Albania to the United Kingdom, ICJ Reports 1949*, p 244.

[13] See also the comments of the Court in *Application of the Convention on the Prevention and Punishment of the Crime of Genocide (Bosnia and Herzegovina v Serbia and Montenegro), ICJ*, Judgment, 26 February 2007, para 167.

[14] ML Padelletti, *Pluralità di Stati nel fatto illecito internazionale* (Milan, Giuffrè, 1990), chs 1 and 2.

[15] B Graefrath, 'Complicity in the Law of International Responsibility' (1996) 90 *RBDI* 370.

Thus conceived, the obligation of cessation is really a formulation of the principle *sunt servanda*: it is an expression of the fact that States must respect their interna obligations.

There is an interesting debate between those who maintain that the obligation sation is a primary obligation (for it merely reaffirms the obligation to respect an ing rule)[2] and those who consider the obligation to be a secondary rule (insofar conceived as the consequence of the breach of a primary rule).[3] In 1993 the ILC that 'cessation is situated, so to speak, in between the two categories of rules'.[4] The mentary to article 30 justifies the inclusion of the obligation among the articles on quences of internationally wrongful acts in the following terms:

> There are several reasons for treating cessation as more than simply a function of the duty to with the primary obligation. First, the question of cessation only arises in the event of a breach must then occur depends not only on the interpretation of the primary obligation but also secondary rules relating to remedies, and it is appropriate that they are dealt with, at least in terms, in articles concerning the consequences of an internationally wrongful act. Secondly, co ing wrongful acts are a common feature of cases involving State responsibility and are spec dealt with in article 14. There is a need to spell out the consequences of such acts in Part Two.

In my opinion, the sole rigorous and logical characterization of the obligation sation is that it is a secondary rule, since (as the Commentary notes) by definition arises when a primary rule has been breached and it is indisputably 'concerned with mining the legal consequences of failure to fulfill obligations established by the "pri rules'.[6] This does not preclude an alternative description of cessation as the express a primary rule: that regarding the non-violation of obligations.[7] But the expression principle through an obligation of cessation (and not through an obligation of re implies its placement within the regime established by secondary rules.

Whatever the characterization given to cessation, it is undeniable that the obligation sation is a part of general international law insofar as it is a customary rule, and it ma be considered a general principle of law. In addition, cessation often appears in the prac numerous States and international organizations, recalling the obligation to put an end to ful continuing acts.[8] Case law has also affirmed the principle: several judgments have re States responsible for unlawful acts to cease continuing violations of the primary rule.[9]

[2] See: G Arangio-Ruiz, Preliminary Report on State Responsibility, *ILC Yearbook 1988*, Vol II(1), 5 (para 31); C Dominicé, 'Observations sur les droits de l'Etat victime d'un fait internationalement illici P Weil (ed), *Droit international II* (Paris, Pedone, 1982), 27.

[3] See K Zemanek, 'La responsabilité des Etats pour faits internationalement illicites ainsi que pour internationalement licites', in P Weil (ed) *Responsabilité internationale* (Paris, Pedone, 1988), 65.

[4] Commentary to draft art 6, para 4, Report of the ILC, 45th Session, *ILC Yearbook 1993*, Vol II(2)

[5] Commentary to art 30, para 6.

[6] According to the definition of secondary rules adopted by the ILC: see Report of the ILC, 25th Se *ILC Yearbook 1973*, Vol II, 169 (para 40); Report of the ILC, 27th Session, *ILC Yearbook 1975*, Vol II, (para 35). See also J Salmon (ed), *Dictionnaire de droit international public* (Brussels, Bruylant, 2001),

[7] Riphagen considered that the obligation represents 'two sides of one and the same coin': W Ripha Second Report on State Responsibility, *ILC Yearbook 1981*, Vol II(1), 87 (para 68).

[8] See eg SC Res 660, 2 August 1990 and SC Res 1304, 16 June 2000 aiming, respectively, to put ar to the occupation of Kuwait by Iraq and of certain areas of the Democratic Republic of the Congo by armed forces.

[9] *United States Diplomatic and Consular Staff in Tehran (United States of America v Islamic Republic ICJ Reports 1980*, p 3, 44–45 (para 95(3)); *Military and Paramilitary Activity in and against Nicaragua gua v United States of America), Merits, ICJ Reports 1986*, p 14, 149 (para 292(12)).

complete. Clearly, in the case of breach of that type of obligation, the States to whom such an obligation is owed fall into the category of injured States mentioned in article 42.

