

INTERNATIONAL TRIBUNAL FOR THE LAW OF THE SEA

Case No. 31

**REQUEST FOR AN ADVISORY OPINION SUBMITTED BY THE
COMMISSION OF SMALL ISLAND STATES ON
CLIMATE CHANGE AND INTERNATIONAL LAW**



WRITTEN STATEMENT OF THE AFRICAN UNION

VOLUME I

16 JUNE 2023

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Activities in the Area Advisory Opinion	<i>Responsibilities and obligations of States sponsoring persons and entities with respect to activities in the Area (Request for Advisory Opinion submitted to the Seabed Disputes Chamber), 1 February 2011, ITLOS Reports 2011, p. 10</i>
Alleged Violations in the Caribbean Sea (Nicaragua v. Colombia)	<i>Alleged Violations of Sovereign Rights and Maritime Spaces in the Caribbean Sea (Nicaragua v. Colombia), Judgment of 21 April 2022, I.C.J.</i>
Armed Activities	<i>Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda), Judgment, I.C.J. Reports 2005, p. 168</i>
Barcelona Traction	<i>Barcelona Traction, Light and Power Company, Limited, Judgment, I.C.J. Reports 1970, p. 3</i>
Corfu Channel	<i>Corfu Channel (United Kingdom v. Albania), Judgment of 9 April 1949, I.C.J. Reports 1949, p. 4</i>
Gabčíkovo-Nagymaros	<i>Gabčíkovo-Nagymaros Project (Hungary/Slovakia), Judgment, I.C.J. Reports 1997, p. 7</i>
Genocide Case (Bosnia and Herzegovina v. Serbia and Montenegro)	<i>Application of the Convention on the Prevention and Punishment of the Crime of Genocide (Bosnia and Herzegovina v. Serbia and Montenegro), Judgment, I.C.J. Reports 2007, p. 43</i>
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Pulp Mills	<i>Pulp Mills on the River Uruguay (Argentina v Uruguay), Judgment, I.C.J. Reports 2010, p. 14</i>

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South West Africa/Namibia	<i>Legal Consequences for States of the Continued Presence of South Africa in Namibia (South West Africa) notwithstanding Security Council Resolution 276 (1970), Advisory Opinion, I.C.J. Reports 1971, p. 16</i>
Southern Bluefin Tuna	<i>Southern Bluefin Tuna (New Zealand v. Japan; Australia v. Japan), Provisional Measures, Order of 27 August 1999, ITLOS Reports 1999, p. 280</i>
SRFC Advisory Opinion	<i>Request for an Advisory Opinion submitted by the Sub-Regional Fisheries Commission (SRFC) (Request for Advisory Opinion submitted to the Tribunal), 2 April 2015, ITLOS Reports 2015, p. 4</i>
Trail Smelter	<i>Trail smelter case (United States, Canada), Award of 16 April 1938 and 11 March 1941, 3 U.N.R.I.A.A. 1905</i>

LIST OF ABBREVIATIONS

Abbreviation	Description
AFOLU	Agriculture, Forestry and Other Land Use
AGN	African Group of Negotiators
ANRC	African Natural Resources Centre
AR	Afforestation and Reforestation
AU	African Union
ASEAN	Association of Southeast Asian Nations
BBNJ Agreement	Agreement on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction
CAHOSCC	Committee of African Heads of State on Climate Change
CARICOM	Caribbean Community and Common Market
CBD	Convention on Biological Diversity
CBDR-RC	Common but differentiated responsibilities and respective capabilities
CDP Africa	Center for Development Policy
CFC	Chlorofluorocarbons
CH ₄	Methane
CO ₂	Carbon dioxide
COP	Conference of the Parties to the United Nations Framework Convention on Climate Change
COP26	26th Conference of the Parties to the United Nations Framework Convention on Climate Change
COP27	27th Conference of the Parties to the United Nations Framework Convention on Climate Change
COSIS	Commission of Small Island States on Climate Change and International Law
EEZ	Exclusive Economic Zone

Abbreviation	Description
EU	European Union
FAO	Food and Agriculture Organization
FAQ	Frequently asked question
GESAMP	Group of Experts on the Scientific Aspects of Marine Pollution
GHG	Greenhouse gases
GMSL	Global mean sea level
ICJ	International Court of Justice
IFAD	International Fund for Agricultural Development
IPCC	Intergovernmental Panel on Climate Change
ITLOS	International Tribunal for the Law of the Sea
IUCN	International Union for Conservation of Nature
IUU	Illegal, unreported and unregulated
Kyoto Protocol	Kyoto Protocol to the United Nations Framework Convention on Climate Change, done at Kyoto, Japan, 11 December 1997, 2303 U.N.T.S. 148
LDCF	Least Developed Countries Fund
MVI	Multidimensional Vulnerability Index
NAPAs	National adaptation programmes of action
NBSAPs	National biodiversity strategies and action plans
NDC	Nationally determined contribution
OECD	Organisation for Economic Co-operation and Development
OUP	Oxford University Press
Paris Agreement	Paris Agreement to the United Nations Framework Convention on Climate Change, done at Paris, France, 12 December 2015, T.I.A.S. No. 16-1104
PCA	Permanent Court of Arbitration

Abbreviation	Description
PIF	Pacific Islands Forum
Rules	Rules of the Tribunal, adopted on 28 October 1997
SDG	Sustainable Development Goals
SIDS	Small island developing States
SRFC	Sub-Regional Fisheries Commission
Statute	Statute of the International Tribunal for the Law of the Sea
UK	United Kingdom
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea, done at Montego Bay, Jamaica, 10 December 1982, 1833 U.N.T.S. 397
UNDP	United Nations Development Programm
UNEP	United Nations Environment Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNGA	United Nations General Assembly
UNICEF	United Nations International Children's Emergency Fund
UNFCCC	United Nations Framework Convention on Climate Change, done at New York, United States of America, 9 May 1992, 1771 U.N.T.S. 107
USA	United State of America
USD	US Dollar
VCLT	The Vienna Convention on the Law of Treaties, done at Vienna, Austria, 23 May 1969, 1155 U.N.T.S. 331
WFP	World Food Programme
WG	Working Group
WHO	World Health Organization

Abbreviation	Description
WIM	Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts
WMO	World Meteorological Organisation

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(Annex-3)	ITLOS, “ <i>Letter to African Union</i> ”, 2 February 2023
(Annex-4)	Lavanya Rajamani and Jacob Werksman, “ <i>Climate Change</i> ” in Lavanya Rajamani, Jacqueline Peel (eds), <i>The Oxford Handbook of International Environmental Law</i> , 2nd ed. (Oxford University Press, 2021), p. 496, 498
(Annex-5)	United Nations General Assembly, 77th Session, 8th Plenary Meeting on 22 September 2022, U.N. Doc. A/77/PV.8
(Annex-6)	D. Bielak, J. Ariel, “ <i>Ocean Acidification – International Legal Avenues under the UN Convention on the Law of the Sea</i> ”, in M. Gerrard, G. Wannier, <i>Threatened Island Nations: Legal Implications of Rising Seas and a Changing Climate</i> , 1st ed. (Cambridge University Press, 2013)
(Annex-7)	P. L. Munday, <i>et al.</i> , “ <i>Effect of ocean acidification on otolith development in larvae of a tropical marine fish</i> ”, (Biogeosciences, vol. 8, issue 6, 1631), p. 1632
(Annex-8)	G. Li, <i>et al.</i> , “ <i>Increasing ocean stratification over the past half-century</i> ”, (Nature Climate Change, vol. 10, 2020), 1116
(Annex-9)	M.H. Nordquist (ed.), “ <i>United Nations Convention on the Law of the Sea</i> ”, <i>op.cit.</i> , para. 197.1
(Annex-10)	Philippe Cullet, “ <i>Differentiation</i> ” in Lavanya Rajamani, Jacqueline Peel (eds), <i>The Oxford Handbook of International Environmental Law</i> , 2nd ed. (Oxford University Press, 2021)
(Annex-11)	M.H. Nordquist (ed.), “ <i>United Nations Convention on the Law of the Sea, op.cit.</i> ”, para. 194.10(e), p. 54
(Annex-12)	A. Proelss (ed.), “ <i>United Nations Convention on the Law of the Sea: A Commentary</i> ”, (C.H. Beck/Hart/Nomos, Munich, Oxford and Baden-Baden, 2017), p. 1303
(Annex-13)	E. Uhlmann, “ <i>State Community Interests, Jus Cogens and Protection of the Global Environment: Developing Criteria for Peremptory Norms</i> ”, 11 <i>Geo. Int’l Env’tl L. Rev.</i> (1998), 101.

ANNEX	DESCRIPTION
	Chandrasekhara, P. Gautier, <i>The ITLOS: law, practice and procedure</i> (Elgar, 2018)
(Annex-14)	E. Johansen, “ <i>Ocean Fertilisation</i> ” in Johansen, Bush and Jakobsen (eds.), <i>The Law of the Sea and Climate Change</i> (Cambridge University Press, 2020)
(Annex-15)	United Nations Environment Programme, “ <i>Diving Deep: Finance, Ocean Pollution and Coastal Resilience</i> ” (2022)

I. INTRODUCTION TO THE WRITTEN STATEMENT

A. Introduction

1. The African Union is honoured to submit this Written Statement to the International Tribunal for the Law of the Sea (“ITLOS”, or “Tribunal”), in the present advisory proceedings. To recall, on 31 January 2023, the African Union requested leave to present a Written Statement as “*an intergovernmental organization likely to be able to furnish information on the questions submitted to the Tribunal for [the] advisory opinion*”.¹ In that letter, the African Union recalled the asymmetric impact of climate change on the African continent, the mandate of the African Union to coordinate African positions on issues of shared interest to African States, and the importance of taking the African perspective into account in the present proceedings. On 2 February 2023, the President of the ITLOS granted the African Union’s request, and invited the African Union to submit the present Written Statement within the prescribed deadline.²

2. The present proceedings place before the ITLOS one of the most serious challenges of international life in our times – climate change. Climate change represents an existential crisis, for some States in the short- to medium-run, and to humanity as whole in the longer run. Climate change is already causing, and is increasingly threatening to cause, profound harm to the marine environment through, among others, drivers like ocean acidification, increased ocean temperatures, deoxygenation and sea level rise. These drivers are already leading to the destruction of marine ecosystems and unprecedented harm to marine biodiversity.

3. African States and peoples, on behalf of whom the African Union addresses this Written Statement to the ITLOS, are among the worst affected by climate change and its impact on the marine environment. In particular, Africa is threatened by loss of territory, loss of sustainable developmental opportunity, loss of livelihood, enhanced food insecurity, forced large scale migrations, and large scale loss of life.

4. It is against this background that the Commission of Small Island States on Climate Change and International Law (“COSIS”)³ has asked the ITLOS to identify the “specific obligations” of States in relation to the effects of climate change on the marine environment. The African Union supports that request. In this regard, the questions at issue before the ITLOS bring to mind the observations of Judge Padilla Nervo of the International Court of Justice (“ICJ”), made in his separate opinion in the *Barcelona Traction* case:

The law, in all its aspects, the jurisprudence and the practice of States change, as the world and the everyday requirements of international life change, but those responsible for its progressive evolution should take care

¹ Order of the ITLOS 2023/1 of 15 February 2023, p. 2, available at https://www.itlos.org/fileadmin/itlos/documents/cases/31/C31_Order_2023-1_15.02.2023_Readable.pdf, last accessed 12 June 2023; African Union, “*Application to Participate in the Proceeding for an Advisory Opinion in Case No. 31*”, 31 January 2023 (**Annex-1**); African Union, “*Letter to ITLOS*”, 31 January 2023 (**Annex-2**).

² Order of the ITLOS 2023/1 of 15 February 2023, p. 2; ITLOS, “*Letter to African Union*”, 2 February 2023 (**Annex-3**).

³ COSIS members are: Antigua and Barbuda, Tuvalu, Palau, Niue, Vanuatu and Saint Lucia.

that their decisions do, in the long run, contribute to the maintenance of peace and security and to the betterment of the majority of mankind.⁴

5. As the climate crisis unfolds, international law has not been at a standstill. States have been engaged in law-making, in their state practice and at various international *fora*, to tackle this challenge. As a result, there exists a rich normative framework of international law governing the conduct of States in relation to climate change. Thus, the African Union calls upon the ITLOS to utilise this opportunity to “contribute to the maintenance of peace and security and to the betterment of the majority of mankind”, by considering existing pieces of international law norms and principles, examining how they operate together, and offering actionable advice setting out the results of that examination.

6. The remainder of this introductory section proceeds as follows. In Section I.B, the African Union recalls the procedural history of these advisory proceedings. In Section I.C, the African Union offers an overview of the remaining Sections of this Written Statement.

B. Procedural history

7. On 12 December 2022, the COSIS submitted a request (“**the Request**”) to the ITLOS to render an advisory opinion on the following questions:

What are the specific obligations of State Parties to the United Nations Convention on the Law of the Sea (the “UNCLOS”), including under Part XII:

(a) to prevent, reduce and control pollution of the marine environment in relation to the deleterious effects that result or are likely to result from climate change, including through ocean warming and sea level rise, and ocean acidification, which are caused by anthropogenic greenhouse gas emissions into the atmosphere?

(b) to protect and preserve the marine environment in relation to climate change impacts, including ocean warming and sea level rise, and ocean acidification?

8. By order of 16 December 2022, and in accordance with Article 133(3) of the Rules of the Tribunal (“**Rules**”), the President of the ITLOS invited State Parties to the United Nations Convention on the Law of the Sea (“**UNCLOS**”), as well as a list of international organisations, to present written statements on the questions submitted in the Request. By the

⁴ *Barcelona Traction, Light and Power Company, Limited, Judgment, I.C.J. Reports 1970*, p. 3, Separate Opinion of Judge Padilla Nervo, p. 248, available at <https://www.icj-cij.org/sites/default/files/case-related/50/050-19700205-JUD-01-08-EN.pdf>, last accessed 12 June 2023.

same order, the President of the ITLOS fixed 16 May 2023 as the deadline for submitting written statements.⁵ The deadline was subsequently extended to 16 June 2023.⁶

9. On 31 January 2023, the African Union requested leave to present a Written Statement as “*an intergovernmental organization likely to be able to furnish information on the questions submitted to the Tribunal for [the] advisory opinion*”.⁷ On 2 February 2023, the President of the ITLOS granted the African Union’s request, and invited the African Union to submit the present Written Statement within the prescribed deadline.⁸

C. Overview of this Written Statement

10. The African Union avails itself of the opportunity to present a Written Statement and assist the ITLOS in responding to the two questions raised, by providing necessary background on (1) the link between climate change and damage to the marine environment and (2) the interaction between the international legal norms regulating these matters.

11. At the outset, the African Union takes note of the dossier of documents submitted by COSIS to provide further context on the questions referred to the ITLOS.⁹ These documents draw attention to the catastrophic impact of climate change on oceans and small islands, which are also of significant concern to African countries. Echoing these concerns, the African Union calls further attention to the disproportionate burden borne by African countries in dealing with climate change effects, despite their limited contribution to the anthropogenic greenhouse gas (“GHG”) emissions causing and exacerbating climate change.

12. To address the threats posed by climate change, international scientific consensus – reflected in evaluations from the International Panel on Climate Change (“IPCC”) – shows that countries need to reduce GHG emissions (mitigation) and adjust their resilience to climate change effects (adaptation). The questions posed to the ITLOS bear upon the nature and scope of action required from the UNCLOS State Parties to address the impact of climate change on the marine environment.

13. The African Union notes that the UNCLOS creates binding obligations on State Parties with respect to protection of the marine environment. Those obligations require State Parties to adopt adaptation and mitigation efforts to combat climate change, since climate change is causing significant harm to the marine environment. In particular, Article 192 of the UNCLOS sets out a general obligation for State Parties to “*protect and preserve the marine environment*”, which in the context of climate change effects on the marine

⁵ Order of the ITLOS 2022/4 of 16 December 2022, available at https://www.itlos.org/fileadmin/itlos/documents/cases/31/A31_ordonnance_2022-4_16.12.2022.pdf, last accessed 12 June 2023.

⁶ Order of the ITLOS 2023/1 of 15 February 2023.

⁷ Order of the ITLOS 2023/1 of 15 February 2023, p. 2.

⁸ Order of the ITLOS 2023/1 of 15 February 2023, p. 2.

⁹ See, ITLOS, Dossier submitted by the Commission of Small Island States on Climate Change and International Law, available at <https://www.itlos.org/en/main/cases/list-of-cases/request-for-an-advisory-opinion-submitted-by-the-commission-of-small-island-states-on-climate-change-and-international-law-request-for-advisory-opinion-submitted-to-the-tribunal/dossier-submitted-by-the-commission-of-small-island-states-on-climate-change-and-international-law/>, last accessed 12 June 2023.

environment, entails an obligation to adopt climate change mitigation and adaptation measures.

14. Article 192 is given further specificity, *inter alia*, by Article 194 which offers some guidance on measures State Parties should take to “*prevent, reduce or control pollution of the marine environment*” from all source – including from GHG emissions. Consequently, this provision entails an obligation for State Parties to significantly reduce GHG emissions, i.e., to adopt mitigation measures. For the purposes of this Written Statement, the interpretation and application of these two provisions will be addressed separately, and in the order and context of the questions posed in COSIS’ Request.

15. While these UNCLOS provisions outline the scope of State Parties’ obligations, they do not stipulate the exact standard of conduct required to meet compliance. In particular, the extent of emission reduction or adaptation measures needed for a State Party to comply with Articles 192 and 194 is unclear. The African Union considers that the ITLOS should interpret the requisite standard of conduct in these provisions in light of customary rules of international law relating to the environment, and conventional norms on climate change, espoused in the 1992 United Nations Framework Convention on Climate Change (“UNFCCC”) and the Paris Agreement (together, the “**international climate change regime**”). In responding to the Questions, the Tribunal should also take into account the best available scientific knowledge on climate change (*i.e.*, the IPCC’s evaluations) and best available practices and techniques for addressing climate change.

16. Under the Paris Agreement, countries have agreed to specific levels, specifically to hold the global average temperature increase to well below 2.0°C above pre-industrial levels and pursue efforts to limit temperature increases to 1.5°C. Achieving this goal requires states to take significant collective action on emission reductions, as well as individual responsibility to adopt measures consistent with the requisite emission reductions and adaptation strategies.

17. The Paris Agreement recognises that the implementation of individual state action should follow the principle of “common but differentiated responsibilities and respective capabilities”, taking into account different national circumstances (“**CBDR-RC**”). It also explicitly acknowledges that developed countries must make more robust emission reductions and support developing countries in mitigation and adaptation efforts. To that end, the responsibility of States to protect and preserve the marine environment from climate change falls more heavily on developed countries.

18. The African Union also considers that compliance with the international climate change regime alone is insufficient for State Parties to satisfy their UNCLOS obligations. Specifically, the UNCLOS requires State Parties to engage in conduct that prevents further damage to the marine environment, including by preventing, reducing and controlling marine pollution resulting from continued emissions. The current consensus in the international climate change regime – to allow emissions to continue, subject to achievement of the agreed temperature levels – falls woefully short of meeting these obligations under the UNCLOS. In that regard, the African Union submits that State Parties need to pursue greater emission reductions than envisioned in the current international climate change regime.

19. This Written Statement addresses the highlighted issues in further detail and is structured as follows. **Section II** provides an overview of the climate change crisis from the perspective of African countries. **Section III** addresses the jurisdiction of the ITLOS to render an advisory opinion and questions of admissibility. **Section IV** presents the science regarding the impact of GHG emissions on the oceans. **Section V** sets out the rules of treaty interpretation that are relevant to the ITLOS' assessment of the questions posed in the Request.

20. Next, **Section VI** addresses the Request's first question in light of Article 194 of the UNCLOS and other relevant rules of international law. **Section VII** addresses the Request's second question in light of Article 192 of the UNCLOS and other relevant rules of international law. Finally, **Section VIII** sets out the African Union's concluding comments and the findings the ITLOS is requested to make.

II. INTRODUCTION TO THE CLIMATE CRISIS

A. An overview of the climate crisis

21. The scientific community is now unequivocal that human activities have caused warming to the earth's atmosphere, ocean and land.¹⁰ The burning of fossil fuels, various widespread agricultural and industrial processes, deforestation, land clearance, and garbage landfills (among others) generate gas emissions with a "greenhouse" effect: these anthropogenic GHG emissions trap the sun's warmth around the planet, raising atmospheric temperatures.¹¹

22. As a result, since the culmination of large-scale industrialisation in the late 1880s, predominantly in the West, the earth has warmed by approximately 1.1°C.¹² The last decade (2011-2020) was the warmest on record.¹³ In 2021, more than 400 weather stations around the world broke their all-time highest records.¹⁴ Without a rapid and far-reaching global transition to a low-carbon economy, projected temperatures could increase by as much as 3.3°C to 5.7°C over the next 20 to 60 years.¹⁵

¹⁰ IPCC, 2021: Summary for Policymakers. In: *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)], (hereafter "IPCC 2021, Summary for Policymakers, *The Physical Science Basis*"), para. A.1, available at https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf, last accessed 14 June 2023.

¹¹ See, United States Environmental Protection Agency, "Sources of Greenhouse Gas Emissions", available at <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>, last accessed 18 May 2023.

¹² See, National Aeronautics and Space Administration, "World of Change: Global Temperatures", available at <https://earthobservatory.nasa.gov/world-of-change/global-temperatures>, last accessed 18 May 2023.

¹³ See, National Aeronautics and Space Administration, "World of Change: Global Temperatures."

¹⁴ See, The Guardian, "More than 400 weather stations beat heat records in 2021", available at <https://www.theguardian.com/world/2022/jan/07/heat-records-broken-all-around-the-world-in-2021-says-climatologist>, last accessed 18 May 2023.

¹⁵ See IPCC 2021, Summary for Policymakers, *The Physical Science Basis*, para. B.1.1. Projections are of global surface temperature averaged over 2081-2100.

23. Climate change has the potential to be existentially catastrophic for the environment and the world's population. In the IPCC's words, continued GHG emissions will increase the likelihood of "severe, pervasive and irreversible impacts".¹⁶

24. Consequences include intense droughts, water scarcity, increased frequency and severity of wildfires and extreme weather events, rising sea levels, flooding, melting polar ice, and declining biodiversity.¹⁷ Many of these consequences are already occurring, contributing to mass mortalities in vulnerable species, displacing communities, and creating acute food and water insecurity in vulnerable populations.¹⁸ Some of these consequences are approaching irreversibility, such as the first species extinctions, and changes in ecosystems driven by permafrost thaw.¹⁹

25. The impact of climate change is felt particularly by the world's oceans. The oceans play a crucial role in regulating the earth's climate systems: they store heat trapped in the atmosphere, mask and slow warming of the earth's surface, store excess carbon dioxide, and are a key component of global biogeochemical cycles.²⁰ However, climate change is causing ongoing, persistent, and, in some cases, irreversible changes to the physical and chemical state of the ocean. Increased atmospheric GHGs, resulting from anthropogenic emissions, contribute to ocean acidification, increased ocean temperatures, deoxygenation and sea level rise, with serious implications for marine biodiversity.²¹ Many ecologically and economically significant fish stocks are already suffering, along with the communities that rely on them for sustenance and livelihoods.²²

¹⁶ IPCC, 2014: Summary for Policymakers. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)], p. 14, available at https://www.ipcc.ch/site/assets/uploads/2018/02/ar5_wgii_spm_en.pdf, last accessed 12 June 2023.

¹⁷ 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* [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)], (hereafter "IPCC 2022, Summary for Policymakers, *Impacts, Adaptation and Vulnerability*"), paras. B.1.1-B.1.3, available at https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_SummaryForPolicymakers.pdf, last accessed 12 June 2023.

¹⁸ See IPCC 2022, Summary for Policymakers, *Impacts, Adaptation and Vulnerability*, paras. B.1.1-B.1.3.

¹⁹ See IPCC 2022, Summary for Policymakers, *Impacts, Adaptation and Vulnerability*, paras. B.1.2.

²⁰ IPCC, 2019: Changing Ocean, Marine Ecosystems, and Dependent Communities [Bindoff, N.L., W.W.L. Cheung, J.G. Kairo, J. Aristegui, V.A. Guinder, R. Hallberg, N. Hilmi, N. Jiao, M.S. Karim, L. Levin, S. O'Donoghue, S.R. Purca Cuicapusa, B. Rinkevich, T. Suga, A. Tagliabue, and P. Williamson]. In: *IPCC Special Report on the Ocean and Cryosphere in a Changing Climate* [H.-O. Pörtner, D.C. Roberts, V. Masson-Delmotte, P. Zhai, M. Tignor, E. Poloczanska, K. Mintenbeck, A. Alegría, M. Nicolai, A. Okem, J. Petzold, B. Rama, N.M. Weyer (eds.)], (hereafter "IPCC 2019, Changing Ocean, Marine Ecosystems, and Dependent Communities, *Special Report on the Ocean and Cryosphere in a Changing Climate*"), p. 456, available at https://www.ipcc.ch/site/assets/uploads/sites/3/2022/03/07_SROCC_Ch05_FINAL.pdf, last accessed 14 June 2023.

²¹ See IPCC 2019, Changing Ocean, Marine Ecosystems, and Dependent Communities, *Special Report on the Ocean and Cryosphere in a Changing Climate*, pp. 450-451.

²² See IPCC 2019, Changing Ocean, Marine Ecosystems, and Dependent Communities, *Special Report on the Ocean and Cryosphere in a Changing Climate*, p. 451.

26. The African continent is particularly vulnerable to all the adverse consequences of climate change – despite the widespread recognition that it is one of the lowest contributors to the anthropogenic GHG emissions that have caused, and continue to exacerbate, climate change.²³

27. Indeed, African countries are already face escalating risks, which will compound in the coming decades, including from reduced food production across crops, livestock and fisheries; flooding from sea level rise; and mortality from extreme heat. For many African countries, extreme temperatures will come much earlier in this century than for the world’s generally wealthier, higher latitude countries.²⁴ At the same time, annual financing falls many billions short of even the lowest estimates of what is needed to meet the consequences of climate change on the African continent.²⁵

28. To tackle the climate emergency, the community of nations must cut anthropogenic emissions (mitigation) and prepare for the impacts of global warming, some of which are already occurring (adaptation).

29. With respect to mitigation, the international community has agreed to a collective goal: “holding the increase in the global temperature to well below 2.0°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial limits, recognising that this would significantly reduce the risks and impacts of climate change”.²⁶ The IPCC’s “Special Report on 1.5°C” sets out, in detail, the full range of increased risks that arise from 1.5°C to 2.0°C.²⁷

30. The challenge of meeting this goal is monumental, but – with concerted and dedicated action – achievable. The latest IPCC reports underscore that, “if we act now, we can still secure a liveable, sustainable future for all”.²⁸ The necessary steps are clear and well-

²³ See, IPCC, 2022: Africa [Trisos, C.H., I.O. Adelekan, E. Totin, A. Ayanlade, J. Efitre, A. Gemed, K. Kalaba, C. Lennard, C. Masao, Y. Mgaya, G. Ngaruiya, D. Olago, N.P. Simpson, and S. Zakieldeen]. 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* [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegria, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)], (hereafter “IPCC 2022, Africa, *Impacts, Adaptation and Vulnerability*”), p. 1289, available at https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter09.pdf, last accessed 12 June 2023.

²⁴ See IPCC 2022, Africa, *Impacts, Adaptation and Vulnerability*, p. 1290.

²⁵ See IPCC 2022, Africa, *Impacts, Adaptation and Vulnerability*, p. 1290.

²⁶ See Paris Agreement, Article 2.

²⁷ IPCC, 2018: Impacts of 1.5°C Global Warming on Natural and Human Systems [Hoegh-Guldberg, O., D. Jacob, M. Taylor, M. Bindi, S. Brown, I. Camilloni, A. Diedhiou, R. Djalante, K.L. Ebi, F. Engelbrecht, J. Guiot, Y. Hijioka, S. Mehrotra, A. Payne, S.I. Seneviratne, A. Thomas, R. Warren, and G. Zhou]. In: *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)], (hereafter “IPCC 2018, Impacts of 1.5°C Global Warming on Natural and Human Systems, *Special Report on Global Warming of 1.5°C*”), pp. 177-181, available at https://www.ipcc.ch/site/assets/uploads/sites/2/2022/06/SR15_Chapter_3_LR.pdf, last accessed 15 June 2023.

²⁸ See IPCC, “Urgent climate action can secure liveable future for all”, 20 March 2023, available https://www.ipcc.ch/report/ar6/syr/downloads/press/IPCC_AR6_SYR_PressRelease_en.pdf, last accessed 18 May 2023.

understood: there are “tried and tested” policy measures that can achieve deep emission reductions, if they are scaled up and applied more widely.²⁹

31. The remainder of this Section of the Written Statement proceeds as follows. In Section II.B, the African Union unpacks further the international cooperative efforts so far to address the climate crisis. In Section II.C, we discuss the disproportionate effects of climate change on Africa, *vis-à-vis* Africa’s contributions to GHG emissions. Finally, in Section II.D, we set out the African Union’s efforts to combat climate change.

B. International cooperation to address the climate crisis

1. Early cooperative efforts

32. The international community has recognised for some time the need for cooperative efforts to tackle a global crisis.

33. Beginning in the late 1980s, efforts at the World Meteorological Organisation (“WMO”) and the United Nations Environment Program (“UNEP”) established the IPCC.³⁰ Now with 195 member countries, the IPCC provides scientific input to underpin climate policy. Thousands of scientists, drawn from across the world, periodically subject the emerging literature to intense peer review, with a view to giving policy makers comprehensive assessments of the risks and impacts of climate change, and the best available options for adaptation and mitigation. In 2007 the IPCC was awarded the Nobel Peace Prize for its efforts:

Through the scientific reports it has issued over the past two decades, the IPCC has created an ever-broader informed consensus about the connection between human activities and global warming. Thousands of scientists and officials from over one hundred countries have collaborated to achieve greater certainty as to the scale of the warming.³¹

34. Building from the IPCC’s work, international cooperation has also included the development of an international legal regime to address climate change. The first of these efforts culminated in the UNFCCC in 1992, which forms the backbone of the international climate change regime, setting out an institutional architecture and guiding principles.³²

35. Under Article 2 of the UNFCCC, the objective of the Convention is “stabilization of [GHG] concentrations in the atmosphere *at a level that would prevent dangerous anthropogenic interference with the climate system*”. Further, this “level” should be achieved in a timeframe “to allow *ecosystems to adapt naturally to climate change*”. The UNFCCC

²⁹ See IPCC, “*Urgent climate action can secure liveable future for all*”, 20 March 2023, available https://www.ipcc.ch/report/ar6/syr/downloads/press/IPCC_AR6_SYR_PressRelease_en.pdf, last accessed 18 May 2023.

³⁰ See IPCC, “*History of the IPCC*”, available at <https://www.ipcc.ch/about/history/>, last accessed 12 June 2023.

³¹ See Norwegian Nobel Committee, “*The Nobel Prize 2007*”, 12 October 2007, available at <https://www.nobelprize.org/prizes/peace/2007/press-release/>, last accessed 18 May 2023.

³² See United Nations Framework Convention on Climate Change, done at New York, United States of America, 9 May 1992, 1771 U.N.T.S., “*History of the Convention*” available at <https://unfccc.int/process/the-convention/history-of-the-convention#Essential-background>, last accessed 12 June 2023.

built on many well-established or customary principles of international environmental law. These include, among others, the necessity of cooperation in solving transboundary environmental problems, and the principle of equity and “common but differentiated responsibilities and respective capabilities” (“**CBDR-RC**”).³³

2. Efforts following the conclusion of the UNFCCC

36. The first attempt to elaborate on the UNFCCC came with the Kyoto Protocol, adopted in 1997 (although it did not enter into force until 2005).³⁴ The Kyoto Protocol imposed legally binding obligations, balanced against a strongly differentiated approach, in which developed countries took on binding, quantified emission reductions targets, while developing countries did not.³⁵

37. Eventually, however, key developed countries opted out or severely limited their participation, objecting to what they perceived as an overly prescriptive approach (specific binding targets) that lacked even-handedness (no reduction obligations at all on a large and undefined category of “developing countries”).³⁶ Many of those developing countries, for their part, strenuously rejected any approach that subjected them to binding reduction commitments, which could prejudice a development trajectory that depends on increasing economic activity and, therefore, emissions.³⁷

38. Following several years of negotiations, in 2015 the Paris Agreement was adopted as an effort to resolve the stalemate. According to Article 2.1 of the Paris Agreement, “in enhancing the implementation of the UNFCCC”, the Agreement “aims to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty”. The Agreement addresses three aspects of the global response to climate change: (1) so-called climate change mitigation, which includes efforts to reduce or prevent GHG emissions; (2) so-called climate change adaptation, which seeks to increase the ability to adapt to the adverse impacts of climate change, and foster climate “resilience” and low GHG development; and (3) loss and damage associated with the adverse impacts of climate change.

39. Based on preceding IPCC work, in relation to climate change mitigation, the Paris Agreement established the temperature goal referred to above: “holding the increase in the

³³ See UNFCCC, sixth preambular recital. “*Acknowledging that the global nature of climate change calls for the widest possible cooperation by all countries...in accordance with their common but differentiated responsibilities and respective capabilities and their social and economic conditions*”, available at <https://unfccc.int/resource/docs/convkp/conveng.pdf>, last accessed 12 June 2023. See Status of the Kyoto Protocol to the United Nations Framework Convention on Climate Change, https://treaties.un.org/Pages/ViewDetails.aspx?src=IND&mtdsg_no=XXVII-7-a&chapter=27&clang=en

³⁴ Although the Kyoto Protocol was adopted in 1997 it did not come into force until 2005, when it was ratified by the required 55 countries responsible for 55 per cent of greenhouse gas emissions.