One can in this connection speak of a bilateral obligation, in the sense that the obligation exists only in the relations between two States. However, this obligation is not necessarily bilateral in the sense that it exists for both States, as a treaty may establish differentiated obligations for States parties. In any event, in practice it is usually the obligation of a single State which will be at issue.

An obligation can be clearly identified as bilateral in the first sense where it derives from a rule which only binds two States. Even in the case of a rule which binds several States, the obligation of one State may exist in respect of only one other State. There would be thus an 'obligation breached' which is owed to a State 'individually', as it is phrased in sub-paragraph (a) of article 42.

As with the rules of general international law, multilateral treaties may impose obligations which, in a given circumstance, States are required to fulfil in respect of a large number of States. However, this is not necessarily true of every obligation imposed by a multilateral treaty. A contrary opinion which is sometimes voiced on this point tends to generalize a position which only holds true for certain treaties. For many multilateral treaties, applying the rules provided for in the treaty to a particular case will be to the benefit of only a single State, or a limited group of States parties. Even where the text of the multilateral treaty does not expressly so indicate, a reasonable interpretation of the treaty provisions can lead to the conclusion that the obligations provided for by the treaty exist, in practice, as a series of bilateral obligations.

One can take as an example a multilateral extradition treaty. Usually this type of treaty contains rules which appear to be of general application. Nevertheless, in regard to a specific request for extradition, these rules only apply to the relations between the requesting State and the requested State. If the latter does not fulfil its obligations, only the requesting State may claim to be injured. At the very most, the other States parties to the extradition treaty could harbour a legitimate concern as to the application of the treaty in future relations between the requested State and themselves.

A second example could be the immunities of diplomatic or consular agents, whether these immunities derive from general international law (this example is briefly touched upon by the ILC Commentary[5]) or from the Vienna Conventions on Diplomatic Relations (1961) and Consular Relations (1963). It is true that in the case of *United States Diplomatic and Consular Staff in Tehran* the International Court drew 'the attention of the entire international community . . . to the irreparable harm that may be caused by events of the kind now before the Court'.[6] The Court did not, however, indicate that in its opinion States other than the claimant State could be considered as injured, or had another basis for invoking the responsibility of the respondent State. Moreover, according to general international law and the conventions referred to above, it is clear that if a State wishes to renounce the immunity of one of its diplomatic or consular agents, it can freely waive this immunity.

A third example can be drawn from the *LaGrand* case.[7] Where a State does not inform a foreign national who has been detained of his/her right to contact the consulate of his/her State of nationality, the former State breaches an international obligation deriving

[5] Commentary to art 42, para 6.

[6] *United States Diplomatic and Consular Staff in Tehran (United States of America v Iran), ICJ Reports 1980*, p 3, 43, para 92.

[7] *LaGrand (Germany v United States of America), ICJ Reports 2001*, p 466.

Annex 12

J. Crawford, *State Responsibility: The General Part* (2014) (excerpt)

State Responsibility

The General Part

James Crawford

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10.2 Joint and collective conduct by states

Responsibility for joint and collective state conduct can be engaged in a variety of ways. As has been indicated above, these can be divided into two distinct categories,[52] although in practice the differences may not be clear-cut, and various forms of collaborative conduct can coexist in the same case.[53]

The first category arises when there is a plurality of responsible states, each of which has breached its international obligations, whether together or separately. This category is concerned with the attribution of internationally wrongful conduct to multiple states, and is governed by the basic principle of independent responsibility and the normal rules of attribution.

In the second category, by contrast, responsibility arises because one state is implicated in the internationally wrongful act of another, whether through the provision of aid or assistance or by its exercise of control or coercion over the acting state. Besides the standard rules of attribution, a set of further specific rules has developed to deal with responsibility in cases under the second category; these are addressed as exceptions to the principle of independent responsibility.[54]

The categories are not necessarily discrete. Depending on the circumstances, a situation in which a state is implicated in another's act may become a case of joint responsibility under the first category requiring multiple attribution: for example, the provision of military assistance may result in co-authorship rather than merely implication if it is shown that the character of the assistance amounts to participation in the wrongful act itself.[55] Besides these two primary categories there are also questions about the conduct of joint organs and various other bases for solidary responsibility.