³⁵ See United Nations Climate Change, “*What is the Kyoto Protocol?*”, available at https://unfccc.int/kyoto_protocol, last accessed 14 June 2023.

³⁶ Lavanya Rajamani and Jacob Werksman, “*Climate Change*” in Lavanya Rajamani, Jacqueline Peel (eds), *The Oxford Handbook of International Environmental Law*, 2nd ed. (Oxford University Press, 2021), p. 496, (Annex-4).

³⁷ Lavanya Rajamani and Jacob Werksman, “*Climate Change*” in Lavanya Rajamani, Jacqueline Peel (eds), *The Oxford Handbook of International Environmental Law*, 2nd ed. (Oxford University Press, 2021), p. 496, (Annex-4).

global temperature to well below 2.0°C” and “pursing efforts to limit the temperature increase to 1.5°C” (“**the Paris temperature goal**”).³⁸ The IPCC has urged that meeting this Paris temperature goal is crucial for avoiding the most catastrophic consequences of climate change.³⁹ As the IPCC explains, “every increment of warming results in rapidly escalating hazards”.⁴⁰

40. The Paris Agreement sets forth binding obligations on all Parties to *identify* and *publish* their proposed contribution to emission reductions.⁴¹ However, the *amount* of the reduction, and the *means* for achieving it, are at each country’s discretion. In other words, each country’s mitigation contribution is “nationally determined” (“**nationally determined contribution**”, or “**NDC**”).⁴² The Parties commit to a “cycle of ambition”, submitting a new, reduced NDC every five years, eventually (in principle), bridging the gap between current mitigation efforts and what is required to meet the Paris temperature goal.⁴³

41. On adaptation, the approach is similar: a global goal of “enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change”⁴⁴ is established, with accompanying obligations to “engage in adaptation planning processes and the implementation of actions”,⁴⁵ and to communicate those plans and actions.⁴⁶ The Agreement recognises that “adaptation is a global challenge faced by all”, and emphasises that adaptation must be inclusive, including being “country-driven”.⁴⁷ The Agreement underscores “the importance of international cooperation on adaptation efforts” and “of taking into account the needs of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change”.⁴⁸

42. The Paris Agreement further recognises “the importance of averting, minimizing and addressing loss and damage”,⁴⁹ and calls on the Parties to “enhance understanding, action and

³⁸ See Paris Agreement, Article 2.1(a).

³⁹ IPCC, 2018: Summary for Policymakers. In: *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)], (hereafter “IPCC 2018, Summary for Policymakers, *Special Report on Global Warming of 1.5°C*”), p. 5, available at https://www.ipcc.ch/site/assets/uploads/sites/2/2022/06/SPM_version_report_LR.pdf, last accessed 15 June 2023. See also Reuters, “‘Climate time bomb ticking’, emissions must urgently be cut, UN chief says”, 20 March 2023, available at <https://www.reuters.com/business/environment/un-chief-urges-faster-shift-net-zero-after-report-highlights-climate-threat-2023-03-20/>, last accessed 12 June 2023 (“According to the IPCC, emissions must be halved by the mid-2030s if the world is to have any chance of limiting temperature rise to 1.5 degrees Celsius (2.7 Fahrenheit) above pre-industrial levels - a key target enshrined in the Paris accord”).

⁴⁰ See IPCC, “Urgent climate action can secure liveable future for all”, 20 March 2023, available at <https://www.ipcc.ch/2023/03/20/press-release-ar6-synthesis-report/>, (last accessed 16 June 2023).

⁴¹ See UNFCCC, Article 4.

⁴² See UNFCCC, Article 4.

⁴³ See Paris Agreement, Article 4.9..

⁴⁴ Paris Agreement, Article 7.1.

⁴⁵ Paris Agreement, Article 7.9.

⁴⁶ Paris Agreement, Article 13.7.

⁴⁷ Paris Agreement, Articles 7.2 and 7.5.

⁴⁸ Paris Agreement, Article 7.6.

⁴⁹ See Paris Agreement, Article 8.1.

support” for doing so, including under the Warsaw International Mechanism for Loss and Damage.⁵⁰

43. Finally, developed countries also commit to financial assistance for developing countries, especially the most vulnerable, in mitigation and adaptation efforts.⁵¹ Article 7.13 of the Agreement states that “[c]ontinuous and enhanced international support shall be provided to developing country Parties”, with a similar provision in Articles 9.1, covering mitigation and adaptation. Articles 10.1 and 11.1 address, respectively, the importance of technology development and transfer, and capacity building, for mitigation and adaptation. The Agreement also includes a call for developed countries to “take the lead in mobilising climate finance from a wide variety of sources, instruments and channels”, “taking into account the needs and priorities of developing country Parties”.⁵² Subsequent to the Paris Agreement, the Parties adopted a decision committing to another goal of mobilising USD 100 billion per year to address the climate-related needs of developing countries.⁵³

44. Thus, subject to the commitment to achieve the Paris temperature goal, the Paris Agreement grants Parties considerable discretion on crucial elements such as the amount of their emission reductions; the mechanisms for achieving them; and how countries will contribute to adaptation efforts. It relies on its strong transparency framework (and, consequently, on public pressure) to restrain and direct countries’ actions. In this regard, commentators have warned that, “given its regulatory approach, and the politics that necessitated that approach”, the Paris Agreement cannot, by itself, reach its long-term goals.⁵⁴

45. To this end, currently submitted NDCs are insufficient to reach 1.5°C; indeed, the IPCC warns that, based on current NDCs, warming above 1.5°C is likely during the 21st century. The UNEP Emissions Gap Report 2019 concludes that “countries must increase their NDC ambitions threefold to achieve the well below 2.0°C goal and more than fivefold to achieve the 1.5°C goal”.⁵⁵

⁵⁰ See Paris Agreement, Article 8.3. By way of background, the Warsaw International Mechanism for Loss and Damage addresses loss and damage associated with the impacts of climate change, including extreme events and slow onset events, in developing countries that are particularly vulnerable to the adverse effects of climate change. See United Nations Climate Change, “*Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts (WIM)*”, available at https://unfccc.int/topics/adaptation-and-resilience/workstreams/loss-and-damage/warsaw-international-mechanism#_Enhancing-knowledge-and-understanding-of-comprehensive-risk-management-approaches-to-address-loss-and-damage-associated-with-the-adverse-effects-of-climate-change-including-slow-onset-impacts-by-facilitating-and-promoting), last accessed 15 June 2023.

⁵¹ See Paris Agreement, Article 9.1.

⁵² See Paris Agreement, Article 9.3.

⁵³ See UNFCCC, Copenhagen Accord of 18 December 2009, UN Doc. No. FCCC/CP/2009/11/Add.1, pp. 5-7 (hereafter “Copenhagen Accord”), para. 8, available at <https://unfccc.int/resource/docs/2009/cop15/eng/11a01.pdf>, last accessed 13 June 2023 (“In the context of meaningful mitigation actions and transparency on implementation, developed countries commit to a goal of mobilizing jointly USD 100 billion dollars a year by 2020 to address the needs of developing countries”).

⁵⁴ Lavanya Rajamani and Jacob Werksman, “*Climate Change*” in Lavanya Rajamani, Jacqueline Peel (eds), *The Oxford Handbook of International Environmental Law*, 2nd ed. (Oxford University Press, 2021), p. 510, (Annex-4).

⁵⁵ UN Environment Programme (UNEP), “*Emissions Gap Report 2019*”, 16 November 2019, para. 5, available at <https://wedocs.unep.org/bitstream/handle/20.500.11822/30797/EGR2019.pdf?sequence=1&isAllowed=y>, last accessed 14 June 2023.

46. There are also similar large gaps in adaptation and financing.⁵⁶ The latest IPCC assessment concludes that “[p]rogress on the alignment of financial flows towards the goals of the Paris Agreement remains slow”.⁵⁷ In this regard, developed countries have consistently failed to meet the USD 100 billion target, with the Parties expressing “deep regret” and “serious concern” at the state of climate financing, and “urging” developed countries to increase their efforts.⁵⁸

3. Cooperative efforts beyond the Paris Agreement

47. Other areas of international law, such as human rights, are also engaged by climate change, providing complementary sources of obligations to act.

48. In July 2022, the United Nations General Assembly (“UNGA”) adopted a historic resolution “[r]ecogniz[ing] the right to a clean, healthy and sustainable environment as a human right”.⁵⁹ The climate crisis is also addressed in the UNGA’s unanimously adopted Sustainable Development Goals (“SDGs”), which include a goal to “take urgent action to combat climate change and its impacts”, including through strengthen[ing] resilience and adaptive capacity to climate-related hazards and integrat[ing] climate change measures into national policies, strategies and planning.⁶⁰ The SDGs also repeat the USD 100 billion per annum financing target.⁶¹

⁵⁶ IPCC, 2022: International cooperation [A. Patt, L. Rajamani, P. Bhandari, A. Ivanova Boncheva, A. Caparrós, K. Djemouai, I. Kubota, J. Peel, A.P. Sari, D.F. Sprinz, J. Wettestad]. In IPCC, 2022: *Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)], p. 1471, available at https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_Chapter14.pdf, last accessed 13 June 2023.

⁵⁷ See IPCC, 2022: Summary for Policymakers [P.R. Shukla, J. Skea, A. Reisinger, R. Slade, R. Fradera, M. Pathak, A. Al Khourdajie, M. Belkacemi, R. van Diemen, A. Hasija, G. Lisboa, S. Luz, J. Malley, D. McCollum, S. Some, P. Vyas, (eds.)]. In: *Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)], (hereafter “IPCC 2022, Summary for Policymakers, *Mitigation of Climate Change*”), para. B.5., available at https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_SummaryForPolicymakers.pdf, last accessed 14 June 2023.

⁵⁸ See UNFCCC, Report of the Conference of the Parties on its twenty-sixth session, held in Glasgow from 31 October to 13 November 2021, UN Doc. FCCC/CP/2021/12/Add.1, pp. 5, 12, available at https://unfccc.int/sites/default/files/resource/cp2021_12_add1_adv.pdf, last accessed 14 June 2023. See also UNFCCC, Report of the Conference of the Parties on its twenty-seventh session, held in Sharm el-Sheikh from 6 to 20 November 2022, UN Doc. FCCC/CP/2022/10/Add.2, (hereafter “*COP27 Report on Climate Finance*”), p. 2, available at https://unfccc.int/sites/default/files/resource/cp2022_10a02E.pdf, last accessed 13 June 2023.

⁵⁹ United Nations General Assembly, Resolution adopted by the General Assembly on 28 July 2022, UN Doc. A/RES/76/300, p. 3, available at <https://documents-dds-ny.un.org/doc/UNDOC/GEN/N22/442/77/PDF/N2244277.pdf?OpenElement>, last accessed 14 June 2023.

⁶⁰ See United Nations Department of Economic and Social Affairs, “*The 17 Goals*”, available at <https://sdgs.un.org/goals>, last accessed 18 May 2023.

⁶¹ See United Nations Department of Economic and Social Affairs, “*Goal 13 – Take urgent action to combat climate change and its impacts*” available at <https://sdgs.un.org/goals/goal13>, last accessed 18 May 2023.

49. Finally, there are a myriad of cooperative efforts on climate change at the regional level. Among others, alongside the African Union itself,⁶² the European Union (“EU”),⁶³ the Pacific Islands Forum (“PIF”),⁶⁴ the Association of Southeast Asian Nations (“ASEAN”),⁶⁵ and the Caribbean Community and Common Market (“CARICOM”)⁶⁶ have each established their own frameworks dedicated to climate-related cooperation in their respective regions.

C. Africa and the climate crisis: limited contribution, disproportionate burden

50. “Despite not being responsible for causing climate change, it is Africans who are bearing both the brunt and the cost”.⁶⁷ So summarised the outgoing Coordinator of the Committee of African Heads of State on Climate Change (“CAHOSCC”), an African Union body created to “spearhead the African common position on climate change”.⁶⁸

51. At just 3.8% of GHG emissions,⁶⁹ Africa is among the lowest contributors of historical GHG emissions responsible for human-induced climate change.⁷⁰ The IPCC has

⁶² See the African Union’s Climate Change and Resilient Development Strategy and Action Plan (2022-2032), (hereafter “African Union, Climate Change Strategy Plan”) which sets out the African Union’s vision and objectives to enhance climate-resilient development, available at https://au.int/sites/default/files/documents/41959-doc-CC_Strategy_and_Action_Plan_2022-2032_08_02_23_Single_Print_Ready.pdf, last accessed 14 June 2023.

⁶³ See European Council, “fit for 55” legislative package, which is the EU’s plan to reduce GHG emissions by at least 55% by 2030 compared to 1990 levels, available at <https://www.consilium.europa.eu/en/policies/green-deal/fit-for-55-the-eu-plan-for-a-green-transition/>, last accessed 14 June 2023.

⁶⁴ See also PIF’s “Framework for Resilient Development in the Pacific”, a voluntary non-political framework which suggests coordination and action on a number of key issues relating to climate change and disaster risk management in the Pacific Islands region, available at <https://www.forumsec.org/frdp/#:~:text=The%20Framework%20for%20Resilient%20Development%20in%20the%20Pacific.change%20and%20disaster%20risk%20management%20in%20the%20region>, last accessed 12 June 2023.

⁶⁵ See ASEAN, “ASEAN State of Climate Change Report”, which sets out climate change as one of ASEAN’s priorities, alongside ASEAN’s climate vision 2050, available at https://asean.org/wp-content/uploads/2021/10/ASCCR-e-publication-Correction_8-June.pdf, last accessed 12 June 2023.

⁶⁶ See CARICOM, “Community Climate Change Centre”, which coordinates the Caribbean region’s response to climate change, working on effective solutions and projects to combat its environmental impacts and global warming, available at <https://caricom.org/institutions/caribbean-community-climate-change-centre-cccc/>, last accessed 14 June 2023.

⁶⁷ See African Union, “Statement by H.E. Cyril Ramaphosa, President of the Republic of South Africa and Outgoing Coordinator of the Committee of African Heads of State and Government on Climate”, 6 February 2022, available at <https://au.int/es/node/41459>, last accessed 12 June 2023.

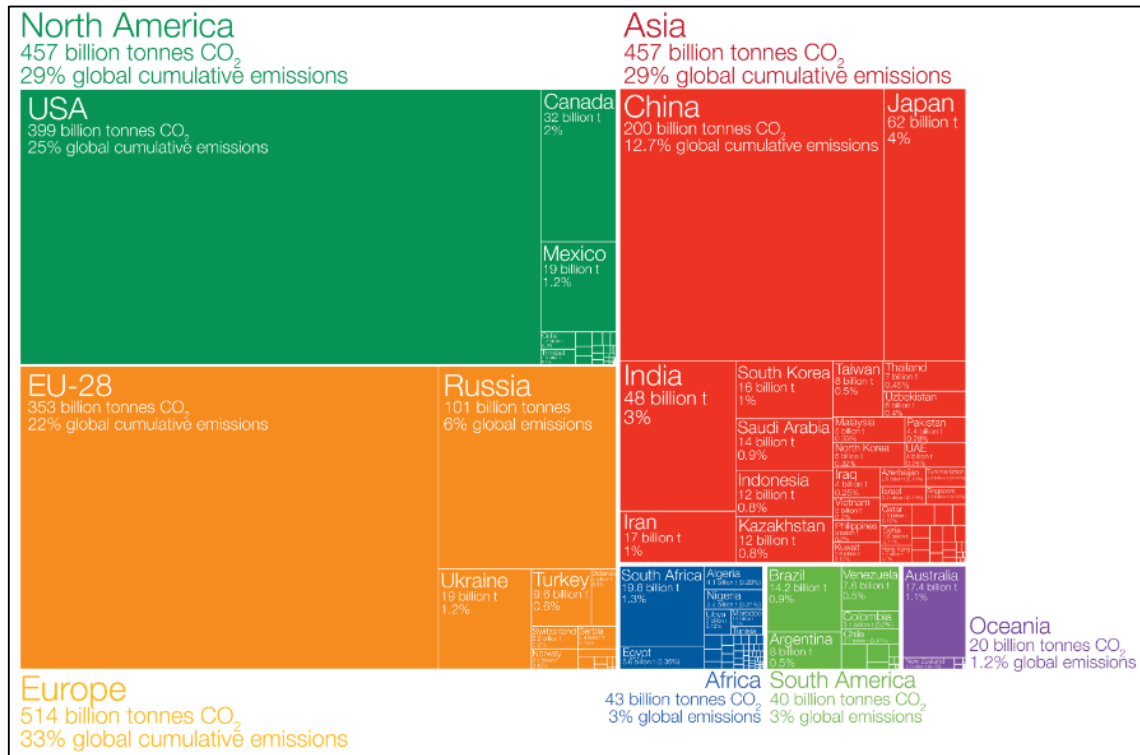
⁶⁸ African Union, Climate Change Strategy Plan, p. 5.

⁶⁹ CDP Africa, “CDP Africa Report: Benchmarking Progress towards Climate Safe Cities, States, and Regions”, 1st ed. (CDP Worldwide, 2020), p. 3, available at https://cdn.cdp.net/cdp-production/cms/reports/documents/000/005/023/original/CDP_Africa_Report_2020.pdf, last accessed 12 June 2023.

⁷⁰ See IPCC 2022, Africa, *Impacts, Adaptation and Vulnerability*, Section 9.1.1, available at https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter09.pdf, last accessed 12 June 2023.

also recognised that Africa has the “lowest per capita GHG emissions of all regions currently”.⁷¹

Figure 1: Historical carbon dioxide (or CO₂) emissions (Source: Our world in data)



52. At the same time, Africa is the continent most vulnerable to the effects of climate change.⁷² It bears a disproportionate burden, with key development sectors already experiencing widespread loss.⁷³ Factors contributing to the continent’s vulnerability include a high level of economic reliance on climate-affected agriculture; a pre-disposition to high temperatures; and high existing levels of poverty and under-development.⁷⁴ The region also includes six small island developing States (“SIDS”)⁷⁵ – well recognised as the most

⁷¹ See IPCC 2022, Africa, *Impacts, Adaptation and Vulnerability*, Section 9.1.1, available at https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter09.pdf, last accessed 12 June 2023.

⁷² United Nations Environment Programme, “*Responding to climate change*”, available at <https://www.unep.org/regions/africa/regional-initiatives/responding-climate-change>, last accessed 9 June 2023. See also, UNFCCC, “*United Nations Fact Sheet on Climate Change*”, available at https://unfccc.int/files/press/backgrounders/application/pdf/factsheet_africa.pdf, last accessed 9 June 2023.

⁷³ See IPCC 2022, Africa, *Impacts, Adaptation and Vulnerability*, p. 1289, available at https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter09.pdf, last accessed 12 June 2023.

⁷⁴ See African Union, *Climate Change Strategy Plan*, p.3.

⁷⁵ Specifically, Cabo Verde, the Comoros, Guinea-Bissau, Mauritius, Saõ Tomé and Príncipe, and the Seychelles. See United Nations Economic Commission for Africa, “*African small island developing states*”, available at <https://archive.uneca.org/africansmallislanddevelopingstates/pages/african-small-island-developing-states>, last accessed 12 June 2023.

vulnerable of all to climate change.⁷⁶ In addition, more than half the countries in Africa are coastal States.⁷⁷

53. The African region is especially vulnerable to, and affected by, the incremental warming *between* 1.5°C and 2.0°C. Even as temperatures edge towards 1.5°C – let alone 2.0°C – the negative impacts will become more “widespread and severe” for every incremental increase.⁷⁸ Holding the temperature increase as low as possible, including limiting it to 1.5°C is expected to “substantially reduce damages to African economies, agriculture, human health, and ecosystems”.⁷⁹

54. The specific negative impacts of climate change for Africa vary widely across the region. The African Union explores these in greater detail in Section IV.C. In sum, observed impacts include: increasing mean and extreme temperature trends across the continent; land and marine heatwaves; increases in drought frequency and duration in swathes of southwestern and northern African, with increased heavy rainfall and flooding across the continent; and disappearance of glaciers on Mt. Kenya and Mt. Kilimanjaro.⁸⁰ Of course, each impact results in its own cascading set of consequences.

55. As a result, African countries already face compounding risks from reduced food production across crop, livestock and fisheries; increases in human mortality and morbidity from heat and infectious diseases (and related loss of labour productivity); and biodiversity loss and ecosystem disruption.⁸¹ Other risks include climate-related infrastructure damage; rising conflict risks due to heat and drought; and loss of cultural heritage sights due to sea level rises and coastal erosion.⁸² Recent analysis concludes that ongoing droughts in the Horn of Africa

⁷⁶ See UNFCCC, “*Climate Change: Small island developing States*”, 1st ed. (Climate Change Secretariat (UNFCCC), 2005), available at https://unfccc.int/resource/docs/publications/cc_sids.pdf, last accessed 12 June 2023 (“Small island developing States (SIDS) have long been recognized by the international community as a special case whose needs and concerns have to be addressed”).

⁷⁷ African coastal countries include: Madagascar, Somalia, South Africa, Mozambique, Egypt, Eritrea, Morocco, Libya, Angola, Namibia, Tanzania, Tunisia, Algeria, Cape Verde, Gabon, Nigeria, Mauritania, Liberia, Sudan, Ghana, Kenya, Senegal, Cote d’Ivoire, Seychelles, Cameroon, Sierra-Leone, Guinea-Bissau, Comoros, Mauritius, Guinea, Djibouti, Equatorial Guinea, Saõ Tomé and Príncipe, Republic of the Congo, Benin, The Gambia, Togo, Democratic Republic of the Congo.

⁷⁸ See IPCC 2022, Africa, *Impacts, Adaptation and Vulnerability*, pp. 1289, 1300, available at https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter09.pdf, last accessed 12 June 2023.

⁷⁹ See IPCC 2022, Africa, *Impacts, Adaptation and Vulnerability*, p. 1289, available at https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter09.pdf, last accessed 12 June 2023.

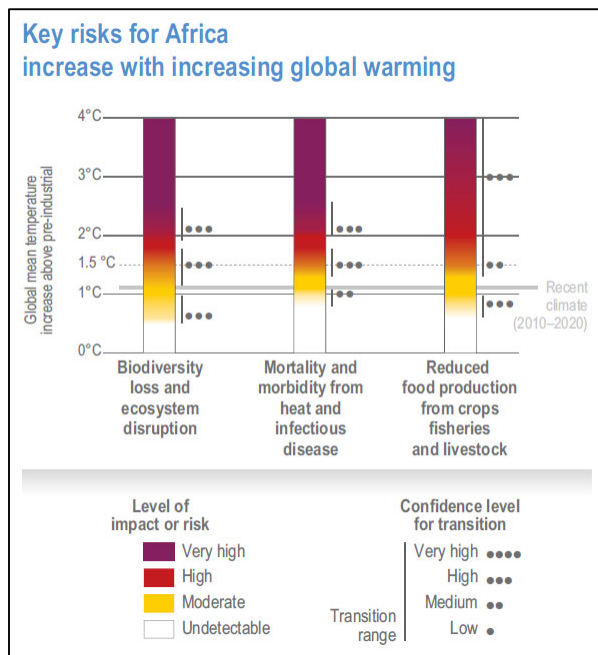
⁸⁰ See IPCC 2022, Africa, *Impacts, Adaptation and Vulnerability*, p. 1290, available at https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter09.pdf, last accessed 12 June 2023.

⁸¹ See IPCC 2022, Africa, *Impacts, Adaptation and Vulnerability*, p. 1290, available at https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter09.pdf, last accessed 12 June 2023.

⁸² See IPCC 2022, Africa, *Impacts, Adaptation and Vulnerability*, p. 1292, available at https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter09.pdf, last accessed 12 June 2023.

which left around 4.35 million people in desperate need of humanitarian aid, and killed 43,000 people in Somalia alone, would not have happened without climate change.⁸³

Figure 2: Key risks for Africa with increasing global warming (Source: IPCC 2022, Africa)



56. Finally, a key component of vulnerability is the capacity to adapt. There are cost-effective pathways for adaptation on the African continent, but many have limited feasibility of implementation due to financial and institutional barriers.⁸⁴ These challenges will rise as global warming levels rise, with consequential increases in adaptation costs. Adaptation costs in Africa are estimated at USD 7-15 billion per year from 2020; at 2.0°C warming, the potential costs increase up to USD 60 billion per year.⁸⁵ Despite the goal of mobilising USD 100 billion per year to meet the climate-related needs of developing countries, financing for adaptation currently falls billions of dollars short of the estimated costs.⁸⁶

⁸³ See Al Jazeera, "Global warming made Horn of Africa drought possible: WWA study", 27 April 2023, available at <https://www.aljazeera.com/news/2023/4/27/global-warming-made-horn-of-africa-drought-possible-wwa-study>, last accessed 12 June 2023.

⁸⁴ See IPCC 2022, Africa, *Impacts, Adaptation and Vulnerability*, pp. 1289, 1301, available at https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter09.pdf, last accessed 12 June 2023.

⁸⁵ See IPCC 2022, Africa, *Impacts, Adaptation and Vulnerability*, p. 1305, available at https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter09.pdf, last accessed 12 June 2023.

⁸⁶ See COP27 Report on Climate Finance, p. 8 ("Domestic public expenditures on climate change in 2019-2020 amounted to an estimated total of USD 134.2 billion"), cf. p. 2 (noting that recent pledges to the Adaptation Fund totaled USD 5.3 billion, and urging developed country Parties to achieve the goal of mobilising jointly USD 100 billion per year).

D. The African Union's efforts to combat climate change

57. Recognising that climate change presents an existential crisis for the region, the African Union and its member States have worked hard to develop a coordinated policy position.

58. Early regional cooperative efforts on climate change were pursued through “Agenda 2063”, the African Union’s strategic framework adopted in 2013 and later linked with the UN’s 2015 SDGs.⁸⁷ Among the aspirations set out in Agenda 2063 was the “participat[ion] in global efforts for climate change mitigation that support[s] and broaden[s] the policy space for sustainable development on the continent”.⁸⁸ In the years following, implementation proved difficult, since the bulk of the relevant policies and frameworks were country-specific; whereas climate issues are, by their nature, cross-border and require coordinated action.⁸⁹

59. Recognising this dynamic, in February 2022, the African Union’s heads of State adopted the first Climate Change and Resilient Development Strategy and Action Plan.⁹⁰ The Plan emphasises the continent’s unique vulnerabilities (“climate change is an existential threat to Africa’s communities, ecosystems and economies”),⁹¹ and looks to “support the commitments made by African countries under the 2015 UNFCCC Paris Agreement”.⁹² While recognising that “each Member State will direct their climate response in a self-determined manner, based on their unique national circumstances and capacities”, it also seeks to “build on the shared challenges and opportunities for the continent”.⁹³

60. Under the auspices of the African Union, the African continent has presented the international community with a coordinated negotiating position.⁹⁴ The African Union’s position, consolidated in the lead-up to COP27, focuses on, among others, the need to “doubl[e] adaptation financ[ing] by 2025” and to clarify “support arrangements to address loss and damage”.⁹⁵ AGN leaders have emphasised, in particular, the importance of “the global goal for adaptation”,⁹⁶ with adaptation financing to match estimated costs. The AGN

⁸⁷ See African Union Commission, “*Agenda 2063*”, 1st ed., 2015, (hereafter “*Agenda 2063*”), available at https://au.int/sites/default/files/documents/36204-doc-agenda2063_popular_version_en.pdf, last accessed 12 June 2023.

⁸⁸ See *Agenda 2063*, para. 17.

⁸⁹ See African Union Commission and African Union Development Agency, “*Second Continental Report on the Implementation of Agenda 2063*”, 1st ed., 2022, p. 28, available at <https://au.int/sites/default/files/documents/41480-doc-2nd-Continental-Progress-Report-on-Agenda-2063-English.pdf>, last accessed 12 June 2023 (“... the

Continent recorded varied performance among the three core indicators on environmentally sustainable and climate resilient economies and communities”).

⁹⁰ See African Union, Climate Change Strategy Plan.

⁹¹ See African Union, Climate Change Strategy Plan, p. IV.

⁹² See African Union, Climate Change Strategy Plan, p. 2.

⁹³ See African Union, Climate Change Strategy Plan, p. 2.

⁹⁴ The African regional position is coordinated through the CAHOSCC. Positions developed through CAHOSCC are presented to the international community, under the UNFCCC framework, by the Africa Group of Negotiators (“AGN”).

⁹⁵ See United Nations Economic Commission for Africa, “*African Group of Negotiators consolidate Common Draft Position in lead up to COP 27*”, available at <https://www.uneca.org/stories/african-group-of-negotiators-consolidate-common-draft-position-in-lead-up-to-cop-27>, last accessed 14 June 2023.

⁹⁶ See Africa Renewal, “*Africa’s chief climate negotiator: We must have tangible and actionable climate decisions for a successful COP27*”, available at <https://www.u.n.org/africarenewal/magazine/june->

is committed to “continue calling on developed country parties to meet their [financing] obligations”.⁹⁷

61. Indeed, the African Union has consistently pushed for recognition of the concept of climate justice in international forums. Speaking ahead of COP27, the outgoing Coordinator of CAHOSCC emphasised that a “one-size-fits-all approach to complex issues such as transition from fossil fuels that disregards the realities on the ground in Africa will simply not work, and is neither just nor equitable”.⁹⁸

62. Many individual African Union member States have frequently expressed concern at the state of climate ambition, and the sufficiency of the Paris Agreement mechanisms to make the necessary emissions cuts. Indeed, African Union member States have, for example, “express[ed] [] disappointment” that current submitted NDCs “do not put us on a path to 1.5 degree warming”, but are rather closer to “2.4 degrees”, “equivalent to 3-degree warming for Africa”.⁹⁹ Others have warned that even achieving a limit of 2.0°C would require “radical change” from what countries have currently reflected in their NDCs.¹⁰⁰

63. Of course, while the African Union is committed to an aligned regional voice, it must be recognised that some of the African Union’s member States face still greater challenges than others. Of special note here are the African SIDS, who face especially aggravated challenges. In the words of one such State, Comoros, before the UNGA, while the “disasters [of climate change] spare no country or region, it should be emphasized that the case of island developing States like the Comoros is even more worrisome and deserves greater attention from us leaders”.¹⁰¹

64. A particular policy platform of many such States has been the development of a Multidimensional Vulnerability Index (“MVI”), through which their particular vulnerabilities to climate effects could be taken into account when apportioning financial and other support. As another African SIDS, the Seychelles, emphasised before the UNGA, “SIDS continue to

[2022/africa%E2%80%99s-chief-climate-negotiator-we-must-have-tangible-and-actionable-climate](https://www.un.org/africarenewal/magazine/june-2022/africa%E2%80%99s-chief-climate-negotiator-we-must-have-tangible-and-actionable-climate), last accessed 14 June 2023.

⁹⁷ See Africa Renewal, “Africa’s chief climate negotiator: We must have tangible and actionable climate decisions for a successful COP27”, available at <https://www.un.org/africarenewal/magazine/june-2022/africa%E2%80%99s-chief-climate-negotiator-we-must-have-tangible-and-actionable-climate>, last accessed 12 June 2023.

⁹⁸ See African Union, “Statement by H.E. Cyril Ramaphosa, President of the Republic of South Africa and Outgoing Coordinator of the Committee of African Heads of State and Government on Climate”, 6 February 2022..

⁹⁹ See Republic of Kenya, “National Statement by Cabinet Secretary, Hon. Keriako Tobiko, EGH, SC during Opening Session of the Resumed UNEA 5.2 on 1st March 2022”, para. 29, available at <https://wedocs.unep.org/bitstream/handle/20.500.11822/38641/CS%20UNEA%205.2%20%20NATIONAL%20STATEMENT.pdf?sequence=1&isAllowed=y>), last accessed 12 June 2023.

¹⁰⁰ See United Nations General Assembly, 77th Session, Second Committee, Summary record of the 11th meeting on 22 November 2022, U.N. Doc. A/C.2/77/SR.11, para. 27, available at file:///C:/Users/pnatali/Downloads/A_C.2_77_SR.11-EN.pdf, last accessed 13 June 2023.

¹⁰¹ United Nations General Assembly, 77th Session, 8th Plenary Meeting on 22 September 2022, U.N. Doc. A/77/PV.8, p. 21, (Annex-5).

be disproportionately affected by what can best be termed as environmental injustice as a result of climate change. We are least responsible for it, yet we pay the heaviest tribute”.¹⁰²

III. JURISDICTION

65. In the AU’s view, the ITLOS has jurisdiction to grant an advisory opinion pursuant to the Request. The AU urges the ITLOS to exercise its jurisdiction, since the requested advisory opinion will offer valuable guidance not only to COSIS in the discharge of its functions, but also to the broader international community including the AU.

66. ITLOS’ jurisdiction in the present matter derives from Article 21 of the Statute of the International Tribunal for the Law of the Sea (“**Statute**”),¹⁰³ read with the COSIS Agreement and the Request. The COSIS Request meets the prerequisites of Article 138 of the Rules of the Tribunal and there are no compelling reasons to refuse to give the requested opinion.

A. **The ITLOS has jurisdiction to grant advisory opinions, under Article 21 of the Statute, read with the COSIS Agreement and the Request**

67. Article 21 of the Statute empowers the ITLOS to grant advisory opinions, when the jurisdiction to do so is specifically conferred by an international agreement other than the UNCLOS. The COSIS Agreement constitutes such an agreement. Together, Article 21 of the Statute and the COSIS Agreement constitute the substantive legal basis of the ITLOS’ advisory jurisdiction over the present matter.