10.2.1 Attribution to multiple states: the principle of independent responsibility

The first category of joint or collective responsibility is based on the commission of an internationally wrongful act by more than one state.

[52] Dominicé (2010), 281.

[53] See ARSIWA Commentary, Pt I, Ch. IV, §3; Crawford, Second Report, 46, discussing *Phosphate Lands in Nauru*, ICJ Rep. 1992 p. 240; see further *Eurotunnel Arbitration* (2007) 132 ILR 1, 57–8. Both cases involved cases of mixed types of joint responsibility.

[54] Dominicé (2010), 289. The separate rules are reflected in ARSIWA, Arts. 16–18.

[55] Dominicé (2010), 283. Aust describes the British involvement in the Iraq war in 2003 as one possible example: Aust (2011), 219–21.

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Within the category of situations requiring attribution of internationally wrongful conduct to multiple states, there is a further distinction between situations where a plurality of states collaborate as co-authors of an internationally wrongful act (what Noyes and Smith call situations of 'concerted conduct') and situations in which a plurality of states acting independently are responsible for different breaches in respect of the same injury ('independent conduct').[56]

The starting point for determining responsibility in both cases is the basic principle that all states are individually and independently responsible for their own conduct,[57] being conduct that is attributable to them according to the rules of attribution in ARSIWA Part One, Chapter II.[58] This responsibility is specific to each state.

Examples of concerted conduct could be a joint military attack by a coalition of states against another state in violation of the prohibition on the use of force in Article 2(4) of the UN Charter,[59] or an interstate commercial venture causing environmental damage in a third state through failure of due diligence.[60] The fact that several states are

[56] Noyes and Smith (1988), 228–31. The authors include aid and assistance as 'falling squarely in the category of a distinct breach relating to a single event' i.e. independent conduct (at 229), but the act by which aid or assistance is provided may not in itself be a wrongful act. Where it is not, the better view is to treat the situation of aid or assistance as an exception to the principle of independent responsibility, falling in the second separate category (implication in the act of another state). See further Dominicé (2010), 281–4.

[57] ARSIWA and Commentary, Art. 1. [58] ARSIWA and Commentary, Arts. 4–11.

[59] Yugoslavia argued this in its *Legality of the Use of Force* cases against ten NATO member states; very few of the respondents attempted to argue that NATO should be held responsible rather than the member states themselves. See Klein (2010), 302–3 and references at n. 30; Dominicé (2010), 281–2. Another example might be the invasion of Iraq by the United States and the United Kingdom in 2003: see Talmon, in Shiner and Williams (2008) 185; Aust (2011), 219–21. The involvement of other states would more likely fall within the category of aid or assistance than co-authorship: see e.g. the arguments of the plaintiff in *Edward Horgan* v. *An Taoiseach*, (2003) 132 ILR 407, 429–31, referring to ARSIWA, Art. 16 to support his allegations that Ireland (a traditionally neutral state and not a member of the 'coalition of the willing') had participated in the unlawful use of force in violation of the Irish Constitution by allowing US military aircraft to stop over at Irish airbases before the invasion. The Irish High Court was not willing to rule on the matter. See further Nolte and Aust (2009), 1.

[60] The principle that states should use their best efforts to prevent cross-border pollution was articulated in the *Trail Smelter Arbitration*, (1941) 3 RIAA 1938, and has been reiterated in numerous instruments since: see e.g. Declaration of the United Nations Conference on the Human Environment (Stockholm Declaration), 16 June 1972, UN Doc. A/CONF.48/14/Rev.1, Ch. I, Principle 21; GA Res. 2995(XXVII), 15 December 1972, §1 (on co-operation between states in the field of the environment); International Convention

responsible for the same internationally wrongful act does not diminish the specific responsibility of each of those states, which may be separately invoked by those who have suffered injury as a result of that act. This is reflected in ARSIWA Article 47(1),[61] subject to the qualifications in Article 47(2).[62] What is required for each state's responsibility in cases of concerted conduct is that its contribution to the joint action is attributable to it and amounts to an element of the unlawful act. Subsequent questions of reparation and apportioning each state's contribution for purposes of compensation do not affect the principle of responsibility for the conduct in question.[63]

As for responsibility arising from independent conduct, the second subcategory of attribution to multiple states, the classic example is Albania's failure to disclose the presence of mines in its waters, central to the *Corfu Channel* case.[64] Although it could not be established that Albania had itself laid the mines, and allegations of collusion with the minelayer were unable to be proved, the fact that Albania knew the mines were present and failed to warn foreign ships passing through its waters meant that it was held responsible for all the resulting damage to British vessels when the mines exploded. The separate wrongful acts of Albania and the unknown state that laid the mines[65] caused the same injury, and each was independently responsible for it under the normal rules of attribution. Another example of independent conduct arose in the *Soering* case, in which the European Court of Human Rights held that

for the Prevention of Pollution from Ships (MARPOL 73/78), 2 November 1973 / 17 February 1978, 1340 UNTS 184; United Nations Convention on the Law of the Sea, 10 December 1982, 1833 UNTS 3, Art. 194(2); Rio Declaration on Environment and Development, 14 June 1992, UN Doc. A/CONF.151/26, Vol. I, Principle 2; Draft Articles on Prevention of Transboundary Harm from Hazardous Activities (with commentaries), ILC Ybk 2001/II(2), 146; Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising out of Hazardous Activities, Report of the ILC, 58th Session, UN Doc. A/61/10, 106. On responsibility in the area of international environmental law generally, see Nègre, in Crawford, Pellet and Olleson (2010) 803.

[61] See also Crawford, Third Report, 75; ARSIWA Commentary, Pt I, Ch. IV, §§2–3 and Art. 47.

[62] 'Paragraph 1: (a) does not permit any injured State to recover, by way of compensation, more than the damage it has suffered; (b) is without prejudice to any right of recourse against the other responsible States.' See ARSIWA Commentary, Art. 47, §§9–10.

[63] See Crawford, 'State responsibility', (2006) MPEPIL.

[64] *Corfu Channel*, ICJ Rep. 1949 p. 4.

[65] The UK alleged that Yugoslavia had laid the mines, but this was not proved and Yugoslavia was not involved in the proceedings before the International Court. Counsel for Albania suggested that the Greek government might be responsible for laying the mines but the Court dismissed this as conjecture. See ibid., 16–17.

a state party to the European Convention would be responsible for violating Article 3 of the Convention if it extradited a person to a non-party state where the person was likely to suffer inhuman or degrading treatment or punishment.[66] The extraditing state was not responsible for directly inflicting such treatment, but through extradition it violated its own obligation under Article 3, which provides that no one shall be subjected to torture or to inhuman or degrading treatment or punishment.

Although on its terms Article 47(1) is limited to situations in which several states are responsible for the *same* internationally wrongful act, not independent wrongful acts, the same principle of independent responsibility applies in cases like *Corfu Channel* or *Soering*. The responsibility of each state is assessed on its own conduct in the light of its own obligations – the usual rules of attribution apply and the responsibility of one state is not diminished by the responsibility of another state or states for the same damage.[67]

10.2.2 Implication in the act of another state: exceptions to the principle of independent responsibility

According to the ILC:

> It is self-evident that the parallel commission of identical offences by two or more States is altogether different from participation by one of those states in an internationally wrongful act committed by the other.[68]

Thus a second category of collective conduct arises when state A participates in the internationally wrongful act of another, state B. In such cases it is state B which has committed the wrongful act, and state A's responsibility is derived from that of state B on account of its contribution to the commission of the act, even though its own conduct taken independently may not actually amount to a breach of its international obligations.

The exceptions to the principle of independent responsibility are set out in Part I, Chapter IV of ARSIWA.[69] Articles 16, 17 and 18 define the 'exceptional cases where it is appropriate that one State should assume responsibility for the internationally wrongful act of another'.[70]

[66] *Soering* v. *UK*, (1989) 98 ILR 270; see further the authorities mentioned in ARSIWA Commentary, Pt I, Ch. IV, §4, n. 281).
[67] See further ibid., Art. 47, §8. [68] ILC Ybk 1978/II(2), 99.
[69] See generally ARSIWA Commentary, Pt I, Ch. IV; Dominicé (2010), 284–9.
[70] ARSIWA Commentary, Pt I, Ch. IV, §5.