1. **Article 21 of the Statute empowers the ITLOS to grant advisory opinions**

68. Article 21 of the Statute, titled “Jurisdiction”, states that “[t]he jurisdiction of the Tribunal comprises all disputes and all applications submitted to it in accordance with this Convention and *all matters specifically provided for in any other agreement which confers jurisdiction on the Tribunal*” (emphasis added).¹⁰⁴

69. The provision identifies two categories of proceedings over which the ITLOS has jurisdiction. *First*, the ITLOS has jurisdiction over any “disputes” and “applications” submitted in accordance with the UNCLOS.¹⁰⁵ *Second*, the ITLOS has jurisdiction over “all matters specifically provided for in any other agreement which confers jurisdiction on the Tribunal.”

¹⁰² United Nations General Assembly, 76th Session, 11th Plenary Meeting on 23 September 2021, U.N. Doc. A/76/PV.11, p. 68, available at <https://documents-dds-ny.un.org/doc/UNDOC/GEN/N21/262/85/PDF/N2126285.pdf?OpenElement>, last accessed 13 June 2023.

¹⁰³ Statute of the International Tribunal for the Law of the Sea, Annex VI to the United Nations Convention on the Law of the Sea, done at Montego Bay, 10 December 1982, 1833 UNTS 397, (hereafter “*UNCLOS*”), available at https://www.un.org/depts/los/convention_agreements/texts/unclos/annex6.htm, last accessed 12 June 2023.

¹⁰⁴ UNCLOS, Article 21 of Annex VI.

¹⁰⁵ *Request for Advisory Opinion submitted by the Sub-Regional Fisheries Commission, Advisory Opinion, 2 April 2015, ITLOS Reports 2015, p. 4*, (hereafter “*ITLOS, SRFC Advisory Opinion*”), para. 55, available at https://www.itlos.org/fileadmin/itlos/documents/cases/case_no.21/advisory_opinion_published/2015_21-advop-E.pdf, last accessed 13 June 2023.

70. The term “*all matters*” in the second part of Article 21 is generic and all-encompassing. The contrast between “disputes” and “applications”, on the one hand, and the broader expression “all matters”, on the other, is telling. The scope of “all matters” must include “something more” than what is covered by “disputes” and “applications”.¹⁰⁶ As recognised by the ITLOS in the *SRFC Advisory Opinion*, that “something more” must include “advisory opinions, if specifically provided for in ‘any other agreement which confers jurisdiction on the Tribunal’”¹⁰⁷

71. Neither Article 21, nor the UNCLOS, contains any indication that “all matters” excludes requests for advisory opinions, or prohibits the ITLOS from exercising advisory jurisdiction.¹⁰⁸ If the provision were intended to limit the ITLOS’ jurisdiction in that way, it could have expressly stated as much.¹⁰⁹ It is significant that no such limitations are expressed.

72. Therefore, the ITLOS has jurisdiction under Article 21 to render advisory opinions, so long as the request is a “matter[] specifically provided for in any other agreement which confers jurisdiction on the Tribunal”.

2. The COSIS Agreement and the COSIS Request meet the requirements under Article 21

73. The COSIS Agreement is an “other agreement” that confers advisory jurisdiction on the ITLOS, in the sense of Article 21. The Request concerns a “matter[] specifically provided for” in the COSIS Agreement, over which the COSIS Agreement confers jurisdiction on the ITLOS. Together, these instruments confer and trigger the ITLOS’ jurisdiction over the Request.

74. The COSIS Agreement is an “other agreement”, since it is an agreement among several States, other than the UNCLOS. Article 2(2) of the COSIS Agreement provides that “...*the Commission shall be authorized to request advisory opinions from the [Tribunal] on any legal question within the scope of the 1982 United Nations Convention on the Law of the Sea, consistent with Article 21 of the ITLOS Statute and Article 138 of its Rules*” (emphasis added).¹¹⁰ That provision “specifically provide[s]” for advisory proceedings before the ITLOS on matters concerning “any legal question within the scope of the 1982 United Nations Convention on the Law of the Sea”.

¹⁰⁶ ITLOS, *SRFC Advisory Opinion*, para 56.

¹⁰⁷ ITLOS, *SRFC Advisory Opinion*, para 56. On the “breadth” of the concept, cf. the use of term “matters” elsewhere in the Convention (e.g., Article 17 of Annex III) indicating a general reference followed by specific items.

¹⁰⁸ ITLOS *SRFC Advisory Opinion*, Declaration of Judge Cot, para. 4, available at https://www.itlos.org/fileadmin/itlos/documents/cases/case_no.21/advisory_opinion_published/2015_21_Decl_Cot-E.pdf, last accessed 13 June 2023.

¹⁰⁹ ITLOS *SRFC Advisory Opinion*, Separate Opinion of Judge Lucky, para. 14, explaining that “[i]f a matter such as a request for an advisory opinion is excluded, the article will say so”, and that Article 21 of the Statute would have then ended at the word “Convention”, available at https://www.itlos.org/fileadmin/itlos/documents/cases/case_no.21/advisory_opinion_published/2015_21_SO_Luck-E.pdf, last accessed 12 June 2023.

¹¹⁰ The Agreement for the establishment of the Commission of Small Island States on Climate Change and International Law, done at Edinburgh, 31 October 2021, Article 2(2), (hereafter “*COSIS Agreement*”), available at <https://commonwealthfoundation.com/wp-content/uploads/2021/12/Commission-of-Small-Island-States-on-Climate-Change-and-International-Law.pdf>, last accessed 12 June 2023.

75. The COSIS Agreement mandates the COSIS to promote and contribute to the definition, implementation, and progressive development of rules and principles of international law concerning climate change, including obligations relating to the protection and preservation of the marine environment.¹¹¹ This mandate is to be read in light of the COSIS Agreement’s objectives, as reflected in its preamble, which, *inter alia*, explicitly refers to the obligations under the UNCLOS.¹¹² To achieve the mandate, the COSIS Agreement authorises the COSIS, as explained above, to request the ITLOS’ advisory opinions “on *any* legal question *within the scope of [the Convention]*” (emphasis added).¹¹³ The COSIS has acted on this authority by posing two legal questions concerning specific obligations arising within the scope of the UNCLOS. As the COSIS Request poses legal questions consistent with the COSIS’ mandate under the COSIS Agreement,¹¹⁴ the Request is a “matter” that is “specifically provided for in any other agreement which confers jurisdiction on the Tribunal”.

B. The Request meets the requirements of Article 138 of the Rules

76. Article 16 of the Statute empowers the ITLOS to devise its own rules of procedure.¹¹⁵ In exercise of that power, the ITLOS adopted the Rules on 28 October 1997. Article 138 of those Rules set out the prerequisites for the exercise of the ITLOS’ advisory function.

77. Below, the AU details how the Request meets the prerequisites of Article 138.

1. The COSIS Request satisfies the prerequisites of Article 138(1)

78. Article 138(1) states that “[t]he Tribunal may give an advisory opinion on a legal question if an international agreement related to the purposes of UNCLOS specifically provides for the submission to the Tribunal of a request for such an opinion”.¹¹⁶ As recognised by the ITLOS in the *SRFC Advisory Opinion*, the prerequisites set out under this provision are:

[i] an international agreement related to the purposes of the Convention specifically provides for the submission to the Tribunal of a request for an advisory opinion; [ii] the request must be transmitted to the Tribunal by a body authorized by or in accordance with the agreement mentioned above; and [iii] such an opinion may be given on “a legal question”.¹¹⁷

79. The COSIS Request satisfies these conditions. The COSIS Agreement is an international agreement related to the purposes of the UNCLOS, as it concerns the obligations of States towards the protection and preservation of the marine environment, with express reference to such obligations under the UNCLOS. Article 2(2) of the COSIS Agreement

¹¹¹ COSIS Agreement, Articles 1(3) and 2(1).

¹¹² In the relevant part, it reads: “[h]aving regard to the obligations of States under ... the 1982 United Nations Convention on the Law of the Sea” (emphasis original). COSIS Agreement, tenth preambular paragraph.

¹¹³ COSIS Agreement, Article 2(2).

¹¹⁴ COSIS Agreement, Article 2(2). See also, COSIS Agreement, tenth preambular paragraph.

¹¹⁵ UNCLOS, Article 16 of Annex VI.

¹¹⁶ ITLOS, Rules of the Tribunal, Adopted on 28 October 1997 (amended on 15 March and 21 September 2001, on 17 March 2009, on 25 September 2018, on 25 September 2020 and on 25 March 2021), (hereafter “*Rules of the Tribunal*”, Article 138(1), available at https://www.itlos.org/fileadmin/itlos/documents/basic_texts/Itlos_8_E_17_03_09.pdf, last accessed 13 June 2023).

¹¹⁷ ITLOS, *SRFC Advisory Opinion*, para. 60.

specifically provides for the submission to ITLOS of a request for such an opinion, empowering COSIS to request advisory opinions from ITLOS “on *any* legal question *within the scope of [the Convention]*”.¹¹⁸ Finally, the questions posed by the Request are legal questions, since they ask the ITLOS to identify “specific obligations” arising under the UNCLOS.

2. COSIS has complied with Article 138(2)

80. Article 138(2) sets forth a requirement that “[a] request for an advisory opinion shall be transmitted to the ITLOS by whatever body is authorised by or in accordance with the agreement to make the request to the Tribunal”.¹¹⁹ The COSIS Request has been properly transmitted to the ITLOS by the Commission, the authorised body under the COSIS Agreement.¹²⁰

C. There are no compelling reasons to refuse to give an advisory opinion

81. Where the ITLOS has jurisdiction to grant an advisory opinion, it has the discretion to decide whether to grant it. This flows from Article 138(1) of the Rules, which provides that “[t]he Tribunal *may* give an advisory opinion...”. The ITLOS held in the *SRFC Advisory Opinion* that “the Tribunal has a *discretionary power to refuse to give an advisory opinion* even if the conditions of jurisdiction are satisfied”, adding however that “a request for an advisory opinion *should not in principle be refused except for ‘compelling reasons’*”.¹²¹

82. The African Union submits that there are no compelling reasons for the ITLOS to refuse to render an advisory opinion in this case.

83. In exercising its advisory function, the ITLOS will be guided by the object of the request. In the *SRFC Advisory Opinion*, the ITLOS’ decision to grant an advisory opinion was based on the following considerations: “[t]he object of the request by the SRFC is to seek guidance in respect of its own actions. ... The Tribunal is mindful of the fact that *by answering the questions it will assist the SRFC in the performance of its activities and contribute to the implementation of the Convention*” (emphasis added).¹²²

84. In the current proceedings, the Request is directly in furtherance of COSIS’s mandate of “assisting Small Island States to promote and contribute to the definition, implementation, and progressive development of rules and principles of international law concerning climate change...including through the jurisprudence of international courts and tribunals”.¹²³ The ITLOS’ answers to the questions posed in the COSIS Request would assist the COSIS “*in the performance of its activities*”. The advisory opinion will also “*contribute to the implementation of the Convention*” by offering guidance to State Parties on their obligations thereunder.

¹¹⁸ COSIS Agreement, Article 2(2).

¹¹⁹ Rules of the Tribunal, Article 138(2).

¹²⁰ For completeness, the African Union notes that Article 138(3) of the Rules of the Tribunal stipulates that “[t]he Tribunal shall apply *mutatis mutandis* articles 130 to 137”. Articles 130-137 set out the rules governing the conduct of advisory proceedings by the Seabed Disputes Chamber. Hence, the rules applicable to the current proceedings shall be guided by Articles 130-137.

¹²¹ ITLOS, *SRFC Advisory Opinion*, para. 71 (referring to the “well-settled” principle in *Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, I.C.J. Reports 1996*, p. 226, at p. 235, para. 14.)

¹²² ITLOS, *SRFC Advisory Opinion*, paras. 76-77.

¹²³ COSIS Agreement, Article 2(1).

85. Additionally, the AU urges the ITLOS to grant an advisory opinion in the present matter, since the AU would also be guided by the advisory opinion in the performance of its own functions. Climate change is a key matter of shared interest to the 55 Member States of the AU. States in the African continent are particularly vulnerable to the consequences of climate change, specifically those resulting from ocean acidification, increased ocean temperatures, deoxygenation and sea level rise. Tasked with the mandate for “promot[ing] and defend[ing] African common positions on issues of interest to the continent and its peoples”,¹²⁴ gaining clarity on the scope of the rights and obligations under the UNCLOS pertaining to climate change would aid the African Union in the exercise of its functions. The AU expects that many other States, across the globe, will stand to benefit similarly from an advisory opinion in this matter.

86. In short, there are no “compelling reasons” to refuse to give an advisory opinion in response to the COSIS Request. On the contrary, the sheer importance of the questions posed, and the shared global interest in the matter, constitute compelling reasons to grant the request.

IV. SCIENCE ON THE IMPACT OF ANTHROPOGENIC GHG EMISSIONS ON THE OCEANS¹²⁵

A. What are anthropogenic GHG emissions and how do they contribute to climate change?

87. Climate change is caused by the release of GHG emissions into the Earth’s atmosphere. There are three major GHGs: carbon dioxide (or CO₂), methane, and nitrous oxide.¹²⁶ These are naturally occurring, but are also released in large volumes by various human activities.¹²⁷ Once GHGs enter the atmosphere, they collectively trap the sun’s radiation around the Earth.

88. Overall, this is a necessary process of life on Earth: with no GHGs, the Earth’s average temperature would be too cold for life as we know it, to survive. However, the large amounts of GHGs emitted by humans have drastically increased and accelerated this natural process, leading to the climate crisis.

89. CO₂ is the most significant GHG, making up approximately 65-67 per cent of annual emissions.¹²⁸ The atmospheric concentration of CO₂ has already increased by 47 per cent

¹²⁴ Constitutive Act of the African Union, done at Lomé, 11 July 2000, , available at https://au.int/sites/default/files/pages/34873-file-constitutiveact_en.pdf, last accessed 15 June 2023.

¹²⁵ The African Union wishes to thank Professor Christopher Gordon for his review of Section IV of this Written Statement. Professor Gordon is based at the University of Ghana’s Institute for Environment and Sanitation Studies, and is the Country Strategic Advisor for the Climate and Development Knowledge Network.

¹²⁶ Figure SPM.2: Assessed contributions to observed warming in 2010–2019 relative to 1850–1900, IPCC 2021, Summary for Policymakers, *The Physical Science Basis*, p. 7; see also World Meteorological Organization (WMO), “Greenhouse Gas Bulletin”, available at <https://public.wmo.int/en/greenhouse-gas-bulletin>, last accessed 12 June 2023.

¹²⁷ IPCC, 2023: Summary for Policymakers. In: *Climate Change 2023: Synthesis Report. A Report of the Intergovernmental Panel on Climate Change. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [H. Lee and J. Romero (eds.)], p. 4, available at https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf, last accessed 14 June 2023.

¹²⁸ See, Table 2.1, IPCC 2022, Summary for Policymakers “*Climate Change: Impacts, Adaptation and Vulnerability*”, p. 229, available at https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_Chapter02.pdf, last accessed 12 June

since the beginning of the industrial revolution.¹²⁹ CO₂ is primarily released by burning fossil fuels such as coal, oil, natural gas and peat. Deforestation and other land use changes also contribute significantly to increased CO₂ emissions – by releasing of carbon stored as biomass in felled trees, and the destruction of terrestrial sinks that remove CO₂ from the atmosphere.¹³⁰ Once emitted, CO₂ remains trapped in the atmosphere for up to 1,000 years.¹³¹

90. Methane makes up a smaller per centage of total emissions (around 17-19 per cent annually),¹³² but its greenhouse effect is around 80 per cent more potent than CO₂ (*i.e.*, its molecular structure is 80 per cent more efficient at trapping heat).¹³³ It is primarily generated through large-scale agricultural operations, the breakdown of rubbish in landfills, as well as fossil fuel burning and associated industrial activities.¹³⁴ Once released, it remains trapped in the atmosphere for around 10 years.

2023. *See also*, The World Bank data on CO₂ emissions, available at

https://data.worldbank.org/indicator/EN.ATM.CO2E.PC?name_desc=false, last accessed 12 June 2023.

The CO₂ emissions (in metric tons per capita) vary greatly across regions: it is estimated at 14.7 for North America; 6.2 for the EU; 1.4 for the Pacific Island Small States; and 0.7 for Sub-Saharan Africa.

¹²⁹ IPCC 2021, Summary for Policymakers, *The Physical Science Basis*, p. 8.

¹³⁰ *See* statistics on Agriculture, Forestry and Other Land Use (AFOLU) emissions, IPCC 2021, Summary for Policymakers, *The Physical Science Basis*, p. 10.

¹³¹ IPCC 2007, Technical Summary, p. 77. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)], available at <https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg1-ts-1.pdf>, last accessed 15 June 2023.

¹³² *See*, Table 2.1, IPCC 2022, Summary for Policymakers “*Climate Change: Impacts, Adaptation and Vulnerability*”, p. 229, available at https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_Chapter02.pdf, last accessed 12 June 2023.

¹³³ UNEP, “Methane emissions are driving climate change. Here’s how to reduce them”, available at <https://www.unep.org/news-and-stories/story/methane-emissions-are-driving-climate-change-heres-how-reduce-them>, last accessed 15 June 2023.

¹³⁴ *See* International Energy Agency “Global Methane Tracker 2022”, available at <https://www.iea.org/reports/global-methane-tracker-2022/methane-and-climate-change>, last accessed 12 June 2023; United Nations Environment Programme/Climate and Clean Air Coalition (2022). *Global Methane Assessment: 2030 Baseline Report*. Nairobi, available at <https://www.iea.org/reports/global-methane-tracker-2022/methane-and-climate-change>, last accessed 12 June 2023.

91. Nitrous oxide makes up a smaller percentage still, but is 280 times more potent than CO₂.¹³⁵ It is generated through fossil fuel burning and some agricultural and industrial processes.¹³⁶ Once released, it remains in the atmosphere for approximately 120 years,¹³⁷

92. In addition to these three, other GHGs include “fluorinated gases” such as hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride.¹³⁸ These are artificial compounds generated exclusively from human industrial activities, for example from the manufacture and use of refrigerators, air-conditioners, industrial solvents and other products. Although fluorinated gases are released in much smaller volumes than the three major GHGs, they are also extremely potent; some have a greenhouse effect several thousand times greater than CO₂.¹³⁹

B. How do GHG emissions affect the composition and temperature of the ocean, and what are the consequences for the marine environment?

1. Introduction

93. Oceans play a vital role in the carbon cycle, absorbing around 30 per cent of the anthropogenic CO₂ released into the atmosphere, as well as other GHGs.¹⁴⁰ Since marine

¹³⁵ See IPCC, 2007: Changes in Atmospheric Constituents and in Radiative Forcing [Forster, P., V. Ramaswamy, P. Artaxo, T. Berntsen, R. Betts, D.W. Fahey, J. Haywood, J. Lean, D.C. Lowe, G. Myhre, J. Nganga, R. Prinn, G. Raga, M. Schulz and R. Van Dorland]. In IPCC 2007: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)], (hereafter “IPCC 2007, Changes in Atmospheric Constituents and in Radiative Forcing, *The Physical Science Basis*”), p. 212, table 2.14, available at <https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg1-chapter2-1.pdf>, last accessed 15 June 2023; IPCC 1995: Technical Summary. In: *Climate Change 1995: The Science of Climate Change. Contribution of Working Group I to the Second Assessment Report of the Intergovernmental Panel on Climate Change*. [J. T. Houghton, L.G. Meira Filho, B.A. Callander, N. Harris, A. Kattenberg and K. Maskell (eds.)], p. 22, available at https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_sar_wg_i_full_report.pdf, last accessed 15 June 2023.

¹³⁶ See IPCC 2007, Changes in Atmospheric Constituents and in Radiative Forcing, *The Physical Science Basis*, p. 135.

¹³⁷ See IPCC 2021, Changing State of the Climate System, *The Physical Science Basis*, p. 302, Table 2.2, available at <https://www.ipcc.ch/report/ar6/wg1/>, last accessed 12 June 2023.

¹³⁸ See IPCC 2022, Summary for Policymakers, *Mitigation of Climate Change*, p. 6 f.n. 6.

¹³⁹ IPCC, 2021: Framing, Context, and Methods [Chen, D., M. Rojas, B.H. Samset, K. Cobb, A. Diongue Niang, P. Edwards, S. Emori, S.H. Faria, E. Hawkins, P. Hope, P. Huybrechts, M. Meinshausen, S.K. Mustafa, G.-K. Plattner, and A.-M. Tréguier]. In *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)], p. 180 available at https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Chapter01.pdf, last accessed 16 June 2023.

¹⁴⁰ See IPCC, 2014: The Ocean [Hoegh-Guldberg, O., R. Cai, E.S. Poloczanska, P.G. Brewer, S. Sundby, K. Hilmi, V.J. Fabry, and S. Jung]. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)], (hereafter “IPCC 2014, The Ocean, *Impacts, Adaptation, and Vulnerability*”), p. 1658, https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-Chap30_FINAL.pdf, last accessed 15 June 2023. (“The Ocean ... has absorbed ... approximately 30% of anthropogenic carbon dioxide (CO₂) from the atmosphere”).

ecosystems have such high carbon storage capacity, they are one of the planet's primary carbon sinks.¹⁴¹ GHGs (primarily CO₂) are absorbed into the ocean through a natural exchange of gases at the ocean's surface, where the gases in the atmosphere dissolve into the water.¹⁴²

94. On one hand, this has historically allowed the ocean to effectively regulate the Earth's temperature, by removing naturally occurring GHGs from the atmosphere.¹⁴³ On the other hand, ocean ecosystems are left especially vulnerable to the impacts of increased anthropogenic emissions.¹⁴⁴

95. These impacts include, directly and indirectly, **four key drivers of harm** to the marine environment. *First*, carbon dioxide is absorbed into the ocean, causing the ocean to become more acidic. *Second*, increased heat in the atmosphere caused by all types of GHGs is also absorbed into the ocean, raising the ocean's temperature (and altering its density). *Third*, increased ocean temperatures cause deoxygenation of the ocean; and, *fourth*, increased ocean temperatures cause rising sea levels. Further, as acidification and water temperature increases, the capacity of the oceans to absorb gases, including CO₂, decreases, reducing the ocean's climate change mitigation functions and creating a vicious cycle of ongoing warming, leading to further warming still.¹⁴⁵

96. Each driver's impact on the marine environment is complex and interrelated with the others.¹⁴⁶ In each instance, the harm caused by one driver amplifies the others, and *vice-versa*; the consequences vary considerably across different regions; and every individually impacted species causes a ripple effect throughout the whole food chain and the wider

¹⁴¹ See D. Bialek, J. Ariel, "Ocean Acidification – International Legal Avenues under the UN Convention on the Law of the Sea", in M. Gerrard, G. Wannier, *Threatened Island Nations: Legal Implications of Rising Seas and a Changing Climate*, 1st ed. (Cambridge University Press, 2013) (hereafter "Bialek & Ariel, *Ocean Acidification*"), p. 474, (**Annex-6**). ("As the ocean's largest carbon sink, the oceans absorb a large proportion of atmospheric CO₂ ...")

¹⁴² See Bialek & Ariel, *Ocean Acidification*, p. 474 ("... the oceans absorb a large proportion of atmospheric CO₂, which in turn produces carbonic acid"), (**Annex-6**).

¹⁴³ See IPCC 2014, *The Ocean, Impacts, Adaptation, and Vulnerability*, p. 1662, available at https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-Chap30_FINAL.pdf, last accessed 12 June 2023 ("The Ocean also contributes to human welfare indirectly through the regulation of atmospheric gas content and the distribution of heat and water through the planet").

¹⁴⁴ See Bialek & Ariel, *Ocean Acidification*, p. 474, (**Annex-6**) ("Although global warming is the most commonly referenced result of increased atmospheric concentration of GHGs, ocean acidification is often referred to as the other half of the CO₂ problem. ... This increases the acidity of the oceans, producing potentially devastating effects for the oceans, marine life, and its human uses, including food security").

¹⁴⁵ See Bialek & Ariel, *Ocean Acidification*, p. 477 ("However, at higher levels of ocean acidification, the absorptive capacity of the ocean is reduced, making it more difficult to balance CO₂ levels in the atmosphere and hydrosphere").

¹⁴⁶ See IPCC, 2022: Oceans and Coastal Ecosystems and Their Services [Cooley, S., D. Schoeman, L. Bopp, P. Boyd, S. Donner, D.Y. Ghebrehiwet, S.-I. Ito, W. Kiessling, P. Martinetto, E. Ojea, M.-F. Racault, B. Rost, and M. Skern-Mauritzen]. 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* [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegria, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)], (hereafter "IPCC 2022, Oceans and Coastal Ecosystems and Their Services, *Impacts, Adaptation and Vulnerability*") p. 410, available at https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter03.pdf, last accessed 15 June 2023.

ecosystem.¹⁴⁷ To this end, considerably more scientific research is needed to fully comprehend the cumulated effects, including the interaction with other non-climate related issues like nutrient pollution, overfishing, habitat destruction and so-on. To this end, IPCC has conducted work on identifying the gaps between current scientific understanding, and the knowledge needed to develop policy measures effectively.¹⁴⁸

97. At a minimum, however, it is clear that, as a result of these drivers, the marine environment is already facing harmful conditions that are, in the IPCC's words, "unprecedented across millennia".¹⁴⁹ The African Union addresses these four key drivers of harm below.

2. Increased ocean acidity

98. A significant consequence of anthropogenic GHG emissions – in particular CO₂ – is ocean acidification. When CO₂ is absorbed into the ocean, it reacts with water to form carbonic acid, increasing the concentration of hydrogen ions in the water and lowering the ocean's pH levels.¹⁵⁰

99. The oceans are absorbing approximately 30 per cent of CO₂ released into the atmosphere each year.¹⁵¹ As a result, the IPCC concludes that it is "virtually certain" that ocean surface pH has already declined over the past four decades;¹⁵² by some estimates, global ocean pH has reduced by approximately 0.1 pH units since the industrial revolution. The IPCC has concluded that even acidification rates caused by the level of GHG emissions associated with 1.5°C would still "impact a wide range of marine organisms and ecosystems, as well as sectors such as aquaculture and fisheries"; and that these impacts worsen considerably as temperatures rise towards 2.0°C.¹⁵³

¹⁴⁷ See, e.g., IPCC 2022, Oceans and Coastal Ecosystems and Their Services, *Impacts, Adaptation and Vulnerability*, p. 412.

¹⁴⁸ See IPCC 2022, Oceans and Coastal Ecosystems and Their Services, *Impacts, Adaptation and Vulnerability*, p. 411.

¹⁴⁹ IPCC 2022, Oceans and Coastal Ecosystems and Their Services, *Impacts, Adaptation and Vulnerability*, pp. 395-396.

¹⁵⁰ See Bialek & Ariel, *Ocean Acidification*, p. 474, (Annex-6) ("... the oceans absorb a large proportion of atmospheric CO₂, which in turn produces carbonic acid"). pH value is a measure indicating acidity or basicity of a substance. On a scale of 0 to 14, a pH value below 7 indicates that the substance is acidic, and a pH value above 7 indicates that the substance is a base. Pure water, being neutral, has a pH value of 7.

¹⁵¹ See IPCC, 2007: Couplings Between Changes in the Climate System and Biogeochemistry [Denman, K.L., G. Brasseur, A. Chidthaisong, P. Ciais, P.M. Cox, R.E. Dickinson, D. Hauglustaine, C. Heinze, E. Holland, D. Jacob, U. Lohmann, S Ramachandran, P.L. da Silva Dias, S.C. Wofsy and X. Zhang]. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)], p. 515, available at <https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg1-chapter7-1.pdf>, last accessed 15 June 2023, ("Oceans are estimated to have taken up approximately 30% [of anthropogenic CO₂ emissions]").

¹⁵² IPCC 2014, *The Ocean, Impacts, Adaptation, and Vulnerability*, p. 1673 ("Surface ocean pH has decreased by approximately 0.1 pH units since the beginning of the Industrial Revolution"); IPCC 2022, Oceans and Coastal Ecosystems and Their Services, *Impacts, Adaptation and Vulnerability*, Table 3.2.

¹⁵³ IPCC, 2018: Technical Summary [Allen, M.R., H. de Coninck, O.P. Dube, O. Hoegh-Guldberg, D. Jacob, K. Jiang, A. Revi, J. Rogelj, J. Roy, D. Shindell, W. Solecki, M. Taylor, P. Tschakert, H. Waisman, S. Abdul Halim, P. Antwi-Agyei, F. Aragón-Durand, M. Babiker, P. Bertoldi, M. Bindi, S. Brown, M. Buckner, I. Camilloni, A. Cartwright, W. Cramer, P. Dasgupta, A. Diedhiou, R. Djalante, W. Dong, K.L. Ebi, F.

100. Indeed, even minimal changes in ocean pH have a myriad of consequences for marine life.¹⁵⁴ Increased acidity in the water reduces the availability of the mineral aragonite, a form of calcium carbonate that many marine organisms use to build their shells and skeletons, including corals, crustaceans, molluscs and zooplankton.¹⁵⁵ Aragonite scarcity also interferes with the development of “otoliths”, small structures in the ears of many fish, cephalopod and crustacean species which allow them to sense changes in acceleration and gravity.¹⁵⁶ When these do not develop properly, organisms struggle to maintain balance and orient themselves in their environment, with serious implications for individuals’ survival capacities.¹⁵⁷

101. Acidification further affects the ability of many fish species to regulate their internal pH levels. Fish maintain a delicate balance of acids and bases within their bodies to ensure proper cellular function; disrupting this balance leads to reduced growth, impaired reproduction and increased susceptibility to disease.¹⁵⁸ The changing chemical composition of the ocean also interferes with many fish species’ olfactory systems, affecting their ability to find food and avoid predators.

102. The full impact of ocean acidification on entire food chains and complex ecosystems remains relatively poorly understood;¹⁵⁹ and, additional research is also required to understand how acidification interacts with other marine stressors, including overfishing,

Engelbrecht, S. Fifita, J. Ford, P. Forster, S. Fuss, V. Ginzburg, J. Guiot, C. Handa, B. Hayward, Y. Hijioka, J.-C. Hourcade, S. Humphreys, M. Kainuma, J. Kala, M. Kanninen, H. Kheshgi, S. Kobayashi, E. Kriegler, D. Ley, D. Liverman, N. Mahowald, R. Mechler, S. Mehrotra, Y. Mulugetta, L. Mundaca, P. Newman, C. Okereke, A. Payne, R. Perez, P.F. Pinho, A. Revokatova, K. Riahi, S. Schultz, R. Séférian, S.I. Seneviratne, L. Steg, A.G. Suarez Rodriguez, T. Sugiyama, A. Thomas, M.V. Vilarinho, M. Wairiu, R. Warren, K. Zickfeld, and G. Zhou]. In: *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)], p. 37, available at

https://www.ipcc.ch/site/assets/uploads/sites/2/2022/06/SR15_Full_Report_HR.pdf, last accessed 15 June 2023.

¹⁵⁴ IPCC 2022, Oceans and Coastal Ecosystems and Their Services, *Impacts, Adaptation and Vulnerability*”, pp. 395-396.

¹⁵⁵ See M. Hood, W. Broadgate, E. Urban, O. Gaffney, “*Ocean Acidification: A Summary for Policymakers from the Second Symposium on the Ocean in a High CO₂ World*”, p. 5, (hereafter “*Hood, Ocean Acidification Symposium*”), available at <https://www.uncclearn.org/wp-content/uploads/library/unesco62.pdf>, last accessed 12 June 2023 (“Most studies show a decrease in calcification, including shell and skeleton formation, with increasing acidification”). See also Bialek & Ariel, *Ocean Acidification*, p. 474, (**Annex-6**).

¹⁵⁶ P. L. Munday, *et al.*, “Effect of ocean acidification on otolith development in larvae of a tropical marine fish”, *Biogeosciences*, vol. 8, issue 6, 1631, p. 1632, (**Annex-7**).

¹⁵⁷ P. L. Munday, *et al.*, “Effect of ocean acidification on otolith development in larvae of a tropical marine fish”, *Biogeosciences*, vol. 8, issue 6 (2011), 1631, p. 1632. (**Annex-7**).

¹⁵⁸ See Hood, *Ocean Acidification Symposium*, p. 5 (“For marine animals, including invertebrates and some fish, accumulation of CO₂ in the body may also result in disturbances of processes other than calcification, leading to overall changes in the organism’s morphology, metabolic state, physical activity and reproduction”).

¹⁵⁹ Biliana Cicin-Sai, *et al.*, “*Towards a Strategic Roadmap on Oceans and Climate: 2016 to 2021*”

(Washington DC: Global Ocean Forum 2016), (hereafter “*Towards a Strategic Roadmap on Oceans and Climate: 2016 to 2021*”, p. 15, available at

https://nicholasinstitute.duke.edu/sites/default/files/publications/strategic_action_roadmap_on_oceans_and_climate_november_2016.pdf, last accessed 13 June 2023.

rising temperatures and other forms of marine pollution such as emerging contaminants and microplastics.¹⁶⁰

3. Increased ocean temperatures

103. The second major consequence of anthropocentric GHG emissions is increased ocean temperatures. The ocean has absorbed around 93 per cent of the excess heat trapped in the earth's atmosphere as a result of anthropogenic GHG emissions.¹⁶¹

104. The IPCC concludes it is “virtually certain” that as a result, the upper ocean (0 to 700m depth) has already warmed over the last four decades.¹⁶² In particular, at the upper 75m of the ocean, temperatures have increased by approximately 0.1°C per decade since 1971.¹⁶³ At the same time, temperatures of the warmest *and* coolest months have increased for most regions since 1950.¹⁶⁴ To illustrate: the temperature of the coral reef provinces of the west side of the Indian Ocean in the warmest month of the year has increased by 0.546°C over 60 years (from 1950 to 2009); and in the coolest month by 0.612°C during the same period.¹⁶⁵

105. Analysis of isotherms, which can measure temperature increases over time, shows that the rate of ocean warming is increasing.¹⁶⁶ In other words, the ocean is getting hotter, faster. This increase in temperatures has widespread effects on the ecosystem as a whole, ramping up the speed at which populations must either move or adapt to their changing environments.¹⁶⁷

106. Warming waters disrupt (among others) the migratory patterns, predation activities, and reproductive processes of many marine species.¹⁶⁸ For example: cold water fish species like Atlantic cod must travel larger distances or migrate vertically into deeper waters to seek out suitable temperatures to breed.¹⁶⁹ They may experience reduced reproductive success if they are unable to reach their spawning ground at the right time, or encounter unexpected environmental conditions.¹⁷⁰ Other affected migratory species include sea turtles, marine

¹⁶⁰ Towards a Strategic Roadmap on Oceans and Climate: 2016 to 2021, p. 15.