According to general international law on the responsibility of States for internationally wrongful acts, as expressed in this respect by Article 30(a) of the International Law Commission's Articles on the subject, the State responsible for an internationally wrongful act is under an obligation to cease that act, if it is continuing.[17]

Article 30(a) raises a number of issues. The first is what it means for an internationally wrongful act to be 'continuing'. Second, there is the issue of the distinction between the obligation of cessation and the continued duty of performance of the primary obligation. A third issue is the distinction between cessation and reparation.

14.3.1 *Wrongful acts that are 'continuing'*

As stated by the tribunal in the *Rainbow Warrior* arbitration, for an order of cessation there are 'two essential conditions intimately linked, namely that the wrongful act has a continuing character and that the violated rule is still in force at the time in which the order is issued'.[18] The second condition is self-explanatory.[19] The first condition will be satisfied where the internationally wrongful act has a continuing character in the sense used in Article 14, for example where a legislative provision is maintained which is incompatible with a treaty obligation of the enacting state.[20] The commentary states that also encompassed are 'situations where a State has violated an obligation on a series of occasions, implying the possibility of further repetitions'.[21]

Some conflate the violation of an obligation on a series of occasions with composite acts in the sense used in Article 15.[22] Article 15 is 'limited to breaches of obligations which concern some aggregate of conduct and not individual acts as such'. In other words their focus is 'a series of acts or omissions defined in *aggregate* as wrongful', such as genocide.[23] Composite acts are one form of conduct that gives rise to

[17] *Jurisdictional Immunities of the State (Germany* v. *Italy; Greece intervening)*, ICJ, 3 February 2012, §137. See also e.g. *Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory*, ICJ Rep. 2004 p. 136, 197.

[18] *Rainbow Warrior (New Zealand/France)*, (1990) 82 ILR 500, 573. On continuing and composite wrongful acts see also Chapter 8.

[19] For case in which cessation was unavailable on the basis that the primary obligation was held to be no longer in force see ibid., 573–4.

[20] For a case in which cessation was unavailable on the basis that the internationally wrongful act had come to an end see e.g. *Pulp Mills on the River Uruguay (Argentina* v. *Uruguay)*, ICJ Rep. 2010 p. 14, 102.

[21] ARSIWA Commentary, Art. 30, §3.

[22] See e.g. Corten (2010), 547.

[23] ARSIWA Commentary, Art. 15, §2 (emphasis added).

continuing breaches.[24] The commentary explicitly distinguishes between composite acts and the violation of an obligation on a series of occasions.[25] During drafting, the language of Article 30(a) was amended to clarify that the obligation of cessation applies also to situations in which an obligation is violated on a series of occasions.[26]

Examples of situations in which an obligation is violated on a series of occasions are found in human rights jurisprudence. In *Ireland* v. *United Kingdom*,[27] Ireland was entitled to complain of a practice made up by a series of breaches of Article 7 of the European Convention for the Protection of Fundamental Freedoms and Human Rights (ECHR)[28] and call for its cessation.[29] The European Court stated:

> The allegation accepted by the Commission under Article 3 concerned a practice or practices and not individual cases as such. Accordingly, the Court's sole task is to give a ruling on that allegation ... A practice incompatible with the [ECHR] consists of an accumulation of identical or analogous breaches which are sufficiently numerous and inter-connected to amount not merely to isolated incidents or exceptions but to a pattern or system ... [T]he rule [of exhaustion of domestic remedies] does not apply where the applicant State complains of a practice as such, with the aim of preventing its continuation or recurrence ...[30]

In subsequent cases the European Court has affirmed that claims concerning a practice alleged to be incompatible with the ECHR are admissible.[31]

In *Avena*[32] at least one of the bases on which Mexico sought cessation was that the United States had violated its obligations under Article 36 of the Vienna Convention on Consular Relations[33] on a series of occasions. This is clear from Mexico's Memorial.[34] As the Court recounted in its judgment, Mexico claimed that

> competent authorities of the United States regularly fail to provide the timely notification required by Article 36 (1) *(b)* and thereby to [*sic*] frustrate the communication and access contemplated by Article 36 (1) *(a)* and the assistance