¹⁶¹ IPCC 2014, *The Ocean, Impacts, Adaptation and Vulnerability* (“The Ocean has absorbed 93% of the extra heat arising from the enhanced greenhouse effect”), p. 1664.

¹⁶² IPCC 2014, *The Ocean, Impacts, Adaptation and Vulnerability*, p. 1664.

¹⁶³ IPCC *The Ocean, Impacts, Adaptation and Vulnerability*, p. 1664.

¹⁶⁴ IPCC 2014, *The Ocean, Impacts, Adaptation, and Vulnerability*, p. 1664 (“... most regions showed either significant warming in the average temperature, or significant warming in either/or the warmest and coolest months of the year, over the period 1950-2009”).

¹⁶⁵ IPCC 2014, *The Ocean, Impacts, Adaptation, and Vulnerability* (Table 30-1), p. 1667.

¹⁶⁶ IPCC 2014, *The Ocean, Impacts, Adaptation, and Vulnerability* (Table 30-1), p. 1667 (“other analyses have revealed that increased temperatures are spreading rapidly across the world's oceans (measured as the movement of bands of equal temperature or isotherms)”). *See also* (Table 30-3)

¹⁶⁷ IPCC 2014, *The Ocean, Impacts, Adaptation, and Vulnerability*, p. 1667.

¹⁶⁸ IPCC 2014, *The Ocean, Impacts, Adaptation, and Vulnerability*, p. 1667.

¹⁶⁹ *See* C. Freitas, *et al.*, “Behavioural responses of Atlantic cod to sea temperature changes”, (*Ecology and Evolution*, vol. 5, issue 10, 2015), 2070, pp. 2070-2083, available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4449760/pdf/ece30005-2070.pdf>, last accessed 13 June 2023.

¹⁷⁰ *See* C. Freitas, *et al.*, “Behavioural responses of Atlantic cod to sea temperature changes”, (*Ecology and Evolution*, vol. 5, issue 10, 2015), 2070, pp. 2070-2083.

mammals like whales and seals, and many types of seabirds.¹⁷¹ Shellfish like oysters and mussels are also sensitive to temperature changes (which is further compounded especially by acidification).¹⁷² In each instance, there are again knock-on effects throughout the whole ecosystem. Each trend becomes “more pronounced” with the shift from 1.5°C to 2.0°C.¹⁷³

107. Already, some species populations are unable to move or adapt, causing population declines and extinctions. Over the last twenty years, for example, temperature increases of 0.6°C in the western Indian Ocean have triggered mass coral bleaching and mortality.¹⁷⁴ As a result, the coral reefs off the African east coast, which comprise approximately 5 per cent of the world’s reefs, are considered to be imminently vulnerable to “ecosystem collapse”.¹⁷⁵

108. Finally, increased temperatures due to climate change are also a driver of “ocean stratification” – the separation of ocean water into layers by density. The ocean is naturally stratified, because warmer, less dense water sits on top of colder water. However, temperature increases exacerbate natural stratification, making it more difficult for the different layers in the ocean to mix.¹⁷⁶ This further disrupts ocean habitats and ecosystems, as it hinders the movement of nutrients to the water’s surface, and the movement of dissolved oxygen to deeper ocean layers.¹⁷⁷

4. Decreased oxygen levels

109. A further consequence of GHG emissions on the ocean is deoxygenation¹⁷⁸ Oxygen levels in the ocean have already decreased by around two per cent since the 1950s.¹⁷⁹ Deoxygenation is predominantly the result of increased ocean temperatures: warm water holds less oxygen than cold water, so as the ocean absorbs more heat from the atmosphere, its overall oxygen content decreases.¹⁸⁰

¹⁷¹ See *Migratory Species and Climate Change: Impacts of a Changing Environment on Wild Animals* (United Nations Environment Programme and the Secretariat of the Convention on the Conservation of Migratory Species of Wild Animals, 2006), pp. 4, 27, 34-39, 41-43, available at https://www.ems.int/sites/default/files/document/ScC14_Inf_09_Migratory_Species&Climate_Change_E_0.pdf, last accessed 13 June 2023.

¹⁷² See C. Mackenzie, et al., “Ocean Warming, More than Acidification, Reduces Shell Strength in a Commercial Shellfish Species during Food Limitation”, (*PloS one*, vol. 9, 2014), 1, p. 2, available at <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0086764#:~:text=Data%20from%20the%20maximum%20loading,C%2C%20regardless%20of%20pH%20level>, last accessed 13 June 2023.

¹⁷³ IPCC 2018, *Impacts of 1.5°C Global Warming on Natural and Human Systems, Special Report on Global Warming of 1.5°C*, p. 222.

¹⁷⁴ IPCC 2014, *The Ocean, Impacts, Adaptation, and Vulnerability*, p. 1688.

¹⁷⁵ See D. Obura, et al., “Vulnerability to collapse of coral reef ecosystems in the Western Indian Ocean”, *Nature Sustainability*, vol. 5 (2022), 104, pp. 104-105, available at <https://www.nature.com/articles/s41893-021-00817-0>, last accessed 13 June 2023.

¹⁷⁶ See G. Li, et al., “Increasing ocean stratification over the past half-century”, *Nature Climate Change*, vol. 10 (2020), 1116 (hereafter “Li, Increasing Ocean Stratification”), p. 1122, (**Annex-8**).

¹⁷⁷ Li, Increasing Ocean Stratification, p. 1122.

¹⁷⁸ IPCC 2014, *The Ocean, Impacts, Adaptation, and Vulnerability*, p. 1675.

¹⁷⁹ See International Union for Conservation of Nature, “Ocean deoxygenation”, available at <https://www.iucn.org/resources/issues-brief/ocean-deoxygenation-on-15-May-2023>, last accessed 12 June 2023 (hereafter “IUCN, Ocean Deoxygenation”).

¹⁸⁰ See IUCN, Ocean Deoxygenation. available at <https://www.iucn.org/resources/issues-brief/ocean-deoxygenation-on-15-May-2023>, last accessed 12 June 2023.

110. Decreased oxygen levels have a severe impact on marine life. Fish and other aquatic organisms require oxygen in the water to survive, just as humans and other animals need oxygen to breathe. With insufficient oxygen, aquatic creatures become physically stressed, their reproduction is impaired, growth rates slow, and they become more susceptible to disease and predation.¹⁸¹ If oxygen levels become too low, fish and other marine organisms must shift to increasingly thin surface layers of oxygen-rich areas, disrupting their habits and migratory patterns.¹⁸² Although our understanding of the risks of deoxygenation from 1.5°C to 2.0°C is incomplete, the IPCC concludes it is “virtually certain” that risks from deoxygenation increase as warming continues, *i.e.*, with each incremental rise in temperature.¹⁸³

111. In some instances, when climate-related deoxygenation occurs alongside other drivers,¹⁸⁴ oxygen levels in a particular marine region become so low that marine life cannot survive, leading to mass die-offs and so-called “hypoxic/anoxic environments”, or “dead zones”.¹⁸⁵

5. Rising sea levels

112. As a result of GHG emissions, the global mean sea level is rising, and will continue to do so for decades. Sea levels rose 1.5mm per year from 1901-1990, then accelerated to 3.6mm per year from 2005-2015.¹⁸⁶

113. Sea level rise is caused by two factors related to GHG emissions. *First*, warmer temperatures cause ice sheets, icebergs and mountain glaciers to melt, adding additional fresh

¹⁸¹ See IUCN, Ocean Deoxygenation, available at <https://www.iucn.org/resources/issues-brief/ocean-deoxygenation-on-15-May-2023>, last accessed 12 June 2023 (“Oxygen is necessary to sustain the life of all the fishes and invertebrates”).

¹⁸² See IUCN, Ocean Deoxygenation, available at <https://www.iucn.org/resources/issues-brief/ocean-deoxygenation-on-15-May-2023>, last accessed 12 June 2023 (“Ocean deoxygenation has started to alter the balance of marine life ... Large species such as tuna, marlin, swordfish and sharks are especially sensitive to low ambient oxygen conditions because of their large size and are being forced into increasingly narrow surface layers of oxygen-rich waters”).

¹⁸³ IPCC 2018, Impacts of 1.5°C Global Warming on Natural and Human Systems, *Special Report on Global Warming of 1.5°C*, p. 224.

¹⁸⁴ These other drivers include nutrient pollution, sedimentation, fishing pressure and resource extraction. For example, nutrient pollution, which is the process by which too many nutrients (mainly nitrogen and phosphorus) are added to water bodies through fertilizer run off of land or wildlife waste, can cause the excessive growth of algae and change in plankton community structure. See IPCC 2022, Oceans and Coastal Ecosystems and Their Services, *Impacts, Adaptation and Vulnerability*, p. 448 (“As an example, nutrient pollution from land together with climate change can lead to low-oxygen coastal areas referred to as ‘dead zones’”).

¹⁸⁵ See IPCC 2014, The Ocean, *Impacts, Adaptation, and Vulnerability*, p. 1693 (“Dead zones are persistent hypoxic conditions where the water doesn’t have enough dissolved oxygen to support oxygen-dependent marine species”).

¹⁸⁶ IPCC, 2019: Sea Level Rise and Implications for Low-Lying Islands, Coasts and Communities [Oppenheimer, M., B.C. Glavovic, J. Hinkel, R. van de Wal, A.K. Magnan, A. Abd-Elgawad, R. Cai, M. Cifuentes-Jara, R.M. DeConto, T. Ghosh, J. Hay, F. Isla, B. Marzeion, B. Meyssignac, and Z. Sebesvari]. In: *IPCC Special Report on the Ocean and Cryosphere in a Changing Climate* [H.-O. Pörtner, D.C. Roberts, V. Masson-Delmotte, P. Zhai, M. Tignor, E. Poloczanska, K. Mintenbeck, A. Alegria, M. Nicolai, A. Okem, J. Petzold, B. Rama, N.M. Weyer (eds.)], (hereafter “IPCC 2019, Sea Level Rise and Implications for Low-Lying Islands, Coasts and Communities, *Special Report on the Ocean and Cryosphere in a Changing Climate*”), p. 411, available at https://www.ipcc.ch/site/assets/uploads/sites/3/2022/03/06_SROCC_Ch04_FINAL.pdf, last accessed 15 June 2023.

water to the ocean. *Second*, as the ocean absorbs more heat, it becomes less dense, and physically expands (thermal expansion).¹⁸⁷ Both factors will continue to contribute to sea level rise throughout the 21st century and beyond. Without significant mitigating action, sea level rise is projected to reach 0.3m by 2100,¹⁸⁸ resulting in the disappearance of a wide range of coastlines at an average of 0.07 cm per year.¹⁸⁹

114. Sea level rise will vary regionally, depending on geographic and other factors. The topography of African coastlines, characterised by low-lying, sandy coasts rather than rocky or steep coastlines, makes them especially vulnerable to sea level rise. To illustrate, whereas the projected global average of coastal erosion is 0.07cm per year, for many coastal African countries it is much higher: 15cm per year for the Maghreb region, 27cm for the Libyan coasts, and 64 cm for the Tunisian coasts.¹⁹⁰ The projections for other areas are equally severe – between 13cm (best case scenario) to 56cm (worst projections) for Angola¹⁹¹ and Equatorial Guinea;¹⁹² and up to 86cm in a worst case scenario for Cameroon.¹⁹³

115. The IPCC concludes that global sea level rise is projected to be around 0.1m higher with a warming of 2.0°C compared to 1.5°C; this amounts to around 10 million more people exposed to related risks.¹⁹⁴

116. Finally, rising sea levels, compounded by temperature changes and ocean acidification, cause disruption to the thermohaline circulation system, or “global conveyor belt” – a complex system of ocean currents operating at a global scale to circulate essential nutrients, heat and oxygen around the Earth’s oceans. Among other factors, melting polar ice dilutes sea water and makes it less dense, slowing down the sinking of water at high latitudes (a crucial component of the conveyor belt); and, temperature changes disrupt the

¹⁸⁷ IPCC 2019, Sea Level Rise and Implications for Low-Lying Islands, Coasts and Communities, *Special Report on the Ocean and Cryosphere in a Changing Climate*, p. 326.

¹⁸⁸ IPCC, 2021: Ocean, Cryosphere and Sea Level Change [Fox-Kemper, B., H.T. Hewitt, C. Xiao, G. Aðalgeirsdóttir, S.S. Drijfhout, T.L. Edwards, N.R. Golleger, M. Hemer, R.E. Kopp, G. Krinner, A. Mix, D. Notz, S. Nowicki, I.S. Nurhati, L. Ruiz, J.-B. Sallée, A.B.A. Slangen, and Y. Yu]. In *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)], p. 1216, available at https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Chapter09.pdf, last accessed 15 June 2023, p. 1216.

¹⁸⁹ Heger, M.P., Vashold, L., Disappearing coasts in the Maghreb: Coastal erosion and its costs, World Bank Group, N°4, p. 2, (2021), available at <https://thedocs.worldbank.org/en/doc/8320c30ab5eee11e7ec39f7f9496b936-0280012021/original/Note-Cost-of-Coastal-Erosion-En.pdf>, last accessed 13 June 2023.

¹⁹⁰ Heger, M.P., Vashold, L., Disappearing coasts in the Maghreb: Coastal erosion and its costs, World Bank Group, N°4, p. 6, (2021), <https://thedocs.worldbank.org/en/doc/8320c30ab5eee11e7ec39f7f9496b936-0280012021/original/Note-Cost-of-Coastal-Erosion-En.pdf>

¹⁹¹ UNESCO Technical report on the status of coastal vulnerability in Central African countries, p. 35, available at <https://unesdoc.unesco.org/ark:/48223/pf0000373623>, last accessed 12 June 2023.

¹⁹² UNESCO Technical report on the status of coastal vulnerability in Central African countries, p. 111, available at <https://unesdoc.unesco.org/ark:/48223/pf0000373623>, last accessed 12 June 2023.

¹⁹³ UNESCO Technical report on the status of coastal vulnerability in Central African countries, p. 93, available at <https://unesdoc.unesco.org/ark:/48223/pf0000373623>, last accessed 12 June 2023.

¹⁹⁴ IPCC 2018, Summary for Policymakers, *Special Report on Global Warming of 1.5°C*, p. 7.

upwelling process, which is how the conveyor belt brings nutrient-rich waters to the surface. Disruption to the system can have far-reaching impacts on the well-being of marine life.

C. What are the consequences of climate change on the ocean and marine environment for the people of Africa?

117. The human impact of the consequences of climate change described above are severe and interrelated, and include increased food insecurity, economic disruption, loss and degradation of productive land, damage to important infrastructure and generally worse-off economic development. The African continent is especially vulnerable.¹⁹⁵

118. As explained above, ocean acidification, increased ocean temperatures and deoxygenation has a serious impact on the growth and reproduction of many fish species, with obvious consequences for fisheries and other aquaculture.¹⁹⁶

119. Marine and freshwater fisheries support the livelihoods of 12.3 million people across Africa, and around 200 million Africans receive their primary source of animal protein and key micronutrients from fish and seafood.¹⁹⁷ Climate change is already posing a significant threat to African fisheries and aquaculture; further declining harvests would leave millions with serious nutritional deficiencies and food insecurity.¹⁹⁸ At the same time, African countries are already home to around 795 million people experiencing food insecurity,¹⁹⁹ especially in sub-Saharan Africa,²⁰⁰ Central and East Africa.²⁰¹ The continued decline in the productivity of fisheries and other marine products as a result of climate change will increase the high prevalence of malnutrition on the continent.

¹⁹⁵ Key Findings, *Climate Change and Marine Fisheries in Africa: Assessing Vulnerability and Strengthening Adaptation Capacity*, World Bank (2019), p. 6, available at <https://documents1.worldbank.org/curated/en/280891580715878729/pdf/Climate-Change-and-Marine-Fisheries-in-Africa-Assessing-Vulnerability-and-Strengthening-Adaptation-Capacity.pdf>, last accessed 12 June 2023; African Natural Resources Centre (ANRC), *The Future of Marine Fisheries in the African Blue Economy*, African Development Bank (2022), p. 42, available at <https://www.afdb.org/fr/documents/future-marine-fisheries-african-blue-economy#:~:text=With%20the%20African%20population%20expected,19%20million%20tonnes%20in%202050,> last accessed 12 June 2023.

¹⁹⁶ See “Chapter 1: Climate change and aquatic systems” in *Impacts of climate change on fisheries and aquaculture: Synthesis of current knowledge, adaptation and mitigation options*, FAO Fisheries and Aquaculture technical paper n°627, 2018, available at <https://www.fao.org/3/19705EN/i9705en.pdf>, last accessed 12 June 2023; FAO, *The State of World Fisheries and Aquaculture 2022: Towards Blue Transformation*, p. 201, available at <https://www.fao.org/3/cc0461en/cc0461en.pdf>, last accessed 12 June 2023.

¹⁹⁷ IPCC 2022, Africa, *Impacts, Adaptation and Vulnerability*, p. 1291.

¹⁹⁸ IPCC 2022, Africa, *Impacts, Adaptation and Vulnerability*, p. 1291.

¹⁹⁹ FAO, IFAD, UNICEF, WFP and WHO, “*The State of Food Security and Nutrition in the World 2022. Repurposing food and agricultural policies to make healthy diets more affordable*”, p. 27, available at <https://data.unicef.org/resources/sofi-2022/#:~:text=The%202022%20edition%20of%20The.shocks%2C%20combined%20with%20growing%20inequalities,> last accessed 12 June 2023.

²⁰⁰ OECD/FAO, 2019, *OECD-FAO Agricultural Outlook 2019-2028*, OECD Publishing, Paris/Food and Agriculture Organization of the United Nations, Rome, p. 197, available at <https://www.oecd-ilibrary.org/docserver/b91999c4-en.pdf?expires=1684177249&id=id&accname=guest&checksum=D89F1D5BEFBD9618AD8F4D39AE6D7D8A>, last accessed 12 June 2023.

²⁰¹ IPCC 2022, Africa, *Impacts, Adaptation and Vulnerability*, p. 1379.

120. Catch declines accelerate considerably beyond 1.5°C.²⁰² At 2.0°C global warming, the maximum potential catch from fisheries is estimated to decline by up to 30 per cent in West Africa, the Horn of Africa and the west coast of South Africa.²⁰³ In some countries (Ghana, São Tomé and Príncipe, Liberia, Côte d'Ivoire), catch could reduce by up to 40 per cent.²⁰⁴ Many small-scale and artisanal fisher communities are ill-equipped to adapt to climate impacts because there are few financially viable alternative livelihoods.²⁰⁵

121. Africa's population is particularly vulnerable to the effects of rising sea levels. By 2030, up to 116 million people in Africa will be exposed to sea level rise,²⁰⁶ as Africa's low-lying coastal zone population is expected to grow more than in any other region. A net migration of 750,000 people out of the East African coastal zone alone could occur between 2020 and 2050.²⁰⁷ Migration in West Africa is likely to be still higher, due to the region's dependence on marine ecosystems.²⁰⁸ In some countries in the region, up to 50 per cent of the population currently lives in coastal areas vulnerable to erosion.²⁰⁹ The SIDS of Africa are especially vulnerable to coastal erosion and sea level rise – in some cases this is an existential threat.

122. Coastal erosion also causes damage to important infrastructure, including housing and other buildings; ports; road networks; and infrastructure associated with the production, storage and processing of fisheries products. The economic consequences are enormous: in the Maghreb region, for example, loss of infrastructure and tourism resulting from sea level rise is expected to result in around USD 2 billion in lost income.²¹⁰ An assessment of 12 major African cities predicted adaptation costs from sea level rise of up to USD 6.5 billion.²¹¹

123. Coastal erosion also presents a compounding risk of water access, since it results in saline intrusion through coastal aquifers. Indeed, for Grand Comoros (one of three islands making up Comoros), the only source of drinkable water comes from coastal boreholes threatened by sea level rise.²¹² Lack of water access and malnutrition would multiply the existing health vulnerabilities on the continent, leading to increased disease transmissions and epidemics within the population.²¹³

²⁰² IPCC 2022, Africa, *Impacts, Adaptation and Vulnerability*, p. 1291.

²⁰³ IPCC 2022, Africa, *Impacts, Adaptation and Vulnerability*, p. 1358.

²⁰⁴ IPCC 2022, Africa, *Impacts, Adaptation and Vulnerability*, p. 1358; World Bank, *Climate Change and Marine Fisheries in Africa: Assessing Vulnerability and Strengthening Adaptation Capacity* (2019), p 17.

²⁰⁵ IPCC 2022, Africa, *Impacts, Adaptation and Vulnerability*, p. 1358.

²⁰⁶ IPCC 2022, Africa, *Impacts, Adaptation and Vulnerability* p. 1291.

²⁰⁷ IPCC 2022, Africa, *Impacts, Adaptation and Vulnerability* p. 1367

²⁰⁸ IPCC 2022, Africa, *Impacts, Adaptation and Vulnerability*, p. 1342.

²⁰⁹ UNESCO Technical report on the status of coastal vulnerability in Central African countries, p. 84, , available at <https://unesdoc.unesco.org/ark:/48223/pf0000373623>, last accessed 12 June 2023.

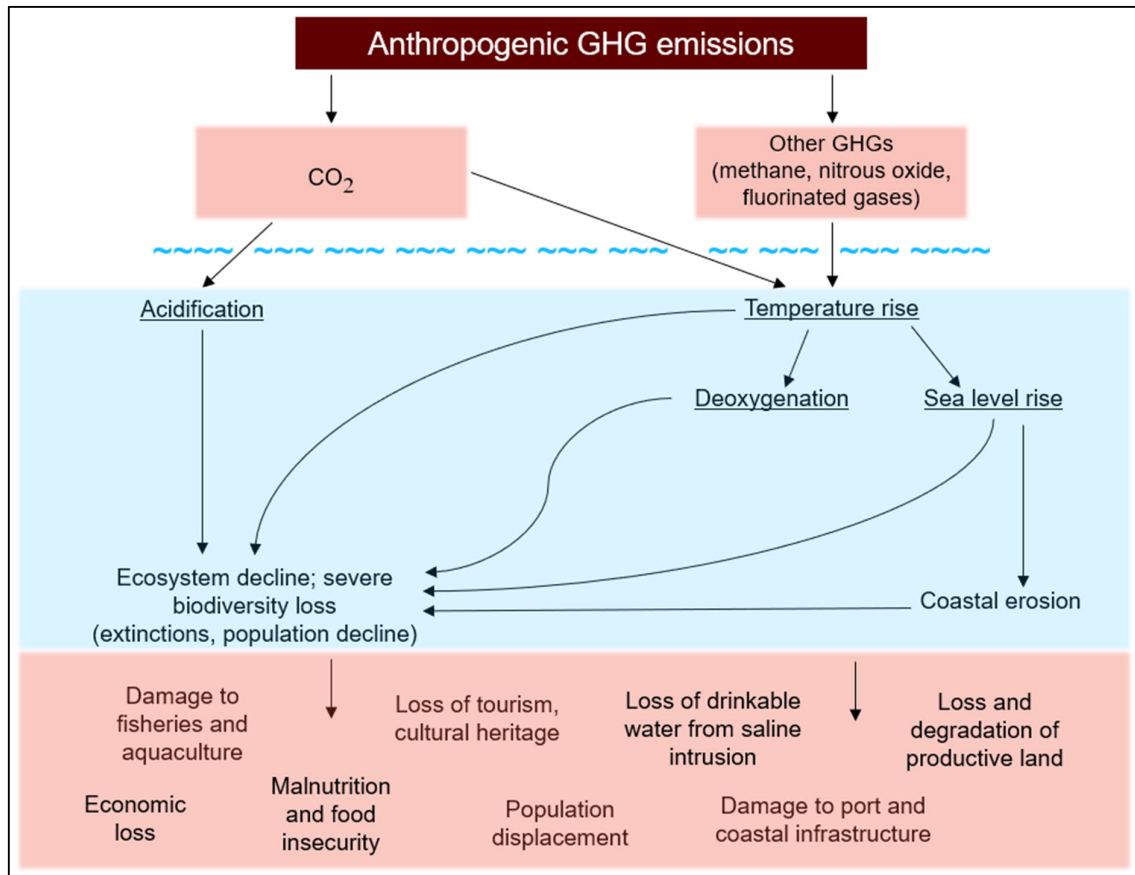
²¹⁰ Heger, M.P., Vashold, L., *Disappearing coasts in the Maghreb: Coastal erosion and its costs*, World Bank Group, N°4 (2021), p. 8, available at <https://www.worldbank.org/en/country/morocco/publication/disappearing-coasts-in-the-maghreb-coastal-erosion-and-its-costs>, last accessed 12 June 2023.

²¹¹ IPCC 2022, Africa, *Impacts, Adaptation and Vulnerability*, p. 1292.

²¹² UNDP, *Ensuring climate resilient water supplies in the Comoros Islands*, available at <https://www.adaptation-undp.org/projects/Comoros-water-GCF>, last accessed 12 June 2023; Global Environment Facility, *Comoros : Adapting Water Resource Management in Comoros to increase capacity to cope with climate change*, 2009, available at https://www.unclearn.org/wp-content/uploads/library/gef56_0.pdf, last accessed 12 June 2023.

²¹³ IPCC 2022, Africa, *Impacts, Adaptation and Vulnerability*, pp. 1372-1380.

Figure 3: Summary of the effects of anthropogenic GHG emissions on marine environment, and its human impact



V. TREATY INTERPRETATION

124. In these proceedings, ITLOS is faced with a request to opine on “the specific obligations of State Parties to the [UNCLOS], including under Part XII”.²¹⁴ The request necessarily calls on ITLOS to interpret provisions of the UNCLOS.²¹⁵ Like any treaty, the UNCLOS must be interpreted in accordance with the customary international law rules of treaty interpretation, codified in Articles 31 and 32 of the Vienna Convention on the Law of Treaties (“VCLT”).²¹⁶ The African Union does not find it necessary to elaborate those rules

²¹⁴ See Request, p. 2.

²¹⁵ See UNCLOS, Article 293(1), which requires ITLOS to “apply this Convention [*i.e.*, UNCLOS] and other rules of international law not incompatible with this Convention”. In French, Article 293(1) reads: « Une cour ou un tribunal ayant compétence en vertu de la présente section applique les dispositions de la Convention et les autres règles du droit international qui ne sont pas incompatibles avec celle-ci. »

²¹⁶ See *Responsibilities and obligations of States sponsoring persons and entities with respect to activities in the Area (Request for Advisory Opinion submitted to the Seabed Disputes Chamber)*, 1 February 2011, ITLOS Reports 2011, p.10, para. 57, available at

https://www.itlos.org/fileadmin/itlos/documents/cases/case_no_17/17_adv_op_010211_en.pdf, last accessed 12 June 2023.

in any detail, since ITLOS has had occasion to apply those rules in past proceedings, and is well-versed in their application.²¹⁷

125. The African Union, however, wishes to comment on one particular aspect of the approach to interpretation and application of treaties. This concerns the need (a) to take into account other, and potentially newer, norms of international law, including other treaties and norms of customary international law while interpreting treaties, and (b) take into account currently available factual information, including scientific information and state of technology, in applying a given treaty.

126. The UNCLOS was signed in 1982, and came into force in 1994. In the decades since, scientific knowledge about climate change has progressed significantly, and international normative framework on climate change has adapted in light of that knowledge. As Judge Padilla Nervo of the ICJ observed in his separate opinion in the *Barcelona Traction* case, “[t]he law, in all its aspects ... change[s], as the world and the everyday requirements of international life change...”.²¹⁸

127. In the African Union’s view, the UNCLOS should not be interpreted as a relic of the past, from 1982 or 1994. The African Union considers that ITLOS must interpret the relevant UNCLOS provisions in light of the development of the international climate change regime. In applying the UNCLOS, the ITLOS should take into account the current state of scientific knowledge on climate change and the current state of technological development.

128. The African Union explains the need to take into account later developments in international law in Section V.A, and the need to take into account the current state of scientific knowledge in Section V.B.

A. The need to take into account recent developments in international law

129. Article 31(3)(c) of the VCLT requires that a treaty interpreter take into account, together with the context of the words, “any relevant rules of international law applicable in the relations between the parties”.²¹⁹ In particular, the international climate change regime – including the UNFCCC, the Paris Agreement, and international customary rules as they apply in the context of climate change – are such other relevant rules, and must be taken into account.

130. The African Union recalls that the ICJ emphasised in the *South West Africa/Namibia* Advisory Opinion that “an international instrument has to be interpreted and applied within the framework of the entire legal system prevailing at the time of the interpretation”.²²⁰ In

²¹⁷ See *Responsibilities and obligations of States sponsoring persons and entities with respect to activities in the Area (Request for Advisory Opinion submitted to the Seabed Disputes Chamber)*, 1 February 2011, ITLOS Reports 2011, p.10, para. 57, available at https://www.itlos.org/fileadmin/itlos/documents/cases/case_no_17/17_adv_op_010211_en.pdf, last accessed 12 June 2023.

²¹⁸ See *Barcelona Traction, Light and Power Company, Limited, Judgment*, ICJ Reports 1970, p. 3, Separate Opinion of Judge Padilla Nervo, p. 248, available at <https://www.icj-cij.org/sites/default/files/case-related/50/050-19700205-JUD-01-08-EN.pdf>, last accessed 12 June 2023.

²¹⁹ See VCLT, Article 31(3)(c).

²²⁰ See *Legal Consequences for States of the Continued Presence of South Africa in Namibia (South West Africa) notwithstanding Security Council Resolution 276 (1970)*, Advisory Opinion, I.C.J. Reports 1971, p. 16,

line with the ICJ's approach in these cases, the *Indus Waters Kishenganga Arbitration* tribunal noted that "principles of international environmental law must be taken into account even when ... interpreting treaties concluded before the development of that body of law".²²¹

131. Of particular relevance to the key UNCLOS provisions at issue is the development of the international climate change regime, including its incorporation of key principles of international environmental law, such as CBD-RC. There are two interpretive pathways through which the international climate change regime can – indeed must – inform the interpretation of the UNCLOS provisions at issue.

132. *First*, Article 31(3)(c) of the Vienna Convention on the Law of Treaties requires that an interpreter take into account, together with the context, "any relevant rules of international law applicable in the relations between the parties".²²² All State Parties to the UNCLOS are also Parties to the UNFCCC and the Paris Agreement, making these instruments rules of international law applicable in relations between and among them. These rules are also "relevant" due to their substantive overlap with the UNCLOS; when dealing with the effects of climate change on the marine environment, States are governed concurrently by the obligations under the UNCLOS and those under the international climate change regime. Thus, the international climate change regime must be taken into account under Article 31(3)(c) of the VCLT as "relevant rules of international law applicable in the relations between the parties".

133. *Second*, there are clear expressions within the UNCLOS itself demonstrating that the treaty was intended to operate coherently with other rules of international law. A number of UNCLOS provisions foresee the creation of other rules of international law; *and* require State Parties to cooperate in creating and implementing such rules.

134. Article 197, for example, provides that "States shall cooperate on a global basis ... directly or through competent international organisations, in formulating and elaborating international rules, standards and practices and procedures ... for the protection and preservation of the marine environment".²²³ Articles 212(3) and 222 both contain further obligations to implement cooperatively-developed rules.²²⁴ Further, Article 293 of the UNCLOS requires ITLOS to apply not only the UNCLOS, but also "other rules of international law not incompatible with" it.²²⁵

135. Thus, the UNCLOS State Parties demonstrated a strong preference for the UNCLOS to operate coherently with the broader framework of international law as it evolved. To achieve this coherence, State Parties need to cooperate in good faith in the pursuit of their

p. 19-53., available at <https://www.icj-cij.org/sites/default/files/case-related/53/053-19710621-ADV-01-00-EN.pdf>, last accessed 12 June 2023.

²²¹ See *In the matter of the Indus Waters Kishenganga Arbitration (Pakistan v India)*, *Partial Award of 18 February 2013*, ICGJ 476 (PCA 2013), 18 February 2013, para. 452, available at <https://pcacases.com/web/sendAttach/1681>, last accessed 13 June 2023.

²²² See VCLT, Article 31(3)(c).

²²³ See UNCLOS, Article 197.

²²⁴ See UNCLOS, Articles 212(3) and 222.

²²⁵ See UNCLOS, Article 293(1). In French, Article 293(1) reads: « Une cour ou un tribunal ayant compétence en vertu de la présente section applique les dispositions de la Convention et les autres règles du droit international qui ne sont pas incompatibles avec celle-ci. »

concurrent obligations under the UNCLOS and the international climate change regime.²²⁶ As the ICJ has emphasised, “[t]rust and confidence are inherent in international co-operation”.²²⁷ Thus, in making their sovereign choices, and in approaching negotiations on international instruments for the protection and preservation of the marine environment, States must conduct themselves in a manner that instils trust and confidence in each other.²²⁸

136. Consistent with this need for “trust and confidence”, where international rules come into existence as a result of cooperative efforts – as they have under the international climate change regime²²⁹ – States have an obligation to abide by them. Conduct contrary to those international rules, or otherwise undermining them (and thereby undermining “trust and confidence” in the collaborative effort), would itself be contrary to the obligation in Article 197 to cooperate in good faith.²³⁰

137. An element of the international climate change regime that bears particular importance for the interpretation of the provisions at issue is the principle of CBDR-RC, which “fundamentally shaped” the regime from the beginning.²³¹

138. CBDR-RC is a cornerstone principle of international environmental law, applying beyond the context of climate change.²³² The concept is based on the long-standing

²²⁶ M.H. Nordquist (ed.), “*United Nations Convention on the Law of the Sea*”, *op.cit.*, para. 197.1, (**Annex-9**).

²²⁷ *Nuclear Tests (Australia v. France)*, *Judgment*, *I.C.J. Reports 1974*, p. 253, para. 46, available at <https://www.icj-cij.org/sites/default/files/case-related/58/058-19741220-JUD-01-00-EN.pdf>, last accessed 13 June 2023.

²²⁸ See, *Pulp Mills on the River Uruguay (Argentina v Uruguay)*, *Judgment*, *I.C.J. Reports 2010*, p. 14, para. 145, available at <https://www.icj-cij.org/sites/default/files/case-related/135/135-20100420-JUD-01-00-EN.pdf>, last accessed 13 June 2023.

²²⁹ There are a number of textual references establishing a link between the international climate change regime, on the one hand, and the UNCLOS, on the other. For example: the *twelfth preambular paragraph* of the UNFCCC refers to a UN General Assembly resolution on “the adverse effects of sea level rise on islands and coastal areas”, and the *fourth preambular paragraph* acknowledges “the role and importance in terrestrial and marine ecosystems of sinks and reservoirs of greenhouse gases”; Article 3(3) refers to “all relevant sources, sinks and reservoirs of greenhouse gases”, encompassing, necessarily, the oceans; Article 4(1)(d) explicitly confirms that “all relevant sources” includes “oceans as well as other terrestrial, coastal and marine ecosystems”. Similarly, the *thirteenth preambular paragraph* to the Paris Agreement refers to “all ecosystems, including oceans”. These provisions suggest that the State Parties to the UNCLOS were intending to discharge their obligation to cooperate in the formation of global rules to protect and preserve the marine environment.

²³⁰ United Nations Conference on the Human Environment, Declaration of the United Nations Conference on the Human Environment, adopted on 16 June 1972, U.N. Doc. A/CONF.48/14/Rev.1 (hereafter “Stockholm Declaration”), principles 11-12, available at <https://wedocs.unep.org/bitstream/handle/20.500.11822/29567/ELGP1StockD.pdf>, last accessed 13 June 2023.

²³¹ See UNFCCC, Article 3 (“Principles”), paragraph 1 (“the Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities”). See also UNFCCC, sixth preambular recital (“Acknowledging that the global nature of climate change calls for the widest possible cooperation by all countries ... in accordance with their common but differentiated responsibilities and respective capabilities and their social and economic conditions”).

²³² Philippe Cullet, “Differentiation” in Lavanya Rajamani, Jacqueline Peel (eds), *The Oxford Handbook of International Environmental Law*, 2nd ed. (Oxford University Press, 2021), p. 319, (**Annex-10**).

international law principle of “equity”; and the term “CBDR” first appeared in Principle 7 of the 1992 *Rio Declaration on the Environment* (“**Rio Declaration**”), which provides that:²³³

In view of the different contributions to global environmental degradation, States have a common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of technologies and financial resources they command.

139. On the one hand, CBDR-RC stands for global solidarity, recognising that *all States* – big and small, developing and developed – have a degree of responsibility to address environmental problems. On the other hand, CBDR-RC recognises that developed countries have made a larger historical contribution to global environmental problems, through their own process of industrialisation. Further, this very same process of industrialisation has bestowed on developed countries far greater financial and technological resources to enable them to address global environmental problems.

140. Article 3(1) of the UNFCCC includes CBDR-RC in the first of the Convention’s “principles”:

The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof.²³⁴

141. The Paris Agreement is similarly “fundamentally shaped” by CBDR-RC.²³⁵ The Parties agreed to an overarching commitment that:

- “This Agreement will be implemented to reflect equity and the principle of common but differentiated responsibilities and respective capabilities, in the light of different national circumstances” (Article 2.2)

142. Further, differentiation between States in addressing the burdens of climate change is threaded throughout the Agreement, including (but not limited to):

²³³ See Rio Declaration, Principle 7, available at https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_CONF.151_26_Vol.I_Declaration.pdf, last accessed 15 June 2023.

²³⁴ See UNFCCC, Article 3.1.

²³⁵ Lavanya Rajamani and Jacob Werksman, “Climate Change”, in Lavanya Rajamani, Jacqueline Peel (eds), *The Oxford Handbook of International Environmental Law*, 2nd ed. (Oxford University Press, 2021), p. 498, (Annex-4).

- “The efforts of all Parties will represent a progression over time, while recognizing the need to support developing country Parties for effective implementation of this Agreement” (Article 3);
- “In order to achieve the long-term temperature goal set out in Article 2, Parties aim to reach a global peaking of greenhouse gas emissions as soon as possible, recognizing that peaking will take longer for developing country Parties, and to undertake rapid reductions thereafter ... on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty” (Article 4.1);
- “Each Party’s successive nationally determined contribution will represent a progression ... reflecting its common but differentiated responsibilities and respective capabilities, in the light of different national circumstances” (Article 4.3);
- “Developed country Parties should continue taking the lead by undertaking economy-wide absolute emissions targets. Developing country Parties should continue enhancing their mitigation efforts, and are encouraged to move over time towards economy-wide emission reduction or limitation targets in light of the different national circumstances” (Article 4.4);
- “Support shall be provided to developing country Parties ... recognizing that enhanced support for developing country Parties will allow for higher ambition in their actions” (Article 4.5).

143. For the reasons the African Union explains above, ITLOS must interpret the UNCLOS in light of the international climate change regime, and the broader framework of international law, as they stand today. This includes the principle of CBDR-RC as it is expressly incorporated into the climate change regime.

B. The need to take into account current state of scientific knowledge

144. These proceedings address the obligations of the UNCLOS State Parties to “protect and preserve the marine environment”, and to “prevent, reduce and control pollution of the marine environment”.²³⁶ These obligations are necessarily of a continuing and evolving nature, and the steps that State Parties must take to comply with them depends on the circumstances at any given time, including scientific knowledge. What measures are capable of – or necessary for – protecting and preserving the marine environment, or for preventing, reducing and controlling pollution of the marine environment is a question that can be answered only in light of scientific evidence.

145. The African Union recalls the judgment of the ICJ in the *Gabčíkovo-Nagymaros* case, where, in interpreting a treaty between Hungary and Czechoslovakia, the ICJ held that the

²³⁶ See Request, p. 2. See also UNCLOS, Articles 192, 194. The authentic text of Article 192 in French reads: “Les Etats ont l’obligation de protéger et de préserver le milieu marin.” Article 194(1) in French reads : « Les Etats prennent, séparément ou conjointement selon qu’il convient, toutes les mesures compatibles avec la Convention qui sont nécessaires pour prévenir, réduire et maîtriser la pollution du milieu marin, quelle qu’en soit la source ; ils mettent en œuvre à cette fin les moyens les mieux adaptés dont ils disposent, en fonction de leurs capacités, et ils s’efforcent d’harmoniser leurs politiques à cet égard. »

treaty imposed on the parties “a continuing – and thus necessarily evolving – obligation” to maintain the quality of water (of the Danube in this case specifically) and to protect nature.²³⁷ The ICJ further held that the “continuing and thus necessarily evolving” nature of the obligation meant that, in dealing with environmental risks, “current standards must be taken into account”.²³⁸

146. The African Union considers such an evolutionary approach to be equally appropriate in the present proceedings. Like the instruments under consideration in *Gabčíkovo-Nagymaros* and *South West Africa/Namibia*, the UNCLOS similarly imposes obligations of a “a continuing - and thus necessarily evolving” nature, especially in respect of protection of the marine environment. Those obligations are not frozen in time as of 1982 or 1994, but evolve with the evolution of scientific and factual knowledge.

VI. QUESTION 1 – SPECIFIC OBLIGATIONS TO PREVENT, REDUCE AND CONTROL POLLUTION OF THE MARINE ENVIRONMENT

A. Introduction

147. This Section sets out the African Union’s views on the question under paragraph (a) presented in the Request (“**Question 1**”):

What are the specific obligations of State Parties to the United Nations Convention on the Law of the Sea (the “UNCLOS”), including under Part XII:

(a) to prevent reduce and control pollution of the marine environment in relation to the deleterious effects that result or are likely to result from climate change, including through ocean warming and sea level rise, and ocean acidification, which are caused by anthropogenic greenhouse gas emissions into the atmosphere?²³⁹

148. Article 194(1) of the UNCLOS reads as follows:

States shall take, individually or jointly as appropriate, all measures consistent with this Convention that are necessary to prevent, reduce and control pollution of the marine environment from any source, using for this purpose the best practicable means at their disposal and in accordance with their capabilities,

²³⁷ See *Gabčíkovo-Nagymaros Project (Hungary/Slovakia)*, Judgment, I.C.J. Reports 1997, p. 7, available at <https://www.icj-cij.org/sites/default/files/case-related/92/092-19970925-JUD-01-00-EN.pdf>, last accessed 13 June 2023.

²³⁸ *Gabčíkovo-Nagymaros Project (Hungary/Slovakia)*, Judgment, I.C.J. Reports 1997, p. 7, p. 7, para. 140, available at <https://www.icj-cij.org/sites/default/files/case-related/92/092-19970925-JUD-01-00-EN.pdf>, last accessed 13 June 2023.

²³⁹ Request, p. 2 (emphasis added).

and they shall endeavour to harmonize their policies in this connection.²⁴⁰

149. The language of Question 1 tracks the terms of Article 194(1). Question 1 is, therefore, directed at identifying the specific obligations that arise under Article 194(1) in the context of climate change. In particular, what specific obligations arise, in that context, from the requirement in Article 194(1), in sum, to “*take all measures ... that are necessary to prevent, reduce and control pollution of the marine environment*”?

150. In this Section, the African Union begins by explaining the applicable legal standard under Article 194(1), as informed by contextual provisions of the UNCLOS (Section VI.B). The African Union then addresses how the legal standard applies in the specific context of climate change (Section VI.C).

B. Legal standard under Article 194(1)

151. There are a number of key elements of the legal standard to address under Article 194(1). *First*, the meaning of the terms “pollution of the marine environment”; *second*, the terms “prevent, reduce and control” in Article 194(1); *third* the terms “shall take ... all measures consistent with this Convention that are necessary to”; *fourth* the terms “individually or jointly as appropriate” and “endeavour to harmonise”; and *fifth* the terms “best practical means at their disposal and in accordance with their capabilities”. The African Union addresses each in turn.

1. “Pollution of the marine environment from any source”

152. The terms “pollution of the marine environment” are defined in Article 1(4) of the UNCLOS as:²⁴¹

“[...] the *introduction* by man, directly or indirectly, of *substances or energy into the marine environment*, including estuaries, which results or is likely to result in such *deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities*”

153. For something to qualify as “pollution of the marine environment”, the following conditions must be fulfilled: “**substances or energy**” must be “**introduced by man into**” the “**marine environment**”; the introduction must be attributable to “**man**” (*i.e.*, humankind), “**directly or indirectly**”; the introduction of the substance or energy into the marine environment must have “**deleterious effects**” for the marine environment, including – but not limited to – those listed.

²⁴⁰ Emphasis added.

²⁴¹ UNCLOS, Article 1(4)(emphases added). In French: « [...] L’introduction directe ou indirecte, par l’homme, de substances ou d’énergie dans le milieu marin, y compris les estuaires, lorsqu’elle a ou peut avoir des effets nuisibles tels que dommages aux ressources biologiques et à la faune et la flore marines, risques pour la santé de l’homme, entrave aux activités maritimes, y compris la pêche et les autres utilisations légitimes de la mer, altération de la qualité de l’eau de mer du point de vue de son utilisation et dégradation des valeurs d’agrément »

154. The terms “**substances or energy**” cover a broad scope: the ordinary meaning of “substance” is “[a]ny particular kind of matter with uniform properties”; and “[a] kind of matter of a definite chemical composition, as a compound or element”.²⁴² The ordinary meaning of the term “energy” includes “[t]he potential or capacity of a body or system to do work ... by virtue of its motion, position, chemical structure, etc., frequently regarded as a quantifiable attribute or property which can be acquired, transferred, and expended”.²⁴³ Among the well-recognised forms of energy is thermal energy. As a matter of physics, the temperature of a body increases when additional thermal energy is introduced into it. In fact, heat is the flow of thermal energy.²⁴⁴

155. The term “**introduced**”, when used with “**into**”, means “to lead or bring in a person or thing into a place”, “or into the inside or midst or something”.²⁴⁵ Under the treaty text, the introduction must be “by man”, *i.e.*, anthropogenic. Here, the relevant “thing” is a “substance” or “energy”, and the relevant “place” is the “**marine environment**”. The noun “environment” refers to the “natural world or physical surroundings in general...”.²⁴⁶ The adjective “marine”, qualifying the noun “environment”, specifies that the relevant environment is “[o]f, relating to, or characteristic of the sea; ...”.²⁴⁷ The words “marine environment” are cast in general terms, thereby referring to the “marine environment” as a whole and in its entirety.²⁴⁸

156. In referring broadly to the “marine environment”, the obligation in Article 194(1) also requires State Parties to use all means at their disposal to address pollution in the high seas, which are in principle outside of State Parties’ national jurisdiction.

157. The obligation in Article 194(1) is developed further in Article 194(2), which requires that, where a State Party has jurisdiction or control over a particular activity under international law, the State Party must exercise that jurisdiction or control to “ensure” two things – first, the activities are conducted such that they do not “cause damage by pollution to other State and their environment”; and second, that “pollution” itself does not “spread beyond the areas where

²⁴² See Oxford English Dictionary, Definition of “*substance, n.*”, available at <https://www.oed.com/view/Entry/193042?redirectedFrom=substance#eid>, last accessed 3 May 2023.

²⁴³ See Oxford English Dictionary, Definition of “*energy, n.*”, available at <https://www.oed.com/view/Entry/62088?redirectedFrom=energy#eid>, last accessed 3 May 2023.

²⁴⁴ Khan Academy, “What is Thermal Energy?”, available at <https://www.khanacademy.org/science/physics/work-and-energy/work-and-energy-tutorial/a/what-is-thermal-energy>, last accessed 3 May 2023.

²⁴⁵ See Oxford English Dictionary, Definition of “*introduce, v.*”, available at <https://www.oed.com/view/Entry/98707?redirectedFrom=introduced#eid157725>, last accessed 15 June 2023.

²⁴⁶ Oxford English Dictionary, Definition of “*environment, n.*”, available at <https://www.oed.com/view/Entry/63089?redirectedFrom=environment#eid>, last accessed 13 June 2023.

²⁴⁷ Oxford English Dictionary, Definition of “*marine, n. and adj.*”, available at <https://www.oed.com/view/Entry/114122?rskey=GxSLyV&result=1&isAdvanced=false#eid>

²⁴⁸ See *South China Sea Arbitration (Philippines v China)*, Award of 12 July 2016, PCA Case No 2013-19, ICGJ 495 (PCA 2016), para. 940: “the Tribunal notes that the obligations in Part XII apply to all States with respect to the marine environment in all maritime areas, both inside the national jurisdiction of States and beyond it”, available at <https://pcacases.com/web/sendAttach/2086>, last accessed 13 June 2023; *Southern Bluefin Tuna (New Zealand v. Japan; Australia v. Japan)*, Provisional Measures, Order of 27 August 1999, ITLOS Reports 1999, p. 280, List of cases No. 3 and 4, §60, available at https://www.itlos.org/fileadmin/itlos/documents/cases/case_no_3_4/published/C34-O-27_aug_99.pdf, last accessed 13 June 2023 (finding that the marine environment includes living resources).

they exercise sovereign rights in accordance with this Convention”.²⁴⁹ Article 194 thus expands on the classic approach to the harm prevention principle under international environment law, which requires States to address pollution caused to *other States* and their environments (rather than areas outside any State’s jurisdiction).²⁵⁰

158. To constitute “pollution”, the relevant “substance” or “energy” must cause **deleterious effects**, including, but not limited to, those listed in Article 194. In other words, there must be some kind of damage or harm resulting from man’s introduction of the substance or energy into the marine environment. The listed effects are broadly defined in Article 1(4), covering any harm to living resources and life, human health, and marine activities, including use of marine resources (fishing) and marine infrastructure (amenities).²⁵¹

159. Unlike prior treaties which addressed pollution of specific kinds or from specific sources,²⁵² the obligation in Article 194(1) applies to pollution of the marine environment “from any source”, and without limitations as to the nature of the pollutant.²⁵³ This is confirmed in Article 194(3), which provides that measures taken pursuant to Article 194 shall “deal with *all sources of pollution* of the marine environment”. Article 194(3) also sets out a (non-exhaustive) list of types of pollution addressed under Article 194, and refers specifically to “the release of toxic, harmful or noxious substances ... *from or through the atmosphere*”.²⁵⁴

²⁴⁹ UNCLOS, Article 194(2). In French, Article 194(2) reads: Les Etats prennent toutes les mesures nécessaires pour que les activités relevant de leur juridiction ou de leur contrôle le soient de manière à ne pas causer de préjudice par pollution à d'autres Etats et à leur environnement et pour que la pollution résultant d'incidents ou d'activités relevant de leur juridiction ou de leur contrôle ne s'étende pas au-delà des zones où ils exercent des droits souverains conformément à la Convention.”

²⁵⁰ In this respect, Article 194(2) draws on Principle 21 of the Stockholm Declaration; A. Proelss (ed.), *United Nations Convention on the Law of the Sea, op.cit.*, para. 194.20, available at https://www.persee.fr/doc/afdi_0066-3085_2017_num_63_1_5421_t49_0896_0000_2, last accessed 13 June 2023. On the harm prevention principle, *Trail smelter case (United States, Canada), Award of 16 April 1938 and 11 March 1941*, 3 U.N.R.I.A.A. 1905, available at https://legal.un.org/riaa/cases/vol_III/1905-1982.pdf, last accessed 13 June 2023; *Corfu Channel (United Kingdom v. Albania), Judgment of 9 April 1949, I.C.J. Reports 1949*, p. 4, last accessed 13 June 2023, p. 22; *Pulp Mills on the River Uruguay (Argentina v Uruguay), Judgment, I.C.J. Reports 2010*, p. 14, para. 101; ICJ, *Legality of the Threat or the Use of Nuclear Weapons*, Advisory Opinion of 8 July 1996, para. 29 and 101, available at <https://www.icj-cij.org/sites/default/files/case-related/95/095-19960708-ADV-01-00-EN.pdf>, last accessed 13 June 2023; M.H. Nordquist (ed.), “*United Nations Convention on the Law of the Sea, op.cit.*”, para. 194.10(e), (**Annex-11**); *Nuclear Tests (Australia v. France), Judgment, I.C.J. Reports 1974*, p. 253, p. 253, available at <https://www.icj-cij.org/sites/default/files/case-related/58/058-19741220-JUD-01-00-EN.pdf>, last accessed 13 June 2023.

²⁵¹ UNCLOS, Article 1(4).

²⁵² See for example *Convention on the High Seas*, Geneva, 29 April 1958, Articles 24 and 25, available at https://www.gc.noaa.gov/documents/8_1_1958_high_seas.pdf, last accessed 13 June 2023; *Convention on the Continental Shelf*, 29 April 1958, Geneva, Article 5(7), available at https://legal.un.org/ilc/texts/instruments/english/conventions/8_1_1958_continental_shelf.pdf, last accessed 13 June 2023. See also M.H. Nordquist (ed.), *United Nations Convention on the Law of the Sea, op.cit.*, para. 194.1, (**Annex-11**).

²⁵³ A. Proelss (ed.), *United Nations Convention on the Law of the Sea: A Commentary*, C.H. Beck/Hart/Nomos, Munich, Oxford and Baden-Baden, 2017, pp. 1303-1304, (**Annex-12**). See also M.H. Nordquist (ed.), *United Nations Convention on the Law of the Sea, op.cit.*, para. 194.34, (**Annex-11**).

²⁵⁴ UNCLOS, Article 194(3).

See also UNCLOS, Articles 212 and 222.

2. “Prevent, reduce and control”

160. Article 194(1) imposes obligations on how State Parties must respond to pollution of the marine environment: they must take measures to *prevent, reduce and control* it.

161. The ordinary meaning of the term “**prevent**” is: “[t]o preclude, stop, or hinder”, and “[t]o preclude the occurrence of (an anticipated event, state, etc.); to render (an intended, possible, or likely action or event) impractical or impossible by anticipatory action; to put a stop to”.²⁵⁵ That is, “prevent[ing]” pollution of the marine environment involves “put[ting] a stop to” ongoing pollution, and “preclud[ing]” further pollution.

162. The ordinary meaning of the term “**reduce**” is: “[t]o bring down or diminish to [...] a smaller number, amount, quantity, extent, etc.[...]”.²⁵⁶ The subject of the verb “reduce” is the “pollution” in the marine environment. Thus, under this obligation, a State Party’s action must be directed towards diminishing the quantity of that “pollution”. In a situation where there is already an accumulated quantity of a persistent form of pollution in the marine environment, this obligation calls for action to diminish that quantity of pollution. If a persistent form of pollution of the marine environment continues to accumulate in the marine environment, even at a slower rate, the cumulative level of pollution of the marine environment grows, rather than reduces.

163. Finally, the term “**control**” means “[t]o restrain from action, hold in check; (in later use) esp. to curb the growth or spread of”; and “regulating and directing”; “management”.²⁵⁷ That is, State Parties are required to manage, hold in check, curb the growth of pollution of the marine environment. Importantly, action by State Parties to manage the rate of accumulation of a persistent form of pollution of the marine environment, while not meeting the requirement to “prevent” or “reduce” that pollution, could qualify as “controlling” pollution.

164. These readings of the verbs “prevent”, “reduce” and “control” in Article 194(1) are supported by the context afforded by Article 194(3)(a), which singles out for special attention the release of harmful substances “which are persistent”.²⁵⁸ It is precisely the “persistent” nature of certain kinds of pollution that necessitates action to address it.

165. The three verbs in Article 194(1) are connected by the conjunction “and”,²⁵⁹ confirming that each has a distinct meaning, and the obligations in the provision are cumulative. There may be instances where the circumstances demand performance of only one type of action: if, for example, State Parties successfully “prevent” a particular type of pollution from arising in the first place, there is no need also to “reduce” and “control” that form of pollution. However,

²⁵⁵ Oxford English Dictionary, Definition of “*prevent, v.*”, available at <https://www.oed.com/view/Entry/151073?rskey=L80Vys&result=2&isAdvanced=false#eid>, last accessed 13 June 2023. See also M.H. Nordquist (ed.), *United Nations Convention on the Law of the Sea, A Commentary*, Dordrecht, Martinus Nijhoff, 1985, 194.10(b), (**Annex-11**).

²⁵⁶ Oxford English Dictionary, Definition of “*reduce, v.*”, available at <https://www.oed.com/view/Entry/160503?rskey=pxR8Yd&result=2&isAdvanced=false#eid>, last accessed 13 June 2023.

²⁵⁷ Oxford English Dictionary, Definition of “*control, v.*”, available at <https://www.oed.com/view/Entry/40563?rskey=ZoZAIi&result=2&isAdvanced=false#eid>, last accessed 13 June 2023.

²⁵⁸ See UNCLOS, Article 194(3).

²⁵⁹ See UNCLOS, Article 194(1).

other circumstances may engage all three verbs, for example where marine pollution has already occurred and is continuing to accumulate in the marine environment. In such a case, State Parties could not discharge their obligations under Article 194(1) to “prevent” and “reduce” pollution of the marine environment merely by “controlling” the rate at which the pollution continues to increase.

3. “Shall take ... all measures consistent with this Convention that are necessary to...”

166. With respect to the need to “prevent, reduce and control” pollution of the marine environment, State Parties are called upon under Article 194(1) to take particular measures. Specifically, State Parties must take “all measures ... necessary” to prevent, reduce and control the pollution of the marine environment, with the additional qualification that such measures must be otherwise “consistent with [the] Convention”. Thus, these terms cast a positive obligation on State Parties to take certain actions.

167. To begin, the terms “**all**” and “**necessary**” define the universe of measures that State Parties must adopt in order to discharge their obligations under Article 194(1). The term “necessary” means “indispensable, vital, essential”.²⁶⁰ Thus, Article 194(1) identifies a problem (pollution of the marine environment); identifies what end should be achieved with respect to that problem (prevent, reduce and control); and then provides that State Parties must take *all measures* which are indispensable, vital, and essential for achieving that end.

168. As part of the obligation in Article 194(1), therefore, State Parties must identify the universe of measures that are needed to achieve the required end. Whether a set of measures is “necessary” is “normally determined by means of scientific criteria”, or “advice”, including from international bodies as appropriate to the particular issue.²⁶¹ Where it is confirmed – for example, through a global scientific consensus – that a given set of measures is the only available means of preventing, reducing and controlling a particular type of marine pollution, those measures are evidently “necessary” and, State Parties must adopt all of those measures.

169. In this regard, Article 194(1) does not impose an obligation of *result* on State Parties; in other words, State Parties do not necessarily violate Article 194(1) where the measures they adopt do not fully achieve the prevention, reduction or control of pollution. Instead, the terms “take ... all measures necessary” are understood to establish an obligation of conduct, or, a “due diligence obligation”.²⁶²

²⁶⁰ Oxford English Dictionary, Definition of “*necessary, adj. and ..*”, available at (Oxford University Press 2023), <https://www.oed.com/view/Entry/125629?redirectedFrom=necessary#eid>, last accessed 13 June 2023.

²⁶¹ A. Proelss (ed.), “*United Nations Convention on the Law of the Sea: A Commentary*”, (C.H. Beck/Hart/Nomos, Munich, Oxford and Baden-Baden, 2017), p. 1303, (**Annex-12**).

²⁶² I. Papanicolopulu, “Due Diligence in the Law of the Sea”, in H. Krieger, A. Peters, L. Kreuzer (eds.), *Due Diligence in the International Legal Order*, Oxford, OUP, 2020, 147-162, p.151-152 (**Annex 16**);

Responsibilities and obligations of States sponsoring persons and entities with respect to activities in the Area, para. 129

https://www.itlos.org/fileadmin/itlos/documents/cases/case_no.21/advisory_opinion_published/2015_21-advop-E.pdf, last accessed 13 June 2023; Responsibilities and obligations of States sponsoring persons and entities

with respect to activities in the Area (Request for Advisory Opinion submitted to the Seabed Disputes Chamber), 1 February 2011, ITLOS Reports 2011, paras 110-113, available at

170. In general terms, a due diligence obligation requires States to employ “all the means at its disposal” in order to prevent harm, in this case, to the marine environment.²⁶³ In a similar vein, a due diligence obligation requires States “to deploy adequate means, to exercise best possible efforts, to do the utmost”.²⁶⁴

171. The conduct that is required to meet the due diligence obligation under Article 194(1) is not, however, fixed in time and space. A particular set of actions may involve “best possible efforts”, and the deployment of all means, at one moment in time, but not at a later moment in time. To that end, the Seabed Disputes Chamber has clarified that “[d]ue diligence is a variable concept”.²⁶⁵ The concept varies in at least three inter-related ways:

- First, the level of diligence required varies depending on the level of the threat to the marine environment: the greater the threat, the greater the required level of diligence. As the Seabed Disputes Chamber said, “[t]he standard of due diligence has to be more severe for the riskier activities”.²⁶⁶
- Second, the level of diligence varies as knowledge regarding a particular risk changes (through scientific research): for example, additional knowledge may highlight that a risk is lesser or a greater than previously understood (in terms of likelihood of materializing or the severity of the consequences if the risk materialises); or it may reveal some previously unknown new dimension of the risk.
- Third, the level of diligence required may also vary as technological knowledge changes (again, through research): for example, new technologies may present more effective and accessible means to address a particular risk.

172. As a result of this variability, the Seabed Disputes Chamber explained that conduct “considered sufficiently diligent at a certain moment may become not diligent enough” as circumstances evolve.²⁶⁷

https://www.itlos.org/fileadmin/itlos/documents/cases/case_no_17/17_adv_op_010211_en.pdf, last accessed 12 June 2023.

²⁶³ *Application of the Convention on the Prevention and Punishment of the Crime of Genocide (Bosnia and Herzegovina v. Serbia and Montenegro)*, Judgment, ICJ Reports 2007, p. 43, available at para. 430, available at <https://www.icj-cij.org/sites/default/files/case-related/155/155-20220421-JUD-01-00-EN.pdf>, last accessed 13 June 2023.

²⁶⁴ ITLOS, SRFC Advisory Opinion, para. 129, , citing to the *See Responsibilities and obligations of States sponsoring persons and entities with respect to activities in the Area (Request for Advisory Opinion submitted to the Seabed Disputes Chamber)*, 1 February 2011, ITLOS Reports 2011, para. 110, available at https://www.itlos.org/fileadmin/itlos/documents/cases/case_no_17/17_adv_op_010211_en.pdf.

²⁶⁵ *See Responsibilities and obligations of States sponsoring persons and entities with respect to activities in the Area (Request for Advisory Opinion submitted to the Seabed Disputes Chamber)*, 1 February 2011, ITLOS Reports 2011, para. 117, available at https://www.itlos.org/fileadmin/itlos/documents/cases/case_no_17/17_adv_op_010211_en.pdf.

²⁶⁶ *See Responsibilities and obligations of States sponsoring persons and entities with respect to activities in the Area (Request for Advisory Opinion submitted to the Seabed Disputes Chamber)*, 1 February 2011, ITLOS Reports 2011, para. 117 available at https://www.itlos.org/fileadmin/itlos/documents/cases/case_no_17/17_adv_op_010211_en.pdf.

²⁶⁷ *See Responsibilities and obligations of States sponsoring persons and entities with respect to activities in the Area (Request for Advisory Opinion submitted to the Seabed Disputes Chamber)*, 1 February 2011, ITLOS Reports 2011, para. 117, available at

173. Article 194(1) expresses the due diligence character of the obligation through terms “the best practicable means at their disposal and in accordance with their capabilities.”²⁶⁸ In other words, State Parties must make “utmost” efforts, taking into account the best practical means available, and their own capabilities.

174. According to case law, a due diligence obligation “entails not only the adoption of appropriate rules and measures, but also a certain level of vigilance in their enforcement and the exercise of administrative control applicable to public and private operators, such as the monitoring of activities”.²⁶⁹ In addition to adopting laws and regulations,²⁷⁰ State Parties may discharge due diligence obligations through taking administrative measures,²⁷¹ conducting law enforcement operations,²⁷² investigating alleged violations;²⁷³ creating monitoring mechanisms;²⁷⁴ imposing sanctions in case of violation; or indeed any other necessary measure.²⁷⁵

175. Finally, any action taken pursuant to the obligation in Article 194(1) must also be consistent with the UNCLOS. For instance, coastal State Parties cannot take measures under Article 194(1) which impede innocent passage, transit passage and archipelagic sea-lanes passage.

4. “Individually or jointly as appropriate” and “shall endeavour to harmonise”

176. In adopting the measures required under Article 194(1), State Parties may act “individually or jointly as appropriate”.²⁷⁶ State Parties may, therefore, take individual measures, or they may take joint measures which are achieved through cooperative efforts.

177. Whether a problem warrants individual or joint action should be decided “as appropriate” with respect to the problem at hand: sometimes, individual action is sufficient; at other times, cooperation may be needed. Even if State Parties act jointly, the obligation remains on *each* “State”, meaning each individual “State” has an obligation to ensure that the

https://www.itlos.org/fileadmin/itlos/documents/cases/case_no_17/17_adv_op_010211_en.pdf, last accessed 12 June 2023.

²⁶⁸ UNCLOS, Article 194(1). Article 194(1) in French reads : « Les Etats prennent, séparément ou conjointement selon qu’il convient, toutes les mesures compatibles avec la Convention qui sont nécessaires pour prévenir, réduire et maîtriser la pollution du milieu marin, quelle qu’en soit la source ; ils mettent en œuvre à cette fin les moyens les mieux adaptés dont ils disposent, en fonction de leurs capacités, et ils s’efforcent d’harmoniser leurs politiques à cet égard. »

²⁶⁹ ICJ, *Pulp Mills on the River Uruguay (Argentina v Uruguay)*, Judgment, I.C.J. Reports 2010, p. 14.

²⁷⁰ ITLOS, *Responsibilities and Obligations of States Sponsoring Persons and Entities with respect to Activities in the Area*, *op.cit.*, para. 119, available at https://www.itlos.org/fileadmin/itlos/documents/cases/case_no_17/17_adv_op_010211_en.pdf, last accessed 12 June 2023.

²⁷¹ ITLOS, SRFC Advisory Opinion, para. 119.

²⁷² ITLOS, *Responsibilities and Obligations of States Sponsoring Persons and Entities with respect to Activities in the Area*, *op.cit.*, para. 115, citing: *Pulp Mills on the River Uruguay (Argentina v Uruguay)*, Judgment, I.C.J. Reports 2010, p. 14, last accessed 13 June 2023; ITLOS, *Responsibilities and Obligations of States Sponsoring Persons and Entities with respect to Activities in the Area*, *op.cit.*, para. 104–105.