[24] ARSIWA Commentary, Art. 15, §1.
[25] ARSIWA Commentary, Art. 15, §5. It is possible that the violation of an obligation on a series of occasions could also constitute a composite act breaching a separate obligation. For example, the wrongful act of genocide is usually made up of a series of acts which are themselves internationally wrongful: ARSIWA Commentary, Art. 15, §9.
[26] ILC Ybk 2000/II(2), 25–6. [27] *Ireland* v. *UK*, [1978] ECtHR A/25.
[28] 4 November 1950, 213 UNTS 221. [29] ARSIWA Commentary, Art. 15, §5.
[30] *Ireland* v. *UK*, [1978] ECtHR A/25, §§157–9.
[31] *Georgia* v. *Russia*, Admissibility, [2011] ECtHR 38263/08, §85, and the cases cited therein.
[32] *Avena and Other Mexican Nationals (Mexico* v. *US)*, ICJ Rep. 2004 p. 12.
[33] 24 April 1963, 596 UNTS 261. [34] *Avena*, Memorial of Mexico, ICJ, 20 June 2003, §401.

contemplated by Article 36 (1) *(c)*. These violations continue notwithstanding the Court's judgment in *LaGrand* and the programme described there.[35]

It does not appear that the Court dealt with the issue of whether there was a continuing breach on the basis of repeated violations; at least it did not do so explicitly.[36] The Court dismissed the claim, merely stating:

Mexico emphasizes the necessity of requiring the cessation of the wrongful acts because, it alleges, the violation of Article 36 with regard to Mexico and its 52 nationals still continues. The Court considers, however, that Mexico has not established a continuing violation of Article 36 of the Vienna Convention with respect to the 52 individuals referred to in its final submissions; it cannot therefore uphold Mexico's claim seeking cessation.[37]

Only Judge ad hoc Sepulveda appears to have considered the issue.[38]

14.3.2 The distinction between cessation and the continued duty of performance

One issue raised in the drafting of Article 30(a) was the distinction between the obligation of cessation and the continued duty of performance of the underlying obligation, specifically whether the former is merely a function of the latter. The ILC's view can be seen to have evolved over time. What became Article 30(a) originated in an article proposed by Special Rapporteur Riphagen. In 1981 he stated:

[T]he first duty of the author State is to stop the breach of its international obligation. It does not seem relevant whether one considers this duty as a consequence of the continuing 'validity' or 'force' of the primary obligation or as a duty which arise as a consequence of the breach. Actually these are, so to speak, the two sides of one and the same coin.[39]

The first reading commentary, in a paragraph adopted in 1993, states:

In terms of legal theory, cessation may be ascribed either to the continued normal operation of the 'primary' rule of which the previous wrongful conduct constitutes a violation or to the operation of the 'secondary' rule coming into play as an effect of the occurrence of the wrongful act. The Commission is of the view that the very distinction between primary and secondary rules is a relative one and that cessation is situated, so to speak, in between the two categories of rules.[40]

[35] *Avena*, ICJ Rep. 2004 p. 12, 67. [36] See also Thirlway, (2009) 80 BYIL 10, 174–5.
[37] *Avena*, ICJ Rep. 2004 p. 12, 68.
[38] Ibid., Separate Opinion of Judge ad hoc Sepúlveda, 99, 125.
[39] Riphagen, Second Report, ILC Ybk 1981/II(1), 87.
[40] Draft Articles Commentary, Art. 41, §4.

But it is not clear that cessation is a mere function of the obligation to comply with the primary norm and not a secondary consequence of a breach.[41] The commentary now states:

> There are several reasons for treating cessation as more than simply a function of the duty to comply with the primary obligation. First, the question of cessation only arises in the event of a breach. What must then occur depends not only on the interpretation of the primary obligation but also on the secondary rules relating to remedies, and it is appropriate that they are dealt with, at least in general terms, in articles concerning the consequences of an internationally wrongful act. Secondly, continuing wrongful acts are a common feature of cases involving State responsibility and are specifically dealt with in article 14. There is a need to spell out the consequences of such acts in Part Two.[42]

14.3.3 *The distinction between cessation and restitution*

An issue of more practical importance is the distinction between cessation and forms of reparation, particularly restitution. The result of cessation may be indistinguishable from that of restitution, for example where the conduct required by each is the freeing of hostages or the return of objects and premises seized.[43] It is nonetheless necessary to distinguish between cessation and restitution, as restitution is subject to limitations that cessation is not. First, restitution is only required to the extent that it is not materially impossible and that it does not involve a burden out of all proportion to the benefit deriving from restitution instead of compensation.[44] There may be an obligation of cessation even when literal return to the *status quo ante* is excluded or can only be achieved in an approximate way.[45] While the consequences of past acts cannot always be erased, it is always possible to take action in relation to future events.[46] Second, in general an injured state may specify the form that reparation should take.[47] However, there may be an obligation of cessation even if an injured state declines to seek restitution.[48]

A number of cases touch on the relation between cessation and restitution. For example, in *Rainbow Warrior* the Secretary-General issued a

[41] Crawford, Third Report, 22.

[42] ARSIWA Commentary, Art. 30, §6. See Crawford, Third Report, 22, for further reasons why cessation is a secondary consequence of a breach. These reasons were supported by the ILC: ILC Ybk 2000/II(2), 25.

[43] ARSIWA Commentary, Art. 30, §7.

[44] ARSIWA, Art. 35.

[45] ARSIWA Commentary, Art. 30, §7.

[46] Corten (2010), 548.

[47] ARSIWA, Art. 43(2)(b).

[48] See Crawford, Third Report, 64; ARSIWA Commentary, Art. 30, §8; ARSIWA Commentary, Art. 43, §6.

This is not merely an issue of classification, but an issue with practical consequences. If assurances and guarantees of non-repetition are purely a form of satisfaction they would only be available to the extent an injury cannot be made good by restitution or compensation.[108] If that were the case, a state other than an injured state would also not be able to seek assurances and guarantees of non-repetition in the collective interest.[109]

14.4.3 Appropriate assurances and guarantees

Whether assurances and guarantees of non-repetition are required will depend on the character of the obligation and of the breach and on whether there is a real risk of repetition.[110] This calls for a case-by-case analysis. The distinction between assurances of non-repetition and guarantees of non-repetition is that assurances are normally given verbally, whereas guarantees involve something more, such as the taking of preventive measures.[111] The commentary gives examples of assurances and guarantees of non-repetition sought in diplomatic practice from the turn of the twentieth century.[112]

In *LaGrand* the Court stated that where a foreign national was not advised of their rights under Article 36 and was 'subjected to prolonged detention or sentenced to severe penalties', as occurred with the individuals in question, an apology would not be sufficient.[113] The Court considered that the programme undertaken by the United States met Germany's request for a general assurance of non-repetition. In so holding, the Court suggests that what is required is the use of 'best efforts' to avoid repetition, as opposed to an assurance or guarantee that no violation will ever occur again: the 'programme in question certainly cannot provide an assurance that there will never again be a failure by the United States to observe the obligation of notification under Article 36 of the Vienna Convention. But no State could give such a guarantee and Germany does not seek it.'[114] In *Avena*, before reaffirming its conclusion in *LaGrand*, the Court observed:

> While it is a matter of concern that, even in the wake of the *LaGrand* Judgment, there remain a substantial number of cases of failure to carry out the obligation to furnish consular information to Mexican nationals, the Court notes that the United States has been making considerable efforts to ensure that its law

[108] ARSIWA, Art. 37(1). [109] ARSIWA, Art. 48(2); Barbier (2010), 556–7.
[110] ARSIWA Commentary, Art. 30, §13. [111] ARSIWA Commentary, Art. 30, §12.
[112] ARSIWA Commentary, Art. 30, §§12–3. [113] *LaGrand*, ICJ Rep. 2001, p. 466, 512.
[114] Ibid., 513.

Annex 12

16.4 Satisfaction

16.4.1 *The basic principle*

Article 37 provides:

(1) The State responsible for an internationally wrongful act is under an obligation to give satisfaction for the injury caused by that act insofar as it cannot be made good by restitution or compensation.
(2) Satisfaction may consist in an acknowledgment of the breach, an expression of regret, a formal apology or another appropriate modality.
(3) Satisfaction shall not be out of proportion to the injury and may not take a form humiliating to the responsible State.

Satisfaction is the remedy 'for those injuries, not financially assessable, which amount to an affront to the State',[149] in other words moral damage to a state. The commentary notes that satisfaction is not a standard form of reparation, but is 'rather exceptional'.[150] It is only where damage 'cannot be made good by restitution or compensation' that satisfaction may be required.