²⁷³ ITLOS, SRFC Advisory Opinion, para. 137.

²⁷⁴ ITLOS, SRFC Advisory Opinion, para. 138.

²⁷⁵ ITLOS, SRFC Advisory Opinion, para. 138.

²⁷⁶ See UNCLOS, Article 194(1).

appropriate measures are taken (which, again, may be either acting individually or acting collectively). In other words, the possibility of taking joint action does not release individual State Parties from the obligation. The obligation is, to borrow terminology from certain domestic legal systems, “joint and several”.

178. Article 194(1), read with Article 197, also requires State Parties to cooperate in identifying, formulating and implementing their actions under Article 194(1) in order to avoid creating a mosaic of fragmented and potentially incompatible legal regimes.²⁷⁷ As a result, the State Party adopting measures in application of Article 194(1) must cooperate with other concerned State Parties to achieve that end. As a practical matter, for efforts at addressing pollution of the marine environment to be effective, they need to be undertaken in a cooperative fashion, given the transboundary nature of the problem.

179. As established above in Section V, the international climate change regime is integral to the interpretation of the UNCLOS provisions at issue in these advisory proceedings, which explore specific obligations arising from those provisions *in relation to climate change*. The international climate change regime constitutes relevant rules of international law under Article 31(3)(c) of the VCLT. Further, the regime is itself a set of international rules developed consistently with the obligation to cooperate in Article 197 through the development of “international rules, standards and practices and procedures ... for the protection of the marine environment”.

180. Where such “international rules, standards and recommended practices and procedures” exist – as they do under the climate change regime – complying with them does not exhaust the obligations of the UNCLOS State Parties. The UNCLOS State Parties continue to be under their UNCLOS obligations to “protect and preserve the marine environment” (Article 192) and to “prevent, reduce and control pollution of the marine environment” (Article 194(1)). Thus, engaging in cooperative efforts under Article 197, and complying in good faith with cooperative instruments resulting from such cooperation, may discharge some elements, but not necessarily the entirety, of the obligations under Articles 192, 194, and the remainder of Part XII of the UNCLOS.

5. “Best practical means at their disposal and in accordance with their capabilities”

181. The obligation to “take ... all measures ... necessary” is further qualified by the requirement that State Parties use “the best practicable means at their disposal” and act “in accordance with their capabilities”.²⁷⁸ As discussed above, this clause sets out the boundaries of what conduct is *possible* for a State Party.

182. By qualifying the obligation in terms of conduct that it is possible for a State Party to take, this phrase introduces differentiation between and among State Parties in the performance of their obligations. The clause was inserted to address the concerns of developing State Parties

²⁷⁷ See UNCLOS, Article 194(4).

²⁷⁸ UNCLOS, Article 194(1) Article 194(1) in French reads : « Les Etats prennent, séparément ou conjointement selon qu’il convient, toutes les mesures compatibles avec la Convention qui sont nécessaires pour prévenir, réduire et maîtriser la pollution du milieu marin, quelle qu’en soit la source ; ils mettent en œuvre à cette fin les moyens les mieux adaptés dont ils disposent, en fonction de leurs capacités, et ils s’efforcent d’harmoniser leurs politiques à cet égard. »

that mandatory measures to protect the marine environment could compromise their progress up the development curve through sustainable economic growth.²⁷⁹ The obligation in Article 194(1), therefore, applies asymmetrically: State Parties with the greater “means” and “capabilities” are under a heavier burden than State Parties with more limited means and capabilities.

183. This final clause of Article 194(1) bears directly on the scope of a State Party’s obligation to take “necessary” measures. Developing State Parties may lack the resources effectively to pursue necessary measures, resulting in a shortfall in preventing, reducing and controlling pollution of the marine environment. In such cases, pursuant to the joint and several character of the obligation, developed State Parties must cover that shortfall, since as a practical matter, they are capable of doing so.

184. This aspect of Article 194(1) is consistent with other provisions of the UNCLOS, which recognise, and make provision for, the special needs and circumstances of developing countries. For example: the *preamble* to the UNCLOS refers to “the special interests and needs of developing countries”²⁸⁰; Articles 202 and 203 respectively provide for scientific and technical assistance to, and preferential treatment for, developing State Parties; and a number of other provisions acknowledge developing State Parties’ special requirements.²⁸¹

185. In the context of actions to tackle GHG emissions, the specific language in the final clause of Article 194(1), and the related provisions elsewhere in the UNCLOS, are consistent with the approach taken in the international climate change regime. In that regime, States are to protect the climate system on the basis of equity and in accordance with the principle of common but differentiated responsibilities” and respective capabilities – as set out in detail in Section V of this Written Statement. To recall, the international climate change regime requires developed countries to take the lead, and to support mitigation and adaptation measures of developing countries, including through financial assistance, technology transfer and capacity building.²⁸²

6. Summary of the legal standard under Article 194(1)

186. It is helpful to bring the various terms of Article 194(1), as interpreted above, together to summarise the legal standard.

187. Article 194(1) is triggered where there is pollution, or risk of pollution, of the marine environment. In such circumstances, State Parties must identify the universe of measures which are necessary to prevent, reduce and control the relevant marine pollution; and State Parties must adopt those measures, using the best practicable means available in accordance with their capabilities.

²⁷⁹ It was included in the Convention by the Kenyan draft articles, but its origin can be found in Principle 7 of the Stockholm Declaration. See M.H. Nordquist (ed.), *United Nations Convention on the Law of the Sea, op.cit.*, para. 194.10(b), (**Annex-11**).

²⁸⁰ UNCLOS, fifth preambular paragraph.

²⁸¹ See, e.g., Articles 61(3), 62(2), 82(4), 119(1), 207(4) of the UNCLOS.

²⁸² See, paras. 138-140 of this Written Statement above.

188. In so doing, State Parties will not automatically be in violation of Article 194(1) if their measures fail to achieve the prevention, reduction or control of pollution. However, they must exercise best efforts, and do the utmost, to achieve that outcome.

189. State Parties may discharge their obligations under Article 194(1) individually or jointly, including through cooperative efforts such as those envisaged under Article 197; and such cooperative arrangements are relevant when assessing whether a State Party has fulfilled its obligations under Article 194(1). However, the obligations remain on each State Party individually, and Article 194(1) will not necessarily be discharged merely through the existence of cooperative efforts to address a pollution problem.

190. Finally, in apportioning the responsibility of State Parties to take measures under Article 194(1), developed State Parties, with better means at their resources and better capabilities, would be under a heavier burden than developing State Parties with more limited means and capabilities. In practice, this means it is for developed State Parties to pick up the shortfall on environmental protection measures that cannot be achieved by developing State Parties.

C. Application of the legal standard in Article 194(1) in the context of climate change

191. This Section sets out the African Union's views on how the obligations in Article 194(1) apply in the context of climate change. Or, in the terms of the Request, what "specific obligations" arise under Article 194(1) in the context of climate change.

192. *First*, the African Union explain that GHG emissions into the atmosphere constitutes pollution of the marine environment, thus engaging the obligations in Article 194(1). *Second*, under three separate headings, the African Union identifies specific obligations arising out of Article 194(1) as a result.

1. Atmospheric GHG emissions are a source of pollution of the marine environment

193. We recall that "pollution of the marine environment" means: the "introduction by man", "directly or indirectly", of "substances or energy" into the marine environment, with "deleterious effects" on that environment, such as (but not limited to) "harm to living resources and marine life".

194. As explained in Section IV.B above, anthropogenic GHG emissions are a source of marine pollution through two different physical pathways. *First*, carbon dioxide (a "substance", *i.e.*, a "kind of matter", "a definite chemical composition") is emitted into the atmosphere through anthropogenic activities and absorbed into the ocean, ("introduced"), which leads to an increase in the acidification of the ocean.

195. *Second*, all GHGs emitted into the atmosphere (*i.e.*, carbon dioxide plus methane, nitrous oxide and fluorinated gases) cause an increase in atmospheric thermal energy, which leads to an increase in atmospheric temperatures; a portion of this increased thermal energy is absorbed into ("introduced") the ocean, increasing its temperature in turn.

196. The introduction of carbon dioxide and thermal energy into the ocean has significant “deleterious effects” on the marine environment. As explained in Section IV.B, ocean acidification, increased ocean temperatures, deoxygenation and sea level rise have already caused extensive harmful consequences for the marine environment, including *all* the harms specifically enumerated in Article 1(4) of the UNCLOS. They result in: harm to living resources and marine life; hazards to human health; hindrance to marine activities such as fishing; quality of sea water and reduction of amenities. These harms are already occurring; are persistent; and will increase further with continued anthropogenic GHG emissions.

197. The conclusion that anthropogenic atmospheric GHG emissions lead to “pollution” of the marine environment, based on the ordinary meaning of the terms in Article 1(4), is further confirmed by the context of Article 194(1) and the negotiating history of the UNCLOS.

198. For context, a number of the UNCLOS provisions explicitly recognise that pollution of the marine environment can occur through the introduction of “toxic, harmful or noxious substances” “*from or through the atmosphere*”.²⁸³ Indeed, commentaries suggest that “the atmosphere itself can be regarded *as a component of the marine environment*” at least to the extent that there is a “direct link” between the atmosphere as it connects with the surface of the sea.²⁸⁴ In this case, as explained above, each of the two harmful “substances” (CO₂ and thermal energy) are introduced into the marine environment “from” and “through” the atmosphere. Anthropogenic GHG emissions are released into the atmosphere and are then introduced into the ocean through the air-sea interface.

199. Finally, during the negotiation of the Convention, the definition of “marine pollution” in the UNCLOS was originally developed by the Group of Experts on the Scientific Aspects of Marine Pollution (“GESAMP”) – a scientific body established under the auspices of several different international organisations.²⁸⁵ As part of its preparatory work, GESAMP working groups proposed lists of scientifically recognised pollutants which should be captured by the final definition. These lists included both “carbon dioxide” and “heat”.²⁸⁶ In the eventual

²⁸³ See UNCLOS, Article 193(3)(a).

²⁸⁴ See M.H. Nordquist (ed.), *United Nations Convention on the Law of the Sea, op.cit.*, para. 194.10(k), (Annex-11).

²⁸⁵ Specifically, the Inter-Governmental Maritime Consultative Organization, Food and Agricultural Organization, the United Nations Educational, Scientific and Cultural Organization, and the World Meteorological Organization.

²⁸⁶ See GESAMP, 1969: Report of the 1st Session (GESAMP I/11, 1969), paras. 20, 35, , available at <http://www.gesamp.org/site/assets/files/1172/report-of-the-1st-session-1969-en-1.pdf>, last accessed 13 June 2023; GESAMP, 1976: Report of the 8th Session (GESAMP VIII/11, 1976), paras. 30-39, available at <http://www.gesamp.org/site/assets/files/1181/report-of-the-8h-session-en.pdf>, last accessed 13 June 2023. See, for example, GESAMP, 1978: Report of the 10th Session (Rep. Stud. GESAMP (9)), Annex V (Summary of the Report of the Working Group on Interchange of Pollutants between the Atmosphere and the Oceans), available at <http://www.gesamp.org/site/assets/files/1186/report-of-the-10th-session-en.pdf>, last accessed 13 June 2023. See also GESAMP, 1983: Report of the 13th Session (Rep. Stud. GESAMP (18)), paras. 6.1-6.5, Annex VIII (Summary of the Report of the Working Group on the Interchange of Pollutants between the Atmosphere and the Oceans). See GESAMP, “Interchange of Pollutants Between the Atmosphere and the Oceans”, *Reports and Studies*, No. 13, 1980, Section 4.3 and Table 6, pp. 27-28, available at <http://www.gesamp.org/site/assets/files/1190/interchange-of-pollutants-between-the-atmosphere-and-the-ocean-en.pdf>, last accessed 13 June 2023. See also GESAMP, “Interchange of Pollutants Between the Atmosphere and the Oceans”, *Reports and Studies*, No. 13, 1980, Section 4.3 and Table 6, pp. 27-28, available at <http://www.gesamp.org/site/assets/files/1190/interchange-of-pollutants-between-the-atmosphere-and-the-ocean-en.pdf>, last accessed 13 June 2023.

definition of “pollution”, the term “substance” captures the former, while the term “energy” captures the latter.

2. Specific obligations arising under Article 194(1) in the context of climate change

200. We turn now to consider the specific obligations of State Parties under Article 194(1) to tackle atmospheric anthropogenic GHG emissions as a source of pollution of the marine environment.

201. In Section IV.B, the African Union has explained that past GHG emissions have already resulted in extensive and persistent marine pollution. Looking ahead, further GHG emissions will lead to the absorption of further carbon dioxide and energy by the oceans, which will increase the cumulative levels of persistent marine pollution, thereby exacerbating the harmful effects on the oceans.

202. Against that factual background, Article 194(1) places obligations on State Parties to take all measures necessary to “prevent”, “reduce” and “control” marine pollution resulting from GHG emissions. In the African Union’s view, in the circumstances of climate change, Article 194(1) gives rise to a series of specific, related, obligations:

- *First*, State Parties must adopt effective measures to reduce GHG emissions. Within the parlance of the international climate change regime, these are so-called climate change “mitigation” measures.
- *Second*, with respect to the *degree* of emission reductions, and in order to bring about a degree of “control” under Article 194(1) over the rate at which marine pollution increases, State Parties must collectively reduce emissions to a level which allows them to meet the 1.5°C temperature level set under the international climate change regime.
- *Third*, to “prevent” and “reduce” further marine pollution under Article 194(1), State Parties must collectively reduce emissions beyond this level.
- *Fourth*, with respect to the individual actions required by State Parties under Article 194(1), the burden of reducing emissions must be understood in light of the international climate change regime and, in particular, the agreement to tackle climate change on the basis of equity and in accordance with the principle of common but differentiated responsibilities and respective capabilities. Thus, developed State Parties, in particular, must take on a higher burden of emission reductions, in comparison to developing countries.

203. The African Union addresses each specific obligation further below.

a. *First specific obligation: State Parties must collectively adopt effective measures to reduce GHG emissions*

204. As explained above, State Parties are under obligations, under Article 194(1), to take measures that are “necessary” to address a pollution problem.

205. The African Union has explained that the IPCC is an internationally recognised scientific body, which has been tasked by the international community with assessing the scientific evidence relating to climate change and providing governments with the scientific information that they can use to develop policies to address climate change. The IPCC publishes regular assessment reports that reflect the international consensus of these scientific matters.

206. The IPCC has concluded, without ambiguity, that the continued production of GHG emissions causes continued pollution to the marine environment. The IPCC explains that this new pollution of the marine environment will cumulate with existing pollution, exacerbating the harmful effects on the marine environment. The IPCC has also concluded that, as the science currently stands, the only effective way of preventing, reducing *or* controlling pollution of the marine environment is to reduce GHG emissions produced by activities within each State Party’s jurisdiction and control.²⁸⁷

207. There is, therefore, an international science-based consensus that the measures *necessary* under Article 194(1) are measures to reduce GHG emissions.²⁸⁸ As noted, these are climate change mitigation measures.

208. There is also an international consensus around the fact that emission-reduction “measures” can and must include a wide variety of different policy instruments – as the IPCC recognises, there is no silver bullet. Rather, as a complex issue implicating all parts of social and economic life in all of the world’s different national settings, a suite of policy instruments is regarded as most effective in reducing emissions. This suite typically includes (but is not limited to) policies such as: carbon pricing mechanisms (e.g., taxes, cap-and-trade); energy efficiency, emissions and fuel standards and requirements for buildings, capital and consumer goods, and different means of transportation; policies to reduce resource use through circular economy principles; policies to promote sustainable land-use practices, in particular around agriculture; and, if means allow, incentives for the transition to a low carbon economy.²⁸⁹

²⁸⁷ IPCC 2014: *The Ocean, Impacts, Adaptation, and Vulnerability*, p.1655-1731; *See also*, Section IV.B.

²⁸⁸ IPCC, 2019: *Extremes, Abrupt Changes and Managing Risk* [Collins M., M. Sutherland, L. Bouwer, S.-M. Cheong, T. Frölicher, H. Jacot Des Combes, M. Koll Roxy, I. Losada, K. McInnes, B. Ratter, E. Rivera-Arriaga, R.D. Susanto, D. Swingedouw, and L. Tibig]. In: *IPCC Special Report on the Ocean and Cryosphere in a Changing Climate* [H.-O. Pörtner, D.C. Roberts, V. Masson-Delmotte, P. Zhai, M. Tignor, E. Poloczanska, K. Mintenbeck, A. Alegría, M. Nicolai, A. Okem, J. Petzold, B. Rama, N.M. Weyer (eds.)], available at https://www.ipcc.ch/site/assets/uploads/sites/3/2022/03/08_SROCC_Ch06_FINAL.pdf, last accessed 15 June 2023., pp. 589-655.

²⁸⁹ IPCC, 2018: *Strengthening and Implementing the Global Response* [de Coninck, H., A. Revi, M. Babiker, P. Bertoldi, M. Buckeridge, A. Cartwright, W. Dong, J. Ford, S. Fuss, J.-C. Hourcade, D. Ley, R. Mechler, P. Newman, A. Revokatova, S. Schultz, L. Steg, and T. Sugiyama]. In: *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* [MassonDelmotte, V., P. Zhai, H.-O. Pörtner,

209. While the African Union considers that State Parties have a specific obligation, under Article 194(1), to take measures to reduce GHG emissions, it does not view this provision, or any other provision of the UNCLOS, as imposing specific obligations on State Parties to adopt any particular type or combination of emission-reduction measures. Instead, provided that State Parties take measures to reduce GHG emissions to a sufficient extent, they have the discretion to craft their particular policy response in a manner that is appropriate to their national circumstances. In the next sections, the African Union address the extent to which State Parties must take measures to reduce emissions pursuant to Article 194(1).

- b. *Second specific obligation: State Parties are collectively required to reduce GHG emissions to the greatest extent possible, as soon as possible, in order to prevent, reduce and control marine pollution*

210. As to the extent of emission reductions, the African Union demonstrates in subsection VI.C.2.b.i that to bring about a degree of “control” over the rate of marine pollution in line with Article 194(1) of the UNCLOS, States must collectively take effective regulatory measures to limit global warming to the 1.5°C temperature level set under the international climate change regime. In subsection VI.C.2.b.ii, the African Union explains that to “prevent” and “reduce” marine pollution, Article 194(1) further requires State Parties to reduce emissions beyond the 1.5°C temperature level.

- i. *Specific obligation to “control” the rate of increase of marine pollution*

211. The African Union considers that State Parties have a specific obligation under Article 194(1) to adopt effective measures to reduce GHG emissions. However, this specific obligation raises a question: to what extent must State Parties reduce GHG emissions?

212. In the international climate change regime, State Parties have entered into certain agreements with respect to actions to reduce GHG emissions. As a first point, the African Union notes that, over time, State Parties have gradually agreed to increasing the extent to which GHG emissions will be reduced:

- (a) In the UNFCCC (1992), States agreed on the objective of “stabilization” of atmospheric GHG concentrations to prevent “dangerous” interference with the climate system. However, they did not assume any specific obligations with respect to emission reductions.
- (b) In the Kyoto Protocol (1997), developed States agreed to certain specific emission reduction commitments, whereas developing States did not.

D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)], (hereafter “IPCC 2018, Strengthening and Implementing the Global Response, *Special Report on Global Warming of 1.5°C*”), available at https://www.ipcc.ch/site/assets/uploads/sites/2/2019/02/SR15_Chapter4_Low_Res.pdf, last accessed 15 June 2023, pp. 313-344.

- (c) In the Paris Agreement (2015), all Parties agreed to the Paris temperature goal, which is to hold global warming to “well below” 2.0°C and pursue efforts to “limit” warming to 1.5°C. All Parties have agreed to formulate and implement successive, and increasingly ambitious, nationally determined contributions towards the collective emission reductions that are necessary to achieve this temperature goal. Parties have also agreed that each Party will formulate its own NDC to reflect its common but differentiated responsibilities and respective capabilities, in the light of different national circumstances. They have further agreed that developed country Parties will make faster, economy-wide, reductions, as compared with developing country Parties.

213. Viewed through the lens of Article 194(1), the measures that States take to formulate and implement their respective NDCs, including the adoption and enforcement of effective regulatory measures to reduce emissions, involve a degree of “control” over the extent of further pollution of the marine environment.

214. More specifically, the measures that States take collectively to achieve the Paris temperature goal involve actions by each State to reduce the quantity of continued GHG emissions from activities within its jurisdiction or control. As a matter of fact, in pursuit of the Paris temperature goal, atmospheric GHG emissions will continue to occur but at a reduced rate. These actions are the very essence of control: they manage and regulate the extent of GHG emissions, by restraining them, holding them in check, and curbing their growth.²⁹⁰

215. By controlling the extent of continued atmospheric GHG emissions, States will also “control” the rate of increase of marine pollution resulting from these GHG emissions. In essence, by reducing the extent of atmospheric GHG emissions, States will slow the rate at which further carbon dioxide and energy are absorbed by the oceans: atmospheric GHG emissions will continue to occur and the two harmful substances will continue to be absorbed by oceans, but they will be absorbed at a slower rate due to the reduced emissions. Again, this is the very essence of “control” – managing the rate at which the marine environment continues to be polluted.

216. The African Union observes that atmospheric GHG emissions and, hence, marine pollution can be controlled to a greater or lesser extent through collective State action. This possibility is explicitly foreseen in the Paris temperature goal, which references two different temperature levels for atmospheric warming, namely 1.5°C and 2.0°C, entailing two different levels of emission reductions.

217. In its scientific work, the IPCC has examined the differences between these two temperature levels. *First*, the IPCC has examined the different harmful effects that would result at each temperature level. For the marine environment, as set forth in Section IV above, the IPCC concludes that the harmful effects are significantly worse, under every metric, if atmospheric temperatures rise by 2.0°C instead of 1.5°C.²⁹¹ Notably, limiting the temperature

²⁹⁰ Oxford English Dictionary, Definition of “control, v,” available at <https://www.oed.com/view/Entry/40563?rskey=ZoZAiI&result=2&isAdvanced=false#eid>, last accessed 6 June 2013.

²⁹¹ *See*, Section IV.B.

increase to 1.5°C rather than 2.0°C will result in lower ocean acidity levels; lower ocean temperatures; higher oxygenation levels; lower sea level rise, with consequently reduced impacts on biodiversity, fisheries, ecosystems and human populations (health, livelihoods, food security, water supply and development).²⁹²

218. *Second*, the IPCC has quantified the different extents to which emissions must be reduced to meet each level: to limit atmospheric warming to 1.5°C would require emission reductions of around 45 per cent by 2030 as compared with 2010 levels, reaching net zero by 2050; whereas, to limit warming to 2.0°C would require reductions of 25 per cent by 2030, reaching net zero by 2070.²⁹³ The IPCC's work also allows States to establish a suite of policy measures that will achieve these different emission reduction levels, using tools to quantify the impact of different types of measure.²⁹⁴

219. These facts have a bearing on the specific obligations of States, under Article 194(1), to reduce atmospheric GHG emissions in order to “control” the rate of increase in marine pollution resulting from the emissions. Specifically, under Article 194(1), in order to meet the requirement to employ “all the means at its disposal” and do their “utmost”, States are collectively required to take all necessary measures to “control”, as far as possible, the rate of increase in marine pollution.

220. As a result, Article 194(1) requires that, in taking measures to implement the international climate change regime, States collectively take effective regulatory measures to limit global warming to the 1.5°C temperature level, rather than 2.0°C, in order to make “best efforts” and do their “utmost” to “control” the continued accumulation of marine pollution and the extent of the consequential harmful effects to the marine environment. Put differently, States cannot collectively fulfil, much less exhaust, their obligation to “control” marine pollution, by choosing a weaker level of atmospheric pollution control.

221. Any conduct *other than* measures targeted at limiting atmospheric warming to 1.5°C is, as a minimum, a failure to satisfy the “control” requirements of Article 194(1). States would, in short, be taking measures that they *know* are not capable of controlling marine pollution. This would be conduct by State Parties that falls short of employing “all the means at [their] disposal” and a failure by State Parties to do their “utmost”.

ii. *Specific obligations to “prevent” and “reduce” marine pollution*

222. To recall, Article 194(1) includes three verbs, namely, “prevent”, “reduce”, and “control”. Each of these three verbs conveys a distinct meaning, with the obligations entailed by the verbs applying cumulatively. As the African Union has explained, the verb “prevent” means to stop or hinder marine pollution; the verb “reduce” means to diminish or lower marine pollution levels; and, as we have just seen, the verb “control” means to manage, restrain, hold in check, and curb growth.

²⁹² See, Section IV.B.

²⁹³ IPCC, 2018, Summary for Policymakers, *Special Report on Global Warming of 1.5°C*, p. 12.

²⁹⁴ IPCC 2018, Summary for Policymakers, *Special Report on Global Warming of 1.5°C*, pp. 14-17.

223. To illustrate the differences between the three verbs, consider a scenario where State Parties to the UNCLOS are collectively leaking 5,000 tons of oil per day into the marine environment. The States conclude an agreement to reduce their leakage of oil to 2,000 barrels per day.

224. Viewed through the lens of Article 194(1), the implementation of this agreement will effect a degree of “control” over marine pollution, slowing the rate at which the pollution continues to accumulate in the marine environment. However, under the agreement, the cumulative level of marine pollution continues to increase each day, albeit at a slower rate than before, and with worsening cumulative effects on the marine environment. This means that, although marine pollution is controlled to some extent, it is not prevented and, rather than being reduced, it continues to increase cumulatively over time.

225. The African Union is concerned that a similar set of pollution problems arise for the marine environment under the Paris Agreement, which calls for States collectively to take action to hold global warming to “well below” 2.0°C, while pursuing efforts to limit warming to 1.5°C.

226. The Paris temperature goal, and the NDCs communicated by States, foresee considerable continued GHG emissions, albeit at reduced levels. These continued GHG emissions will mean that carbon dioxide and energy will continue to be absorbed by the oceans, albeit at a slower rate. This will mean an increase, hour-by-hour, day-by-day, in the accumulated levels of pollution of the marine environment, which will, in turn, progressively worsen the harmful effects on that environment. This involves neither prevention of continued marine pollution nor reduction of the accumulated levels of marine pollution.

227. To fulfil their obligations under Article 194(1), State Parties cannot simply agree collectively to an emission reduction target that condones conduct, over decades, that will necessarily entail significant continued pollution of the marine environment, with worsening harmful effects for that environment. Instead, Article 194(1) imposes specific obligations on State Parties collectively to go further, urgently employing “all the means at [their] disposal” to pursue effective emission reductions that will prevent further marine pollution and will reduce accumulated marine pollution.

228. As the African Union has explained, this is a “due diligence” obligation. To recall, “due diligence” is a variable concept, tailored in the light of three factors: (1) the level of risk (likelihood of the risk materialising and the severity of its consequences); (2) the level of knowledge regarding that risk; and (3) the level of knowledge regarding the means to address the risk.²⁹⁵ As the Seabed Disputes Chamber said, “[t]he standard of due diligence has to be more severe for the riskier activities.”²⁹⁶

²⁹⁵ *Responsibilities and obligations of States with respect to activities in the Area*, Advisory Opinion, 1 February 2011, ITLOS Reports 2011, p. 10, at p. 43, para. 117, , available at https://www.itlos.org/fileadmin/itlos/documents/cases/case_no_17/17_adv_op_010211_en.pdf, last accessed 12 June 2023.

²⁹⁶ *Responsibilities and obligations of States with respect to activities in the Area*, Advisory Opinion, 1 February 2011, ITLOS Reports 2011, p. 10, at p. 43, para. 117, available at https://www.itlos.org/fileadmin/itlos/documents/cases/case_no_17/17_adv_op_010211_en.pdf, last accessed 12 June 2023.

229. In the case of climate change, the level of diligence required must be set at its most “severe”. The risks have long-since passed from theoretical to real, with the marine environment already suffering severe consequences. It is known that, with continued emissions at today’s elevated levels, climate change poses existential threats – to biodiversity, ecosystems and habitats; to food security; to human cultures and ways of life; to the territory of States; and even, in the worst case scenarios, to humanity itself. It is also well-known that the means to mitigate these risks of future harm are steep and sustained emission reductions.

230. In these extreme circumstances, the African Union cannot simply repeat words used by previous international adjudicators to describe the level of diligence required under the UNCLOS. No previous international legal proceeding, contentious or advisory, has addressed known existential risks of the nature, severity and urgency of those presented today by climate change.

231. Accordingly, although the Tribunal could rely on vocabulary from previous proceedings – for example, States must do their “utmost” and deploy “all the means at [their] disposal” to reduce GHG emissions – the African Union urges the Tribunal to imbue its reasoning with the immense urgency of the crisis facing the marine and broader planetary environment today. The responsibility of State Parties to act urgently under Article 194(1) to prevent and reduce marine pollution, by reducing emissions, must, therefore, be expressed in the strongest terms.

- c. *Third specific obligation: States must allocate the burden of emissions reductions asymmetrically in line with the principle of CBDR-RC*

232. Thus far, the African Union has explored specific obligations that apply to State Parties collectively: they are collectively required to (1) adopt effective measures to reduce GHG emissions; and (2) reduce GHG emissions urgently, to the greatest extent possible, on an urgent basis, in order to prevent, reduce and control marine pollution. The African Union has explained that the second specific obligation includes taking all necessary measures to: limit global warming to 1.5°C, as compared to 2.0°C under the Paris Agreement, because this entails greater “control” over further marine pollution and entails significantly lesser harmful effects on the marine environment; and, beyond that, reduce GHG emissions urgently to the greatest extent possible, in order to “prevent” and “reduce” marine pollution.

233. In addition to these specific collective obligations, the African Union also now identifies certain individual obligation obligations on States in relation to the achievement of the collective obligations. These individual obligations relate to the way that that the burden of emission reductions is allocated between and among States.

234. As the African Union has explained,²⁹⁷ the final clause of Article 194(1) introduces the concept of differentiation into the obligation on State Parties to take measures to prevent, reduce and control pollution to the marine environment. As the African Union has explained, this clause should be understood in the context of other similar provisions of the UNCLOS and the international climate change regime, in which differentiation through the principle of

²⁹⁷ See, paras. 181-185 of this Written Statement.

CBDR-RC is fundamental to the very architecture of the regime.²⁹⁸ The unambiguous recognition of the developed countries' greater burden, under the international climate change regime, is relevant under Article 194(1).

235. As outlined above, various provisions of the Paris Agreement demonstrate that the international community has agreed to an asymmetrical allocation of the burden of emissions reductions, as between developed and developing countries, consistent with the principle of CBDR-RC.²⁹⁹ Indeed, the text of the Paris Agreement shows that the asymmetrical balance of rights and obligations struck contributes to achieving the Paris temperature goal, with explicit recognition that “higher ambition” on the part of developing Parties is possible only with “enhanced support” from developed Parties.

236. Article 4.1 of the Paris Agreement provides that “*in order to achieve the long-term temperature goal set out in Article 2, Parties aim to reach global peaking of greenhouse gas emissions as soon as possible*”; in other words, emission reductions are *necessary* to achieve the temperature goal. However, subparagraph 1 then acknowledges that, as a matter of fact, “*peaking will take longer for developing country Parties*”.

237. Following from this acknowledgment, subparagraphs (2) and (3) establish the obligation for each Party to prepare an NDC which “*reflects its highest possible ambition, reflecting its common but differentiated responsibilities and respective capabilities, in light of different national circumstances*”.³⁰⁰ Subparagraph (4) next calls on developed States to “*tak[e] the lead by undertaking economy-wide absolute emission reduction targets*”, while developing countries are “*encouraged to move over time towards economy-wide reduction or limitation targets in the light of different national circumstances*”.³⁰¹ Subparagraph (5) provides that “*support shall be provided to developing country Parties ... recognising that enhanced support for developing country Parties will allow for higher ambition in their actions*”.

238. Article 4 thus acknowledges the practical reality that developing countries will take longer to reach “peak” emissions; and that what is “possible” for developing countries in terms of GHG emission reductions is less than what is possible for developed countries. Further, concrete “enhanced support” from developed countries “will allow for higher ambition” on the part of developing countries to make greater emission reductions. Put differently, failing to account fully for the different position of developing countries will lead to ineffective measures to tackle climate change, including the marine pollution caused by GHG emissions.

239. More broadly, the asymmetrical character of the obligation in Article 194(1) recognises the need for African States to move up the development curve and achieve the same levels of development, and living standards, as developed countries. It makes it possible to tackle the climate crisis effectively, without compromising the development pathways of African States. In contrast to developed States, African States have not caused the climate crisis we now face nor have they enjoyed the economic benefits resulting from the high levels of industrialisation

²⁹⁸ Sixth preambular paragraph and Articles 3.1 and 4 of the UNFCCC. Third preambular paragraph and Articles 2.2 and 4.2 of the Paris Agreement.

²⁹⁹ See, paras. 141-143 of this Written Statement.

³⁰⁰ Emphasis added.

³⁰¹ Paris Agreement, Article 4.4.

in the developed States, which have caused the climate crisis. African States cannot now be expected to pay the same price as developed countries to address the climate crisis.

D. Conclusion to Question 1

240. Atmospheric GHG emissions are a source of pollution of the marine environment, and consequently engage the obligation of State Parties under Article 194 of the UNCLOS. Under that provision, State Parties must “prevent, control and reduce” such pollution.

241. This general obligation, when applied in the context of climate change, places State Parties under the following specific obligations, namely, to:

- adopt collectively effective measures to reduce GHG emissions;
- reduce emissions collectively, on an urgent basis, to an extent that allows them to meet the 1.5°C temperature level set under the international climate change regime, which will bring about a degree of “control” over the rate at which marine pollution increases;
- reduce emissions collectively, on an urgent basis, beyond this level in order to fulfil their obligations to “prevent” further marine pollution and “reduce” accumulated marine pollution;
- allocate the burden of emissions reductions asymmetrically in line with the UNCLOS obligation to cooperate, interpreted in light of both the context in the UNCLOS, and the international climate change regime, including the principle of CBDR-RC.

242. The African Union expresses its conviction that timely compliance with these specific UNCLOS obligations will contribute significantly to preventing, controlling and reducing pollution of the marine environment from GHG emissions and their effects.

VII. QUESTION 2 – SPECIFIC OBLIGATIONS TO PROTECT AND PRESERVE THE MARINE ENVIRONMENT IN RELATION TO CLIMATE CHANGE IMPACTS

A. Introduction

243. This Section sets out the African Union’s views on the question under paragraph (b) presented in the Request (“**Question 2**”):

“What are the specific obligations of State Parties to the United Nations Convention on the Law of the Sea (the “UNCLOS”), including under Part XII:

...

(b) to protect and preserve the marine environment in relation to climate change impacts, including ocean warming and sea level rise, and ocean acidification?”

244. Question 2 uses wording that parallels Article 192 of the UNCLOS. Article 192 sets forth a “[g]eneral obligation”³⁰² and provides, in full, that:

States have the obligation to protect and preserve the marine environment.

245. Question 2 tracks the terms of Article 192. It calls on the Tribunal to identify “specific obligations” arising out of this general obligation “in relation to climate change impacts, including ocean warming and sea level rise, and ocean acidification”.

246. In addressing Question 2 in this Section, the African Union first describes the legal standard under Article 192 of the UNCLOS, which lays down the general obligation “to protect and preserve the marine environment” (Section VII.B). This Section then explores specific obligations relating to climate change impacts arising out of this general obligation (Section VII.C). In doing so, the African Union analyses specific obligations arising in respect of climate change through the prism of mitigation and adaptation actions. This Section first considers specific obligations of cooperation relevant for both (Section VII.C.1). It then addresses specific obligations relevant for mitigation, which cross-reference the African Union’s response to Question 1 (Section VII.C.2). Finally, this Section considers specific obligations relating to adaptation (Section VII.C.3). The African Union concludes with a summary of the specific obligations identified in response to Question 2 (Section VII.D).

B. The legal standard under Article 192 of the UNCLOS

247. Article 192 of the UNCLOS, which reflects customary international law,³⁰³ provides that “States have the obligation to protect and preserve the marine environment.”³⁰⁴

248. Article 192 is a “general obligation”,³⁰⁵ appearing at the start of Part XII of the Convention (titled “Protection and Preservation of the Marine Environment”). Article 192 is followed by other provisions of Part XII which elaborate this general obligation, setting out detailed and more specific obligations concerning the protection of the marine environment in certain geographic areas, in certain circumstances, and in certain manners.

249. Article 192 revolves around the two main textual components, namely the terms “marine environment” and the two verbs “protect and preserve”.

³⁰² In addition to the title itself, see also *South China Sea Arbitration (Philippines v China)*, Award of 12 July 2016, PCA Case No 2013-19, ICGJ 495 (PCA 2016), para. 941.

³⁰³ *Responsibilities and obligations of States sponsoring persons and entities with respect to activities in the Area (Request for Advisory Opinion submitted to the Seabed Disputes Chamber)*, 1 February 2011, ITLOS Reports 2011, p. 10, available at <https://www.icj-cij.org/sites/default/files/case-related/155/155-20220421-JUD-01-00-EN.pdf>, last accessed 13 June 2023.

³⁰⁴ UNCLOS, Article 192. African Union Member States have previously addressed Article 192 in proceedings before the ITLOS: see *Delimitation of the Maritime Boundary in the Atlantic Ocean (Ghana/Côte d’Ivoire)*, Provisional Measures, Order of 25 April 2015, ITLOS Reports 2015, p. 146, para. 69, available at https://www.itlos.org/fileadmin/itlos/documents/cases/case_no.23_prov_meas/23_published_texts/2015_23_Ord_25_Avr_2015-E.pdf, last accessed 13 June 2023.

³⁰⁵ Article 192 is titled “General obligation”. See also *South China Sea Arbitration (Philippines v China)*, Award of 12 July 2016, PCA Case No 2013-19, ICGJ 495 (PCA 2016).

1. The ordinary meaning of “marine environment” and “protect and preserve”

250. In the Section addressing the legal standard in respect of Question 1, the African Union explained the meaning of the term “marine environment”. To recall, the term refers broadly to the natural environment and physical surroundings relating to the sea and oceans, including all forms of marine life.

251. The ordinary meaning of the term “**protect**” is to “defend or guard from danger or injury” and “keep safe, take care of”.³⁰⁶ In this way, the act of “protecting” comes in response to some **threat of harm**. The ordinary meaning of the term “**preserve**” is “to keep from perishing”, “prevent”, or “make lasting”.³⁰⁷

252. Consistent with the ordinary meanings of the verbs “protect and preserve” the marine environment, the Annex VII Arbitral tribunal in the *South China Sea* case explained, in respect of Article 192, that “[t]his ‘general obligation’ extends both to the ‘*protection*’ of the marine environment from **future damage** and the ‘*preservation*’ in the sense of **maintaining or improving its present condition**”.³⁰⁸ For the Tribunal, Article 192 entailed both “the positive obligation to take active measures to protect and preserve the marine environment” and also “by logical implication”, “the negative obligation not to degrade the marine environment”.³⁰⁹

2. Relevant context shows that the obligation to protect and preserve the marine environment is differentiated between and among States

253. The meaning of the general obligation in Article 192 is informed by other provisions of the Convention, which shed contextual light on the obligations to protect and preserve the marine environment. Some of these contextual provisions refer explicitly to protection and preservation,³¹⁰ while others deal with closely related concepts.³¹¹ For present purposes, the African Union notes two general aspects arising from this context.

254. *First*, although the obligation to protect and preserve the marine environment rests on all States, collectively and individually,³¹² the context reveals that the way it applies to

³⁰⁶ Oxford English Dictionary, Definition of “*protect, v.*”, available at <https://www.oed.com/view/Entry/153127?redirectedFrom=protect#eid>, last accessed 2 May 2023

³⁰⁷ Oxford English Dictionary, Definition of “*preserve, v.*”, available at <https://www.oed.com/view/Entry/150728?rskey=RxZVN5&result=2#eid>, last accessed 2 May 2023.

³⁰⁸ *South China Sea Arbitration (Philippines v China)*, Award of 12 July 2016, PCA Case No 2013-19, ICGJ 495 (PCA 2016), para. 941 (emphasis added), available at <https://pcacases.com/web/sendAttach/2086>, last accessed 13 June 2023.

³⁰⁹ *South China Sea Arbitration (Republic of the Philippines v. People’s Republic of China)*, *South China Sea Arbitration (Philippines v China)*, Award of 12 July 2016, PCA Case No 2013-19, ICGJ 495 (PCA 2016).

³¹⁰ See, for example, Article 56 of the UNCLOS (titled “Rights, jurisdiction and duties of the coastal State in the exclusive economic zone”) providing “jurisdiction” to coastal States in the EEZ with regard to “protection and preservation of the marine environment”.

³¹¹ See, for example, Article 61 of the UNCLOS (titled “Conservation of the living resources”), which requires coastal States to determine the total allowable catch of living resources in its EEZ, taking account, inter alia, of the best scientific evidence available to it.

³¹² *South China Sea Arbitration (Philippines v China)*, Award of 12 July 2016, PCA Case No 2013-19, ICGJ 495 (PCA 2016), para. 940: “the Tribunal notes that the obligations in Part XII apply to all States with respect to

individual States varies depending on the State's particular geographic situation. This is because the UNCLOS ascribes special rights and duties to different States in different geographic regions. For instance, under Article 2, a State's "sovereignty" extends to its territorial sea. Under Article 56, States enjoy "sovereign rights" and "jurisdiction" in the Exclusive Economic Zone, including "with regard to ... the protection and preservation of the marine environment".³¹³ Coastal States also enjoy exclusive "rights" in respect of the continental shelf, pursuant to Article 77. Importantly, under Article 193, States have the "sovereign right to exploit their natural resources ... in accordance with their duty to protect and preserve the marine environment". The geographic differentiation in rights enjoyed by States in different parts of the sea also results in a corresponding differentiation in their obligation to protect and preserve the marine environment.

255. *Second*, the general obligation to protect and preserve the marine environment is differentiated between and among State Parties according to their level of development. The UNCLOS seeks to contribute to "the realization of a just and equitable international economic order which takes into account the interests and needs of mankind as a whole and, in particular, the special interests and needs of developing countries, whether coastal or land-locked".³¹⁴ In pursuit of these objectives, the UNCLOS sets out specific obligations relating to assistance from developed States to developing States in terms of scientific expertise, technology transfer and financial assistance.³¹⁵ Indeed, such assistance is a critical feature of the cooperation mandated by Article 197 of the UNCLOS. These provisions indicate that the obligation to protect and preserve the marine environment, while common to all State Parties, is also differentiated in accordance with the state of economic and technological development of the State Parties, *i.e.*, in accordance with the principle of CBDR-RC.

256. As previously explained above, collaboration of the kind mandated by Article 197 of the UNCLOS has resulted in an international consensus on the principle of CBDR-RC, and

the marine environment in all maritime areas, both inside the national jurisdiction of States and beyond it..." See also E. Uhlmann, "State Community Interests, Jus Cogens and Protection of the Global Environment: Developing Criteria for Peremptory Norms", 11 *Geo. Int'l Env'tl L. Rev.* (1998), 101, (**Annex-13**); Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area, Advisory Opinion of 1 February 2011, ITLOS Case No. 17, ITLOS Reports 2011, p. 10, at p. 59, para. 180, available at https://www.itlos.org/fileadmin/itlos/documents/cases/case_no_17/17_adv_op_010211_en.pdf, last accessed 12 June 2023.

³¹³ In this connection, in the *SFRC advisory opinion*, the ITLOS has clarified that while coastal States have the "primary responsibility" to adopt measures under Article 192 of the Convention, and ensure compliance, flag States "are obliged to take the necessary measures to ensure that their nationals and vessels flying their flag" comply with the relevant measures enacted by the coastal State (SFRC Advisory Opinion, paras. 120-124. See also, *Alleged Violations of Sovereign Rights and Maritime Spaces in the Caribbean Sea (Nicaragua v. Colombia)*, Judgment of 21 April 2022, *I.C.J.*, para. 95), available at <https://www.icj-cij.org/sites/default/files/case-related/155/155-20220421-JUD-01-00-EN.pdf>, last accessed 14 June 2023.

³¹⁴ UNCLOS, Preambular paragraph 5.

³¹⁵ *E.g.*, see, Article 244(2), UNCLOS which imposes on State Parties an obligation to "actively promote the flow of scientific data and information and the transfer of knowledge resulting from marine scientific research, especially to developing States...". Annex VI to UNCLOS: Resolution on Development of National Marine Science, Technology and Ocean Service Infrastructures (The Conference recognized that the Convention will "will contribute to the realization of a just and equitable international economic order through making provision for the peaceful use of ocean space, the equitable and efficient management and utilization of its resources, and the study, protection and preservation of the marine environment," while bearing in mind "the special needs and interests of the developing countries, whether coastal, land-locked, or geographically disadvantaged").

extensive commitments regarding financial assistance, technology transfer and capacity building assistance from developed to developing States, under the international climate change regime. When deciding how collective obligations are to be apportioned as between different State Parties, the Tribunal should be mindful of the consensus on that matter under the international climate change regime.

3. Summary of the legal standard under Article 192

257. In sum, the UNCLOS's general obligation in Article 192 is as follows.

258. States must *protect* (guard from danger or injury; keep safe) and *preserve* (keep from perishing; make lasting) the marine environment, including its living resources. Case law has explained these two terms extend both to “the ‘*protection*’ of the marine environment from future damage and the ‘*preservation*’ in the sense of maintaining or improving its present condition”;³¹⁶ and, entail both a positive obligation to take active measures, and a negative obligation not to degrade the marine environment.

259. Finally, as a general matter, the obligation in Article 192 is differentiated among States, according to their geographical differences, and to each State's national circumstances in line with the principle of CBDR-RC. These differentiations apply across the board, *i.e.*, to each of the specific obligations which arise in the context of climate change, as unpacked below.

C. Application of the legal standard under Article 192 in the context of climate change

260. In this Section, in light of the legal standard set forth above, the African Union identifies three sets of specific obligations arising under the general obligation to protect and preserve the marine environment in relation to climate change impacts.

261. This Section first addresses certain specific obligations of cooperation concerning both climate change mitigation and adaptation actions to protect and preserve the marine environment. Second, the Written Statement identifies specific obligations that are particular to mitigation of climate change. Third, the Written Statement discusses specific obligations that are particular to adaptation to climate change.

1. Specific obligations of cooperation in respect of climate change mitigation and adaptation actions

262. Climate change is a “common concern of mankind”;³¹⁷ threatening humankind's shared global environment, including the marine environment. Given the character of the challenges that climate change raises, in respect of both mitigation and adaptation, the obligation to protect the marine environment from future harm, and to maintain and improve its present condition, requires cooperation among States. The international community has long emphasised the need for such cooperation in response to climate change. The preamble

³¹⁶ *South China Sea Arbitration (Philippines v China)*, Award of 12 July 2016, PCA Case No 2013-19, ICGJ 495 (PCA 2016), para. 941 (emphasis added).

³¹⁷ UNFCCC, first preambular paragraph.

to the UNFCCC, for instance, expressly acknowledges that “the global nature of climate change calls for the widest possible cooperation by all countries”.³¹⁸

263. The need for cooperative engagement among States to address threats to the marine environment, including its living resources, is a cornerstone principle of the UNCLOS and is reflected in numerous provisions of the Convention and related legal instruments. To recall, in Section V.A above, the African Union described overarching obligations under the UNCLOS to cooperate in the protection and preservation of the marine environment, particularly through cooperation in competent international organisations and in formulating “international rules, standards and practices and procedures ... for the protection and preservation of the marine environment”.³¹⁹

264. As the African Union discusses in the next two Sections, these general obligations in the UNCLOS to cooperate to protect and preserve the marine environment give rise to certain specific obligations for State Parties in relation to both climate change mitigation and adaptation.³²⁰

265. *First*, the African Union recognises that effective cooperation in order to protect and preserve the marine environment requires institutions to develop and coordinate climate change actions by States at the national, regional and global level. These include actions to monitor GHG emissions and their impacts on the climate and, hence, the marine environment, as well as to coordinate actions needed to maintain and improve the present condition of the marine environment by tackling these impacts. It is only through such

³¹⁸ UNFCCC, sixth preambular paragraph.

³¹⁹ *See*, Section V.A.

³²⁰ Further obligations of cooperation are found throughout Part XII (*See* Articles 194(1); 197-201, 202, and the international rule-making provisions of Section 5); applying to conservation and management of living resources, such as shared, straddling and highly migratory fish stocks (*See* UNCLOS, Article 61 (conservation of the living resources in the EEZ); Article 65 (cooperation for the conservation of marine mammals in the EEZ); Article 66 (conservation of anadromous stocks in the EEZ); Articles 116-120 (conservation and management of the living resources of the high seas); applying to protection of the marine environment of the Area, including through establishing cooperative institutions (*See* Part XI of the UNCLOS); and addressing cooperation in marine scientific research and development and transfer of marine technology (*See* respectively, Section 2 of Part XIII and Section 2 of Part XIV, each titled “International Cooperation”).

See also, cooperation provisions of the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (hereafter BBNJ Treaty) available at

https://www.un.org/bbnj/sites/www.un.org.bbnj/files/draft_agreement_advanced_unedited_for_posting_v1.pdf, last accessed 14 June 2023, including Article 6 (international cooperation); Articles 9(2) (cooperation with regard to marine genetic resources); Article 11(2)(f) (technical and scientific cooperation); Articles 14(b) and 19 (area-based management tools); Articles 42 and 43 (capacity building and transfer of marine technology); Article 50(2)(d) (Secretariat cooperation with other international bodies); and Article 51 (a clearing house mechanism that shall facilitate cooperation).

See also, cooperation provisions under the 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, adopted on 4 August 1995, 2167 U.N.T.S. 3 (hereafter “UNFSA”), available at https://treaties.un.org/doc/Treaties/1995/08/19950804%2008-25%20AM/Ch_XXI_07p.pdf, last accessed 15 June 2023, including Article 8 (cooperation on conservation and management); Article 10 (cooperation of relevant national agencies); Article 14 (cooperation with regard to scientific research); Articles 20 and 21 (cooperation in enforcement); and Article 25 (cooperation with developing States).

concerted and coherent action among States that duplication of efforts, blind spots in research and efforts, and suboptimal regulation can be avoided.

266. In that respect, the African Union acknowledges the concerted efforts of the international community to date regarding climate change, especially within the cooperative framework of the UNFCCC.

267. However, in view of the obligations of the UNCLOS State Parties, under Article 192 of the Convention, to protect and preserve the marine environment, specifically, in the face of climate change, the African Union considers that it may be necessary for the UNCLOS State Parties to augment the existing UNFCCC framework, through renewed cooperative efforts, to ensure that climate change impacts on the marine environment are adequately addressed. The African Union notes that the marine environment is not the focus of either the UNFCCC, which is concerned primarily with stabilizing anthropogenic GHG emissions in the atmosphere,³²¹ or the Paris Agreement, which enhances the implementation of the Convention, in particular through a goal relating to atmospheric temperature rise.³²² Neither instrument establishes any specific objectives or targets relating specifically to the marine environment.

268. The African Union considers, therefore, that State Parties to the UNCLOS collectively have a specific obligation, under Article 192 of the UNCLOS, to review formally whether the existing cooperative framework should be adapted to address the marine environment more explicitly and in more detail. State Parties could use the relevant existing forums – the COP of the UNFCCC, which also serves as the Meeting of Parties of the Paris Agreement – to pursue these efforts.

269. *Second*, the developed UNCLOS State Parties bear an obligation to deliver on their commitments under the international climate change regime regarding financial assistance, technology transfer and capacity building, and to urgently explore making further commitments.

270. Climate change is a global problem, and can be addressed effectively only if States act together in a cooperative manner. A critical aspect of that cooperation is assistance from developed States – through financing, technology transfer and capacity building – for developing States. Such assistance is necessitated by the fact that crucial resources to tackle the climate crisis are heavily concentrated in the developed States. In this context, it is also worth recalling that while developing States, including African States, have made a minimal contribution to the GHG emissions that cause climate change, they face its considerable burdens and adverse effects disproportionately.

271. The UNCLOS mandates cooperation among States to protect and preserve the marine environment. Article 192 imposes an obligation on State Parties collectively and individually, such that some aspects of discharging that obligation will necessarily entail cooperative efforts. Article 197 requires State Parties to “cooperate on a global basis and, as appropriate, on a regional basis, directly or through competent international organizations, in

³²¹ See UNFCCC, second preambular paragraph, and Article 2. See also, Lavanya Rajamani and Jacob Werksman, “Climate Change” in Lavanya Rajamani, Jacqueline Peel (eds), *The Oxford Handbook of International Environmental Law*, 2nd ed. (Oxford University Press, 2021), p. 498, (Annex 4).

³²² Paris Agreement, Article 2.

formulating and elaborating international rules... for the protection and preservation of the marine environment...”. Article 197 requires State Parties not only to set out such international rules on paper, but also to abide by them. Failure to abide by the international rules cooperatively established to protect and preserve the marine environment would be a failure to cooperate in good faith, and also a failure to protect and preserve the marine environment contrary to Article 192.

272. In the context of climate change, States have indeed formulated international rules for the protection and preservation of the marine environment, as part of the international climate change regime. State Parties are under an UNCLOS obligation, under Articles 197 and 192, to abide by their commitments in the international climate change regime.

273. Among the commitments made by State Parties in the international climate change regime are the obligations of developed States to assist developing States through financing, technology transfer and capacity building. Under Article 4.4 of the UNFCCC, developed States are under an obligation to “assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects”. Under Article 4.5, developed States have committed to “take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly developing country Parties, to enable them to implement the provisions of the Convention”. Under Articles 7.13, 10.1 and 11.1 of the Paris Agreement, developed States have committed to providing “[c]ontinuous and enhanced international support”, technology transfer and capacity building assistance to developing States in their adaptation efforts. Developed States have also committed to mobilising USD 100 billion per year to address the climate-related needs of developing countries.³²³

274. Despite these commitments, developed States are yet to deliver fully on them.³²⁴ Developed States have consistently failed to meet the USD 100 billion target, with the COP of the UNFCCC expressing “deep regret” and “serious concern” at the state of climate financing, and “urging” developed States to increase their efforts.³²⁵

275. Interpreted in light of both the context in the UNCLOS, and the international climate change regime, including the principle of CBDR-RC, Article 192 requires that developed States live up to the aforementioned commitments made in the context of the international climate change regime, and explore making further commitments in this regard.

2. Specific obligations related to mitigation

276. In Section IV.B above, the African Union described how anthropogenic GHG emissions pollute the marine environment, and that this pollution has already caused, and will continue to cause, significant deleterious effects for that environment. GHG emissions,

³²³ See Copenhagen Accord, para 8 (“In the context of meaningful mitigation actions and transparency on implementation, developed countries commit to a goal of mobilizing jointly USD 100 billion dollars a year by 2020 to address the needs of developing countries”).

³²⁴ IPCC 2022, Summary for Policymakers, *Mitigation of Climate Change*, para. B.5.4.

³²⁵ See UNFCCC, Report of the Conference of the Parties on its twenty-sixth session, held in Glasgow from 31 October to 13 November 2021, UN Doc. FCCC/CP/2021/12/Add.1, pp. 5, 12. See also COP27 Report on Climate Finance, p. 2.

therefore, impair the present condition of the marine environment, and threaten its future condition.

277. Specifically, the African Union emphasised that anthropogenic GHG emissions have caused, and continue to cause, ocean acidification, increased ocean temperatures, deoxygenation and sea level rise, with severe consequences for (among others) ocean ecosystems and biodiversity generally, coastal infrastructure, and other aspects of the “marine environment”.

278. As a result of these circumstances, anthropogenic GHG emissions engage the general obligation of State Parties under Article 192 to take mitigation action to protect and preserve the marine environment, by reducing emissions. In that respect, the African Union identifies three specific obligations under Article 192 in this regard.

a. *Specific obligation concerning the reduction of emissions, and the allocation of the burden of such reduction*

279. To recall, as explained in Section VII.B.1 above, Article 192 requires State Parties to *protect* the marine environment (guard it from danger or injury; keep safe) and *preserve* it (keep from perishing; make lasting). The obligation addresses both the “*protection*” of the marine environment from future damage and the “*preservation*” of its present condition.³²⁶

280. As elaborated in Section IV.B above, anthropogenic GHG emissions are a major source of ongoing and threatened future harm to the marine environment. As such, Article 192 imposes a specific obligation on State Parties collectively to reduce this source of harm, by taking effective action to reduce emissions. Put differently, allowing emissions to continue unabated, in the knowledge that they will cause continued, significant harm to the marine environment, is a manifest failure to “protect and preserve”.

281. There is, in this regard, overlap between the obligation to “protect and preserve” in Article 192, and the obligation to take measures to “reduce, prevent and control” marine pollution in Article 194. Consequently, the actions required by State Parties to fulfil this aspect of the specific obligations to mitigate emissions under Article 192 are the same as those required to fulfil the specific obligations to mitigate emissions under Article 194. In Section VI, in the context of Question 1, the African Union has addressed these specific obligations in detail and incorporates those arguments here. In particular, State Parties are under a specific obligation:

- (a) adopt collectively effective measures to reduce GHG emissions;
- (b) reduce emissions collectively, on an urgent basis, to an extent that allows them to meet the 1.5°C temperature level set under the international climate change regime, which will bring about a degree of “control” over the rate at which marine pollution increases;

³²⁶ *South China Sea Arbitration (Philippines v China)*, Award of 12 July 2016, PCA Case No 2013-19, ICGJ 495 (PCA 2016), para. 941 (emphasis added).

- (c) reduce emissions collectively, on an urgent basis, beyond this level in order to fulfil their obligations to “prevent” further marine pollution and “reduce” accumulated marine pollution;
- (d) allocate the burden of emissions reductions asymmetrically in line with the UNCLOS obligation to cooperate, interpreted in light of both the context in the UNCLOS, and the international climate change regime, including the principle of CBDR-RC.

b. *Specific obligations concerning the development of scientific information and technology relevant for mitigation*

282. The obligation to “protect and preserve” the marine environment, under Article 192, gives rise to a specific obligation on State Parties collectively to conduct further research on, and develop technology to support, climate change mitigation efforts, and to do so in a cooperative manner, whereby developed States fund scientific research and technological development, and share the output of these exercises with developing States in order to promote collective climate change mitigation efforts.

283. The preamble of the UNCLOS addresses in a single phrase the “study, protection and preservation of the marine environment”.³²⁷ This combination of words underscores the close relationship between the need for “study” and the ability to “protect” and “preserve” the marine environment: the actions needed to protect and preserve the marine environment presuppose a thorough understanding of the threats to that environment.

284. In that respect, the UNCLOS requires State Parties to use the “best” available scientific information and technology to protect and preserve the marine environment.³²⁸ This obligation is ongoing, because the “best” information and technology is the most contemporary, accurate and effective. Again, “study” is necessary in order to optimise the actions to be taken to protect and preserve the marine environment. In this Section, the African Union explains that the specific obligation of State Parties extends, therefore, not only to using the best available scientific knowledge and technologies, but also to creating new “bests” in these areas through further research and technological innovation.

285. Scientific understanding around climate change mitigation is reasonably well developed. Nonetheless, there remain gaps in understanding. For example, there are still issues with data quality and the frequency of reporting of GHG emissions, especially non-CO₂ emissions, whose effects are not always thoroughly understood.³²⁹ With respect to low-income countries, there are knowledge gaps in relation mitigation pathways and their

³²⁷ UNCLOS, fourth preambular paragraph.

³²⁸ For example, Articles 61 and 119 of the UNCLOS relating to the conservation of the living resources of the exclusive economic zone and high seas call for using “best scientific evidence available”. Article 194(1) imposes on States an obligation to use the “best practicable means at their disposal” to prevent, reduce and control pollution of the marine environment from any source. Conservation of living resources and preventing, reducing and controlling pollution are all more specific elaborations of the general obligation to “protect and preserve the marine environment”.

³²⁹ IPCC 2022, Emissions Trends and Drivers, *Mitigation of Climate Change*, p. 273.

impacts. Indeed, for some countries, there are “very few or no studies at all”.³³⁰ The IPCC has also said that, “despite huge expansion in the literature”, “modelling still struggles to bring together detailed physical and economic climate impacts and mitigation”.³³¹ There is also “limited knowledge about the quantification of the blue carbon stocks”, *i.e.*, the volume at which so-called blue carbon ecosystems (mangroves, tidal and salt marshes and seagrasses) – can store carbon as a mitigation function; and how to manage blue carbon generally.³³² Further, there is uncertainty about what might occur if and when the sequestration capacity of the ocean and marine ecosystems reaches the point that the ocean sink becomes, itself, an emitter.³³³

286. To effectively mitigate the harm caused to the marine environment by climate change, these knowledge gaps need to be filled on an urgent basis through scientific research. Doing so is a specific obligation that arises for State Parties, collectively, under Article 192.

287. Additionally, innovative technologies are, and likely will remain, important to protect and preserve the marine environment from the impacts of climate change. Parties to the Paris Agreement, for example, have acknowledged “the importance of technology for the implementation of mitigation [...] actions under this Agreement”.³³⁴

288. There are a number of proposed technologies which, although not available as an effective pathway to mitigation, may become a viable means of protecting and preserving the marine environment. These include: for example, carbon capture and storage (“CCS”); direct air carbon capture; and ocean fertilisation.

- **Carbon capture and storage (“CCS”) and direct air carbon capture:** these are technologies where CO₂ is either captured before it is released into the atmosphere (CCS), or extracted from the atmosphere (direct air carbon capture), and effectively stored without leakage.³³⁵
- **Ocean fertilisation:** adding iron or other nutrients, such as volcanic ash, phosphate and urea, into the ocean with low biological productivity in order to stimulate phytoplankton growth.³³⁶

289. The obligation in Article 192 requires, as a specific obligation arising in the context of climate change, that State Parties collectively explore and develop such mitigation technologies.

³³⁰ IPCC 2022, Mitigation and Development Pathways in the Near to Mid-term, *Mitigation of Climate Change*, p. 476.

³³¹ IPCC 2022, Introduction and Framing, *Mitigation of Climate Change*, p. 191.

³³² IPCC 2022, Mitigation and Development Pathways in the Near to Mid-term, *Mitigation of Climate Change*, p. 476.

³³³ IPCC 2022, Mitigation and Development Pathways in the Near to Mid-term, *Mitigation of Climate Change*, p. 476.

³³⁴ Paris Agreement, Article 10.2.

³³⁵ IPCC 2018, Strengthening and Implementing the Global Response, *Special Report on Global Warming of 1.5°C*, p. 394.

³³⁶ E. Johansen, “Ocean Fertilisation” in Johansen, Bush and Jakobsen (eds.), *The Law of the Sea and Climate Change* (Cambridge University Press, 2020), p. 185, (Annex-14).

290. In conducting scientific research, and in developing and deploying technologies, States must conduct themselves in a manner consistent with the obligations of cooperation under Article 197 of the UNCLOS. As discussed above, a critical aspect of that cooperation is assistance from developed States – through financing, technology transfer and capacity building – for developing States. Article 244(2) of the UNCLOS imposes on State Parties an obligation to “actively promote the flow of scientific data and information and the transfer of knowledge resulting from marine scientific research, especially to developing States...”.³³⁷ Consistent with these obligations of cooperation in the UNCLOS, developed States have undertaken extensive commitments, under the international climate change regime, on asymmetric cooperation on scientific research and technological development, characterised by the funding of such activities, technology transfer and capacity building assistance.³³⁸

291. In sum, the general obligation under Article 192 entails a specific obligation for State Parties collectively to engage in relevant scientific research and technological development. Further, interpreted in light of both the context in the UNCLOS, and the international climate change regime, including the principle of CBDR-RC, Article 192 requires developed States to abide by their commitments with respect to funding scientific research and technological development, sharing scientific findings and transferring technologies, and capacity building, and to explore further commitments in these areas.

c. Specific obligation to ensure that novel mitigation technologies do not entail unintended harm to the marine environment

292. *Third*, in developing and deploying novel technologies for climate change mitigation, State Parties have a collective obligation to consider how the use of these technologies could affect the marine environment, and to protect and preserve the marine environment against any adverse “side-effects” of their use.

293. To illustrate, CCS and direct air carbon capture both involve technologies where CO₂ is either captured before it is released into the atmosphere or extracted from the atmosphere (direct air carbon capture). Under some proposals, the CO₂ would then be stored in the seabed or continental shelf – giving rise to risks of leakage. Under Article 192, interpreted in light of the precautionary approach which States have adopted in broader international law,³³⁹

³³⁷ See also Article 202 of the UNCLOS, which provides that “States shall, directly or through competent international organizations ... promote programmes of scientific, educational, technical and other assistance to developing States for the protection and preservation of the marine environment and the prevention, reduction and control of marine pollution”, and Article 266(2), which clarifies that “States shall promote the development of the marine scientific and technological capacity of States which may need and request technical assistance in this field, particularly developing States, ... with regard to ... the protection and preservation of the marine environment”.

³³⁸ E.g.: Article 7.13 of the Paris Agreement states that “[c]ontinuous and enhanced international support shall be provided to developing country Parties”, with a similar provision in Articles 9.1, covering mitigation and adaptation. Articles 10.1 and 11.1 address, respectively, the importance of technology development and transfer, and capacity building, for mitigation and adaptation.

³³⁹ *Southern Bluefin Tuna (New Zealand v. Japan; Australia v. Japan)*, Provisional Measures, Order of 27 August 1999, ITLOS Reports 1999, p. 280, available at https://www.itlos.org/fileadmin/itlos/documents/cases/case_no_3_4/published/C34-O-27_aug_99.pdf, last accessed 12 June 2023; *Responsibilities and obligations of States sponsoring persons and entities with respect to activities in the Area* (Request for advisory opinion submitted to the seabed disputes chamber), 1 February 2011, ITLOS Reports 2011, paras. 125-135, available at https://www.itlos.org/fileadmin/itlos/documents/cases/case_no_17/17_adv_op_010211_en.pdf, last accessed 12

State Parties have an obligation to avoid such “solutions” to GHG emissions, unless sufficient evidence is available to ensure the marine environment is not damaged in the process.

294. Similarly, ocean fertilisation consists of adding iron or other nutrients, such as volcanic ash, phosphate and urea, into the ocean with low biological productivity in order to stimulate phytoplankton growth.³⁴⁰ In theory, this could increase the capacity of the ocean as a CO₂ sink, and thus increase the climate mitigating functions of the ocean. However, there are evidently risks from interfering with the ocean’s composition and ecosystems in this way.³⁴¹

295. In this regard, the African Union emphasises that the obligation to protect and preserve the marine environment also imposes a specific obligation on State Parties, when deploying novel climate change mitigation technologies, to ensure that those technologies themselves do not harm the marine environment.