The commentary gives examples of various international obligations, the breach of which has been considered to warrant satisfaction. These include insults to the symbols of a state, such as the national flag,[151] violations of sovereignty or territorial integrity,[152] attacks on ships or aircraft,[153] ill-treatment or deliberate attacks on heads of state, government, diplomatic or consular representatives and other protected persons,[154] and violations of the premises of embassies, consulates and residences of members of diplomatic missions.[155]

16.4.2 *Forms of satisfaction*

Paragraph 2 gives a non-exhaustive list of forms satisfaction might take: 'an acknowledgment of the breach, an expression of regret, a formal apology or another appropriate modality'. These forms of satisfaction are

[149] ARSIWA Commentary, Art. 37, §3. [150] ARSIWA Commentary, Art. 37, §1.
[151] Citing the *Magee* case (1874) in Whiteman, 1 *Damages in International Law* (1937–1943), 64–5. See further ARSIWA Commentary, Art. 37, §4 n. 615.
[152] Citing *Rainbow Warrior*, (1990) 20 RIAA 215.
[153] Citing the attack against a Soviet aircraft transporting Soviet leader Leonid Brezhnev by French fighter planes in 1961 in 65 RGDIP 603. See further ARSIWA Commentary, Art. 37, §4 n. 617.
[154] Citing Przetacznik, (1974) 78 RGDIP 919, 951.
[155] Citing the attack by demonstrators in 1851 on the Spanish consulate in New Orleans in Moore, 6 *A Digest of International Law* (1906), 811–19. See further ARSIWA Commentary, Art. 37, §4 n. 619.

Annex 13

J. Crawford, *The Creation of States in International Law* (2007) (excerpt)

The Creation of States in International Law

SECOND EDITION

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Chapter 16

PROBLEMS OF IDENTITY, CONTINUITY AND REVERSION

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16.1 Identity and continuity of States: general considerations

Like the communities they encapsulate, States are not static. Yet we assume continuity of our States even as their governments, constitutions, territories and populations change. International law is based on this assumption. It embodies a fundamental distinction between State continuity and State succession:[1] that is to say, between cases where the 'same' State can be said to

[1] On the fundamental character of the distinction see Stern (1996) 262 *HR* 9, 39–52; Crawford, *Selected Essays*, 243, 264–7. See also Bühler, *State Succession*, 7–8.

continue to exist despite sometimes drastic changes in its government, its territory or its people and cases where one State has replaced another with respect to a certain territory and people. The law of State succession is predicated on this distinction. It must then be possible to distinguish cases of continuity from cases of succession, even though in some situations the distinction may seem arbitrary, or may depend not on the substance of a particular transition but on the way in which it was carried out—for example, the unification of Italy through the house of Sardinia or of Germany through the expansion of the FRG.

The notion of 'State continuity' has been criticized as misleading, over-general and as giving an impression of objectivity where none exists.[2] It is true that in marginal cases the notion of continuity involves distinct subjective elements. In many instances the claim to continuity made by the State concerned will be determinative; other States will be content to defer to the position taken.[3] But the notion of continuity is well established and, given the State/government distinction, is even logically required. Moreover, many relations in other areas of international law depend on the will of the actors, international law providing a mode of expression for underlying claims and perceptions.

Three further points may be made in defence of the concept of continuity, despite its sometimes artificial character. The first is that it preserves legal relations despite changes in the subjects of those relations, and it does so to a much greater degree than the law of State succession, which is often marked by discontinuity, in fact if not in law.[4] After all what is claimed, even in doubtful cases, is a *general* continuity, which avoids any need to deal with issues of succession. The second is that issues of identity often have strong salience for the people concerned, who see in the State as an entity the object of their allegiance. This helps to explain at the same time the significance of the concept and the element of subjectivity involved in claims that one State is 'the same' as an earlier entity that may have suffered changes, reversals or even temporary suppression. The third point is that from a legal point of view the issue of continuity only arises when the question concerns *particular* legal relations, when what is in dispute is not the existence of a State at a given time but its identity with a State at another time. Under modern international law many rules are general in their application; all States are obligors and/or beneficiaries on a

[2] Brownlie, *Principles* (6th edn) 80–2; Schachter (1993) 33 *Va JIL* 252, 254–5.

[3] Cf Müllerson (1993) 42 *ICLQ* 473, 477; Stern (1996) 262 *HR* 9, 82–6; Czaplinski (1993) 26 *RBDI* 374, 391–2.

[4] On the modern law of State succession and its tribulations see Crawford, in *Collected Essays*, 243; Müllerson (1993) 42 *ICLQ* 473; Beemelmans (1997) 15 *Boston UILJ* 71.