3. Specific obligations related to adaptation

296. As discussed in Section II above, “adaptation” is one of the three pillars of the global response to climate change. The term refers to measures which seek to increase the ability to adapt to the adverse impacts of climate change, and foster climate “resilience” and low GHG development. A very concrete example of adaptation measures is the construction of sea walls in vulnerable areas to prevent erosion of the coastline. Since the obligation to protect and preserve the marine environment entails measures to safeguard the marine environment from threats, and to maintain and improve its present condition, climate change adaptation measures are a critical component of the obligation in Article 192.³⁴²

297. To recall, the Paris Agreement recognises that “adaptation is a global challenge faced by all”, which contributes to protecting ecosystems. The Agreement also underscores “the importance of international cooperation on adaptation efforts” and “of taking into account the needs of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change”.³⁴³ Under the Paris Agreement, developed States have

June 2023; UNFSA, Article 6, available at https://www.un.org/Depts/los/convention_agreements/texts/fish_stocks_agreement/CONF164_37.htm, last accessed 13 June 2023; BBNJ Agreement, Article 5(d).

³⁴⁰ E. Johansen, “Ocean Fertilisation”, 184, p. 185, (Annex-14).

³⁴¹ In this respect, the African Union supports the decision adopted by the COP of State Parties to the CBD urging States “to ensure that ocean fertilization activities do not take place until there is an adequate scientific basis on which to justify such activities, including assessing associated risks, and a global, transparent and effective control and regulatory mechanism is in place for these activities; with the exception of small scale scientific research studies within coastal waters” (UNEP/CBD/COP/DEC/IX/16, p. 7, para. 4), available at <https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.cbd.int%2Fdoc%2Fdecisions%2Fcop-09%2Fcop-09-dec-16-en.doc&wdOrigin=BROWSELINK>, last accessed 14 June 2024.

³⁴² In addressing Question 1, the African Union noted above that the general obligation to prevent, control and reduce pollution of the marine environment entails specific obligations concerning climate change mitigation. To recall, this is because Article 194 of the UNCLOS requires State Parties to “prevent, control and reduce” pollution itself, and does not concern adapting to effects of that pollution. On the other hand, Article 192 (the subject of the present discussion on Question 2) requires State Parties to “protect and preserve” the marine environment. That obligation is broader, and requires State Parties to maintain and improve the present condition of the marine environment.

³⁴³ Paris Agreement, Article 7.6.

committed to providing “[c]ontinuous and enhanced international support”, technology transfer and capacity building assistance to developing States in their adaptation efforts.³⁴⁴

298. As the effects of climate change on the marine environment are already manifesting themselves in significant ways, adaptation measures are urgently required. This is particularly so for vulnerable regions like Africa, where the environmental and human effects of climate change are already being felt to the greatest extent. As such, the specific obligations discussed in this Section are of the utmost importance to the African Union and similarly placed States.

299. The African Union spells out four specific obligations under the subheadings below – (1) specific obligations concerning the development of scientific information and technology relevant for adaptation to protect and preserve the marine environment, (2) specific obligations concerning adaptation actions to protect and preserve the marine environment physically, (3) specific obligations concerning adaptation of policies towards marine ecosystems and habitats, and (4) specific obligations concerning adaptation of resource conservation and management policies to reflect climate change impacts.

300. Interpreted in light of both the context in the UNCLOS, and the international climate change regime, including the principle of CBDR-RC, Article 192 casts the greater weight of each of these specific obligations on developed States, which must support of the adaptation efforts of developing States, including African States, including through finance, technology, and capacity building.

a. *Specific obligations concerning the development of scientific information and technology relevant for adaptation*

301. The obligation to “protect and preserve” the marine environment gives rise to a specific obligation to conduct collectively further research on, and develop technology for, climate change adaptation efforts, and to do so in a cooperative manner, with developed States funding scientific research and technological development, and sharing the output of these exercises with developing States.

302. As noted above, the “study ... of the marine environment” is listed as one of the preambular objectives of the UNCLOS, in a single phrase with protection and preservation of that environment. The combination of the three words together underscores the close relationship between “study” of the marine environment on the one hand, and its protection and preservation, on the other.³⁴⁵ Studying the marine environment is a necessary step in protecting and preserving it.

303. The UNCLOS also requires State Parties to use the “best” available scientific information and technology to protect and preserve the marine environment.³⁴⁶ This obligation is ongoing, because the “best” information and technology is the most

³⁴⁴ Paris Agreement, Articles 7.13, 10.1 and 11.1.

³⁴⁵ UNCLOS, fourth preambular paragraph.

³⁴⁶ For example, Articles 61 and 119 of the UNCLOS relating to the conservation of the living resources of the exclusive economic zone and high seas call for using “best scientific evidence available”. Article 194(1) imposes on States an obligation to use the “best practicable means at their disposal” to prevent, reduce and control pollution of the marine environment from any source.

contemporary, accurate and effective. In this Section, the African Union explains that the specific obligation of State Parties extends not only to using best scientific knowledge and technologies that already exist, but also to creating new “bests” in these areas.

304. The UNCLOS obligations in relation to research and technology are critical to climate change adaptation, because adapting to any new situation – particularly one that is evolving dynamically – requires a thorough understanding of the situation; the possible courses of adaptation action to address the situation; and how these possible courses of action will interact with the evolving situation.

305. In the case of climate change, adaptation requires a thorough understanding of the marine environment, the potential impacts of climate change on that environment over an extended time horizon, and the potential courses of action to adapt the marine environment.

306. With respect to these critical questions, States have repeatedly recognised at various for a that there are important gaps in scientific knowledge.³⁴⁷ For example, the COP of the Convention on Biodiversity has called upon States to “[i]dentify, monitor and address the impacts of climate change and ocean acidification on biodiversity and ecosystem services, and assess the future risks for biodiversity and the provision of ecosystem services using the latest available vulnerability and impact assessment frameworks and guidelines”.³⁴⁸ The COP also called upon States to identify “areas and features of the marine environment that are important for conservation and sustainable use of marine and coastal biodiversity”.³⁴⁹

307. To design and implement effective adaptation measures, States will need to fill the knowledge gaps through scientific research. Therefore, scientific research is a specific obligation that arises for State Parties, collectively, under Article 192.

³⁴⁷For example, Articles 61 and 119 of the UNCLOS relating to the conservation of the living resources of the exclusive economic zone and high seas call for using “best scientific evidence available”. Article 194(1) imposes on States an obligation to use the “best practicable means at their disposal” to prevent, reduce and control pollution of the marine environment from any source.

³⁴⁷ For example, States have acknowledged the need to “continue to update a comprehensive and accessible global database of all forms of life in the sea, and [to] further assess and map the distribution and abundance of species in the sea”. States have recognised the need for their governments “to foster further research activities, in accordance with international law, including the United Nations Convention on the Law of the Sea, to explore marine communities where the current level of knowledge is scarce or inexistent” (*See* UNEP/CBD/COP/DEC/X/29, para. 10, available at <https://www.cbd.int/doc/decisions/cop-10/cop-10-dec-29-en.pdf>, last accessed 13 June 2023). They have also acknowledged the need to carry out “assessments on the status and trends of cold-water coral reef ecosystems, seamounts, and hydrothermal vents” (UNEP/CBD/COP/DEC/X/29, para. 13(m), available at <https://www.cbd.int/doc/decisions/cop-10/cop-10-dec-29-en.pdf>, last accessed 13 June 2023)), which are critical for marine biodiversity. States have stressed the “pressing need for research to advance our understanding of marine ecosystem dynamics and the role of the ocean in the global carbon cycle” (UNEP/CBD/COP/DEC/X/29, para. 62, available at <https://www.cbd.int/doc/decisions/cop-10/cop-10-dec-29-en.pdf>, last accessed 13 June 2023)). The Cancún Adaptation Framework emphasizes the need for scientific studies such as “impact, vulnerability and adaptation assessments, including assessments of financial need as well as economic, social and environmental evaluation of adaptation options”. (FCCC/CP/2010/7/Add.1, para. 14, *b*), available at <https://documents-dds-ny.un.org/doc/UNDOC/GEN/G11/605/50/PDF/G1160550.pdf?OpenElement>, last accessed 14 June 2023.

³⁴⁸ COP 10 Decision UNEP/CBD/COP/DEC/X/33, Biodiversity and climate change, para 8, available at <https://www.cbd.int/doc/decisions/cop-10/cop-10-dec-33-en.pdf>, last accessed 13 June 2023.

³⁴⁹ COP 10 Decision X/29, Marine and coastal biodiversity, para. 25, available at <https://www.cbd.int/doc/decisions/cop-10/cop-10-dec-33-en.pdf>, last accessed 13 June 2023..

308. Additionally, innovative technologies are, and likely will remain, important to protect and preserve the marine environment from the impacts of climate change. Parties to the Paris Agreement, for example, have acknowledged “the importance of technology for the implementation of [...] adaptation actions under this Agreement”.³⁵⁰ The obligation in Article 192 requires, as a specific obligation, State Parties collectively to explore and develop such adaptation technologies. While doing so, States must also ensure that the novel adaptation technologies do not cause unintended negative side effects on the marine environment.

309. In conducting scientific research, and in developing and deploying technology, States must conduct themselves in a manner consistent with the obligations of cooperation under Article 197 of the UNCLOS. As discussed above, a critical aspect of that cooperation is assistance from developed States – through financing, technology transfer and capacity building – for developing States. Article 244(2) of the UNCLOS imposes on State Parties an obligation to “actively promote the flow of scientific data and information and the transfer of knowledge resulting from marine scientific research, especially to developing States...”.³⁵¹ Consistent with these obligations of cooperation in the UNCLOS, developed States have undertaken extensive commitments, under the international climate change regime, on asymmetric cooperation on scientific research and technological development, characterised by funding of such activities, technology transfer and capacity building assistance.³⁵²

310. In sum, the general obligation under Article 192 entails a specific obligation for State Parties collectively to engage in relevant scientific research and technological development. Further, interpreted in light of both the context in the UNCLOS, and the international climate change regime, including the principle of CBDR-RC, Article 192 requires developed States to abide by their commitments with respect to funding scientific research and technological development, sharing scientific findings and transferring technologies, and capacity building, and explore further commitments in these areas.

b. *Specific obligations concerning adaptation actions to protect and preserve the marine environment physically*

311. To recall, the obligation to protect and preserve the marine environment requires State Parties to take measures seeking to increase the ability of the marine environment to adapt to the adverse impacts of climate change, and foster climate “resilience”. Some of these adaptation measures require an alteration of the marine environment in a physical sense, including through the creation of new infrastructure, to prevent its degradation from climate change impacts or to enhance its resilience against such effects. Without such physical

³⁵⁰ Paris Agreement, Article 10.2.

³⁵¹ See also Article 202(a) of the UNCLOS, which provides that “States shall, directly or through competent international organizations ... promote programmes of scientific, educational, technical and other assistance to developing States for the protection and preservation of the marine environment and the prevention, reduction and control of marine pollution”, and Article 266(2), which clarifies that “States shall promote the development of the marine scientific and technological capacity of States which may need and request technical assistance in this field, particularly developing States, ... with regard to ... the protection and preservation of the marine environment”.

³⁵² E.g.: Article 7.13 of the Paris Agreement states that “[c]ontinuous and enhanced international support shall be provided to developing country Parties”, with a similar provision in Articles 9.1, covering mitigation and adaptation. Articles 10.1 and 11.1 address, respectively, the importance of technology development and transfer, and capacity building, for mitigation and adaptation.

alteration, some parts of the marine environment will suffer degradation and may be permanently lost.

312. As a practical matter, most physical adaptation of the marine environment will occur within the territorial limits of a State. As such, it is the territorial State which is best placed to assess vulnerabilities and decide on the necessary adaptation projects. In this sense, physical adaptation measures are “country-driven”.³⁵³

313. As explained in Section II.C above, Africa is the continent most vulnerable to the effects of climate change. Africa includes six SIDS³⁵⁴ well recognised as the most vulnerable of all to climate change.³⁵⁵ More than half the countries in Africa are coastal States.³⁵⁶ The African coastline is mostly very low-lying.³⁵⁷ These factors make the physical effects of climate change particularly pronounced on the African continent, and render it absolutely necessary for significant actions to be taken to adapt physically Africa’s coastal regions and its broader marine environment. Without immediate and ongoing physical adaptation measures, for the foreseeable future, significant portions of the African coast will be irretrievably lost to the effects of climate change, resulting in an environmental and human crisis of tragic proportions. As such, the specific obligations discussed in this Section are of the utmost importance to the African Union.

314. To give some examples, on the African continent, States are currently undertaking or planning to undertake a series of physical adaptation measures.

- Building anti-erosive and anti-flooding structures, including stone dykes, small retaining walls, and anti-fire corridors, and planting 1.4 million trees, in Comoros, under a project overseen by the United Nations Environment Programme³⁵⁸;
- Afforestation along stream banks and coastlines in Togo to reduce coastal erosion, under a program sponsored by Global Environment Facility³⁵⁹;

³⁵³ Paris Agreement, Articles 7.2 and 7.5.

³⁵⁴ Specifically, Cabo Verde, the Comoros, Guinea-Bissau, Mauritius, Saõ Tomé and Príncipe, and the Seychelles. See United Nations Economic Commission for Africa, “African small island developing states”.

³⁵⁵ See UNFCCC, “*Climate Change: Small island developing States*”, 1st ed. (Climate Change Secretariat (UNFCCC), 2005), p. 2, available at https://unfccc.int/resource/docs/publications/cc_sids.pdf, last accessed 15 June 2023. (“Small island developing States (SIDS) have long been recognized by the international community as a special case whose needs and concerns have to be addressed”).

³⁵⁶ 38 African countries are coastal: Madagascar, Somalia, South Africa, Mozambique, Egypt, Eritrea, Morocco, Libya, Angola, Namibia, Tanzania, Tunisia, Algeria, Cape Verde, Gabon, Nigeria, Mauritania, Liberia, Sudan, Ghana, Kenya, Senegal, Cote d’Ivoire, Seychelles, Cameroon, Sierra-Leone, Guinea-Bissau, Comoros, Mauritius, Guinea, Djibouti, Equatorial Guinea, Saõ Tomé and Príncipe, Republic of the Congo, Benin, The Gambia, Togo, Democratic Republic of the Congo.

³⁵⁷ Ibe, A. C., and L. F. Awosika. 1991. Sea level rise impact on African coastal zones. In *A change in the weather: African perspectives on climate change*, ed. S.H. Omide and C. Juma, 105-12. Nairobi, Kenya: African Centre for Technology Studies. A Change in the Weather: African Perspectives on Climatic Change (ciesin.org), available at <http://www.ciesin.org/docs/004-153/004-153.html>, last accessed 13 June 2023.

³⁵⁸ United Nations Environment Programme, “Comoros Ecosystem-based Adaptation 2017-2022”, (2019), available at <https://wedocs.unep.org/20.500.11822/28424>, last accessed 9 June 2023.

³⁵⁹ Global Environment Facility, “Project Identification Form (PIF): Strengthening resilience to climate change of coastal communities in Togo” (2019), available at https://www.thegef.org/sites/default/files/web-documents/10165_LDCF_Togo_PIF.pdf, last accessed 9 June 2023.

- Construction of beach stabilisation infrastructure including groynes, breakwater systems, revetment systems, and seawalls in the Gambia, under a program of the United Nations Development Programme and Global Environmental Facility. The same program oversees the construction of dykes, spillways, contour and diversion bunds, irish crossings, gully plugs, road ramps on inland waterways, the restoration of mangrove forests and wetlands, and the introduction of a desalinisation processes and salt resistant seeds in the Gambia’s rice growing regions³⁶⁰;
- Introducing coastal flood and erosion early warning and risk management systems in Liberia under a United Nations Development Programme and Global Environmental Facility program³⁶¹;
- Constructing small landing wharfs and ramps to climate-proof essential fisheries and local transportation infrastructure in Guinea Bissau under a program of the United Nations Development Programme and Global Environmental Facility.³⁶² The same program oversees the establishment of rainwater harvesting systems to serve rice fields impacted by saline intrusion and flooding, and the promotion of alternative agricultural production systems in cashew nuts production areas;
- Construction of evacuation centres, dykes, automated weather data generation stations, and infrastructure for water harvesting, storage and irrigation, as well as the rehabilitation of mangrove ecosystems in Kenya through a program of the Adaptation Fund³⁶³;
- Construction of boreholes, seawalls, groynes in Tanzania, under a program implemented by the UNEP.³⁶⁴

315. These are only a few examples of the vast array of physical adaptation measures that are urgently required in African and other developing States. Any delay or failure in implementing such adaptation measures will result in an irrevocable loss of significant parts

³⁶⁰ Global Environment Facility, “Project Identification Form (PIF): Enhancing Resilience of Vulnerable Coastal Areas and Communities to Climate Change in the Republic of Gambia”, (2011), available at [https://publicpartnershipdata.azureedge.net/gef/PMISGEFDocuments/Climate Change/Gambia - %284724%29 - Enhancing Resilience of Vulnerable Coastal Areas a/12-21-2011 ID4724 PIF Gambia Coastal Adaptation 20 December 2011 %28v%29.pdf](https://publicpartnershipdata.azureedge.net/gef/PMISGEFDocuments/Climate%20Change/Gambia-%284724%29-Enhancing%20Resilience%20of%20Vulnerable%20Coastal%20Areas%20a/12-21-2011_ID4724_PIF_Gambia%20Coastal%20Adaptation%202011%28v%29.pdf), last accessed 9 June 2023.

³⁶¹ United Nations Development Programme, “Enhancing the resilience of vulnerable coastal communities in Sinoe County of Liberia: Key results and outputs”, available at <https://www.adaptation-undp.org/projects/enhancing-resilience-vulnerable-coastal-communities-sinoe-county-liberia>, last accessed 9 June 2023.

³⁶² United Nations Development Programme, Government of Republic of Guinea-Bissau, “Project Document for nationally implemented projects financed by the Least Developed Countries Fund (LDCF)”, (2019), available at https://info.undp.org/docs/pdc/Documents/GNB/4978_LDCF_Guinea%20Bissau_PRODUC_April%202019.pdf, last accessed 9 June 2023.

³⁶³ National Environment Management Authority, “Programme Proposal, Integrated Programme to Build Resilience to Climate Change & Apative Capacity of Vulnerable Communities in Kenya”, (2014), available at <https://pubdocs.worldbank.org/en/107731532335172942/8-Kenya-Climate-Change-Adaptation-programme-proposal-full.pdf>, last accessed 9 June 2023.

³⁶⁴ United Nations Environment Programme, “Climate Adaptation in Tanzania with Ecosystem Restoration & Flood Defence Infrastructure - UNEP Lessons in Climate Change Adaptation” (2022), available at <https://wedocs.unep.org/handle/20.500.11822/40369>, last accessed 9 June 2023.

of the marine environment. As such, State Parties are under a specific obligation to ensure that these adaptation measures are taken.

316. Yet, ongoing and planned physical adaptation measures are nowhere near what is necessary to prevent degradation and/or enhance resilience of the marine environment.³⁶⁵

317. Physical adaptation measures entail significant financial costs, and the deployment of the most advanced technologies. Unfortunately, these are not resources that developing States, especially those in Africa, possess. The only way for these physical adaptation measures to be rendered possible is through financing, technology transfer and capacity building assistance from developed States. As such, developed State Parties are under a specific obligation under Article 192 of the UNCLOS to assist and enable physical adaptation projects in developing States. An important aspect of that obligation is for developed States to abide by the commitments they have already made in this regard, in the international climate change regime, consistent with the cooperation obligations in the UNCLOS.

318. The Paris Agreement underscores “the importance of international cooperation on adaptation efforts” and “of taking into account the needs of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change”.³⁶⁶ Under Articles 7.13, 10.1 and 11.1 of the Paris Agreement, developed States have committed to providing “[c]ontinuous and enhanced international support”, technology transfer and capacity building assistance to developing States in their adaptation efforts. Developed States have also committed to mobilising USD 100 billion per year to address the climate-related needs of developing countries.³⁶⁷

319. Despite the ambitious nature of these commitments made in the international climate change regime, developed States are yet to deliver on many of those commitments. The latest IPCC assessment concludes that “[p]rogress on the alignment of financial flows towards the goals of the Paris Agreement remains slow”.³⁶⁸ Developed States have consistently failed to meet the USD 100 billion target, with the COP of the UNFCCC expressing “deep regret” and “serious concern” at the state of climate financing, and “urging” developed States to increase their efforts.³⁶⁹

320. Since physical adaptation measures are necessary for the protection and preservation of the marine environment, and they cannot be taken without assistance from developed States, developed States are under a specific obligation under Article 192 to render such assistance by way of cooperation to protect and preserve the marine environment. Interpreted in light of both the context in the UNCLOS, and the international climate change regime,

³⁶⁵ By the end of the century, an estimated USD \$40-170 billion is annually required to fund coastal adaptation, recently currently coastal infrastructure finance lay at 1 billion per year in 2014. See United Nations Environment Programme, “Diving Deep: Finance, Ocean Pollution and Coastal Resilience” (2022), p. 32, **(Annex-15)**.

³⁶⁶ Paris Agreement, Article 7.6.

³⁶⁷ See Copenhagen Accord, para. 8 (“In the context of meaningful mitigation actions and transparency on implementation, developed countries commit to a goal of mobilizing jointly USD 100 billion dollars a year by 2020 to address the needs of developing countries”).

³⁶⁸ See J IPCC 2022, Summary for Policymakers, *Mitigation of Climate Change*, para. B.5.

³⁶⁹ See UNFCCC, Report of the Conference of the Parties on its twenty-sixth session, held in Glasgow from 31 October to 13 November 2021, UN Doc. FCCC/CP/2021/12/Add.1, pp. 5, 12. See also COP27 Report on Climate Finance, p. 2.

including the principle of CBDR-RC, Article 192 requires that developed States live up to the aforementioned commitments they made in the context of the international climate change regime, and explore making further commitments in this regard.

c. *Specific obligations concerning adaptation of policies towards marine ecosystems and habitats*

321. Article 192 places on State Parties a specific obligation to adapt their policies towards marine ecosystems and habitats.

322. The obligation to protect and preserve the marine environment requires States to maintain and improve the condition of the marine environment, including marine ecosystems and habitats. Given that climate change impacts, such as ocean acidification, increased ocean temperatures, deoxygenation and sea level rise are already affecting ecosystems, States must take adaptation measures to stop further degradation of ecosystems and enhance their resilience to climate change.

323. To fulfil the obligation to improve the condition of the marine environment, States should employ “an integrated holistic approach aiming to improve the water quality and restore the health and functioning of the whole ecosystem”.³⁷⁰ States have expressed broad consensus on a range of measures that must be taken as part of this holistic approach, at various international fora. These include:

- “further intergrat[ing] climate change-related aspects of marine and coastal biodiversity into relevant national strategies, action plans and programmes, including, *inter alia*, national biodiversity strategies and action plans (NBSAPs), national adaptation programmes of action (NAPAs), national integrated marine and coastal management programmes, ... and other marine environment and resource management-related strategies”.³⁷¹
- “prevent[ing] significant adverse effects by unsustainable human activities to marine and coastal areas, especially those identified as ecologically or biologically significant”³⁷², and “achiev[ing] long-term conservation, management and sustainable use of marine resources and coastal habitats”.³⁷³
- [f]urther efforts to ensure the sustainability of fisheries, by managing the impacts of fisheries on species and the wider ecosystem ... through implementing the ecosystem approach; eliminating illegal, unreported and unregulated (IUU) fishing; minimizing the detrimental impacts of fishing practices; mitigating and managing by-catches sustainably and reducing discards, in order to attain a sustainable exploitation level of

³⁷⁰ UNEP/CBD/COP/DEC/X/29, para. 13(j), available at <https://www.cbd.int/doc/decisions/cop-10/cop-10-dec-29-en.pdf>, last accessed 13 June 2023.

³⁷¹ CBD, Decision X/29, para. 7, available at <https://www.cbd.int/doc/decisions/cop-10/cop-10-dec-29-en.pdf>, last accessed 13 June 2023.

³⁷² UNEP/CBD/COP/DEC/X/29, para. 73., available at <https://www.cbd.int/doc/decisions/cop-10/cop-10-dec-29-fr.pdf>, last accessed 13 June 2023.

³⁷³ UNEP/CBD/COP/DEC/X/29, para. 15, available at <https://www.cbd.int/doc/decisions/cop-10/cop-10-dec-29-fr.pdf>, last accessed 13 June 2023.

marine fishery resources and thereby contributing to a good environmental status in marine and coastal waters.³⁷⁴

- Creation of marine protected areas,³⁷⁵ and “improving the coverage, representativity and other network properties ...” of such areas.³⁷⁶

324. In its Decision X/33, the Conference of the Parties to the CBD provided a non-exhaustive list of measures that may serve to “increase the adaptative capacity of species and the resilience of ecosystems in the face of climate change”, including:

- (i) Reducing non-climatic stresses, such as pollution, over-exploitation, habitat loss and fragmentation and invasive alien species;
 - (ii) Reducing climate related stresses, where possible, such as through enhanced adaptive and integrated water resource and marine and coastal management;
 - (iii) Strengthening protected area networks including through the use of connectivity measures such as the development of ecological networks and ecological corridors and the restoration of degraded habitats and landscapes [in accordance with decision IX/18 on protected areas and the programme of work on protected areas (goal 1.2, activity 1.2.3)];
 - (iv) Integrating biodiversity into wider seascape and landscape management;
 - (v) Restoring degraded ecosystems and ecosystem functions; and
 - (vi) Facilitating adaptive management by strengthening monitoring and evaluation systems;
- (e) Bearing in mind that under climate change, natural adaptation will be difficult and recognizing that in situ conservation actions are more effective, also consider ex situ measures, such as relocation, assisted migration and captive breeding, among others, that could contribute to maintaining the adaptive capacity and securing the survival of species at risk, taking into account the precautionary approach in order to avoid

³⁷⁴ UNEP/CBD/COP/DEC/X/29, para. 13(g), available at <https://www.cbd.int/decision/cop/?id=12268>, last accessed 13 June 2023.

³⁷⁵ *See in this respect*, UNEP/CBD/COP/DEC/X/29, para. 8(d), available at <https://www.cbd.int/doc/decisions/cop-10/cop-10-dec-29-en.pdf>, last accessed 13 June 2023.

³⁷⁶ UNEP/CBD/COP/DEC/X/29, para. 13(a), available at <https://www.cbd.int/doc/decisions/cop-10/cop-10-dec-29-en.pdf>, last accessed 13 June 2023.

unintended ecological consequences including, for example, the spread of invasive alien species;

(f) Develop a strategy for biodiversity conservation and sustainable use, including landscape and seascape management in those areas that are becoming accessible to new uses as a consequence of climate change;

(g) Take specific measures: (i) [f]or species that are vulnerable to climate change, including migratory species; and (ii) [t]o maintain genetic diversity in the face of climate change³⁷⁷

325. The COP also invited Parties to the CBD to “[e]nhance the conservation, sustainable use and restoration of marine and coastal habitats that are vulnerable to the effects of climate change or which contribute to climate change mitigation, such as mangroves, peatlands, tidal salt-marshes, kelp forests and seagrass beds”³⁷⁸.

326. In order to protect and preserve the marine environment, State Parties are collectively under specific obligations to take measures to address threats to marine ecosystems and habitats, including, where appropriate, the measures listed above. Interpreted in light of both the context in the UNCLOS, and the international climate change regime, including the principle of CBDR-RC, Article 192 requires that developed States carry the larger weight of this obligation. In particular, and as with other adaptation measures, developed States must assist developing States in taking these actions, through financial assistance, technology transfer and capacity building.

d. *Specific obligations concerning adaptation of conservation and management policies to reflect climate change impacts*

327. Article 192 places on State Parties a specific obligation to take into account climate change impacts in formulating and updating their conservation and management policies for marine resources.

328. The obligation to protect and preserve the marine environment encompasses actions to address depleted, threatened, or endangered species. The negative obligation not to

³⁷⁷ COP 10 Decision X/33, Biodiversity and climate change, para. 8, available at <https://www.cbd.int/doc/decisions/cop-10/cop-10-dec-33-en.pdf>, last accessed 13 June 2023.

³⁷⁸ COP 10 Decision X/33, available at <https://www.cbd.int/doc/decisions/cop-10/cop-10-dec-33-en.pdf>, last accessed 14 June 2024. See also, Kunming-Montreal “*Biodiversity Framework*”, adopted by COP15 of the Convention on Biological Diversity on 19th December 2022 (decision 15/4), available at <https://www.cbd.int/doc/decisions/cop-15/cop-15-dec-04-en.pdf>, last accessed 13 June 2023. (Target 8 – “Minimize the impact of climate change and ocean acidification on biodiversity and increase its resilience through mitigation, adaptation, and disaster risk reduction actions, including through nature-based solutions and/or ecosystem-based approaches, while minimizing negative and fostering positive impacts of climate action on biodiversity”. Target 11 – “Restore, maintain and enhance nature’s contributions to people, including ecosystem functions and services, such as the regulation of air, water and climate, soil health, pollination and reduction of disease risk, as well as protection from natural hazards and disasters, through nature-based solutions and/or ecosystem-based approaches for the benefit of all people and nature”).

degrade the marine environment also means that States should avoid (1) direct harm through overharvesting fish stocks and (2) indirect harm through the destruction of habitats.

329. Under customary international law, States have permanent sovereignty over their natural resources.³⁷⁹ Article 193 of the UNCLOS recognises “the sovereign right [of State Parties] to exploit their natural resources pursuant to their environmental policies and in accordance with their duty to protect and preserve their marine environment”. The UNCLOS strikes a balance between the sovereign right to exploit resources and the obligation to protect and preserve the marine environment. Accordingly, State Parties must seek to maintain and improve the current condition of the marine ecosystems and marine living resources when exploiting their resources.³⁸⁰

330. The UNCLOS sets out further detailed provisions, requiring States to conserve and manage resources, not only when they occur entirely in their exclusive economic zone,³⁸¹ but also when those resources are shared between the exclusive economic zones of two or more coastal States, when they straddle an exclusive economic zone and an area beyond and adjacent to it. In each of these circumstances, the UNCLOS requires that State Parties cooperate to agree on necessary measures for conservation and management, including through sub-regional and regional organisations.³⁸²

³⁷⁹ The principle was recognized to be a part of customary international law by the ICJ in *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda)*, Judgment, *I.C.J. Reports 2005*, p. 168, available at <https://www.icj-cij.org/sites/default/files/case-related/116/116-20051219-JUD-01-00-EN.pdf>, last accessed 13 June 2023. See also “Permanent sovereignty over natural resources” General Assembly resolution 1803 (XVII) of 14 December 1962, available at https://legal.un.org/avl/pdf/ha/ga_1803/ga_1803_ph_e.pdf, last accessed 13 June 2023; “Declaration on the Establishment of a New International Economic Order” General Assembly resolution 3201 (S.VI) of 1 May 1974, para. 4(e), available at <http://www.un-documents.net/s6r3201.htm#:~:text=The%20right%20of%20every%20country,resources%20and%20all%20economic%20activities>, last accessed 13 June 2023; “Charter of Economic Rights and Duties of States” General Assembly resolution 3281(xxix) of 12 December 1974, Article 2(1), available at <https://investmentpolicy.unctad.org/international-investment-agreements/treaty-files/2778/download#:~:text=No%20State%20may%20use%20or,exercise%20of%20its%20sovereign%20rights>, last accessed 13 June 2023.

³⁸⁰ See ITLOS SFRC Advisory Opinion. See also, *Delimitation of the Maritime Boundary in the Atlantic Ocean (Ghana/Côte d’Ivoire)*, Provisional Measures, Order of 25 April 2015, *ITLOS Reports 2015*, paras. 69-73, available at https://www.itlos.org/fileadmin/itlos/documents/cases/case_no.23_prov_meas/23_published_texts/2015_23_Ord_25_Avr_2015-E.pdf, last accessed 13 June 2023.

³⁸¹ Article 61(2): “[t]he coastal State, taking into account the best scientific evidence available to it, shall ensure through *proper conservation and management measures* that the maintenance of the living resources in the exclusive economic zone is *not endangered by over-exploitation* (emphasis added). Article 61(3): requiring that conservation measures “shall also be designed to maintain or restore populations of harvested species at levels which can produce the maximum sustainable yield, as qualified by relevant environmental and economic factors, including the economic needs of coastal fishing communities and the special requirements of developing States, and taking into account fishing patterns, the interdependence of stocks and any generally recommended international minimum standards, whether subregional, regional or global”. Article 61(4): requiring that conservation measures “shall take into consideration the effects on species associated with or dependent upon harvested species with a view to maintaining or restoring populations of such associated or dependent species above levels at which their reproduction may become seriously threatened.”

³⁸² See Article 63 UNCLOS. Duties in relation conservation and management of straddling stocks and highly migratory species are further developed in the UNFSA.

331. Similar conservation obligations are applicable to the exploitation of the living resources of the high seas. Among others, Article 119(1) of the UNCLOS requires that in determining the allowable catch and establishing other conservation measures for the living resources in the high seas, States shall ... “take measures which are designed, on the best scientific evidence available to the States concerned, to maintain or restore populations of harvested species at levels which can produce the maximum sustainable yield” and to take into account “the special requirements of developing States”.³⁸³ Article 118 establishes a duty of cooperation in respect of conservation and management of the living resources of the high seas.³⁸⁴

332. State Parties must take climate change impacts into account when making decisions about their natural resources in the sea – both in decisions concerning their own jurisdiction, and in cooperation with other States to manage shared, straddling and highly migratory species, as well as other aspects of biodiversity beyond national jurisdiction.³⁸⁵ For example, in addition to taking decisions on factors such as the total allowable catch based on the best available science (which will necessarily take account of climate change impacts), States should also take account of climate change impacts when cooperating to divide that catch among different coastal or other States. Similarly, in deciding, under Articles 65 and 120 of the UNCLOS, whether “to prohibit limit or regulate the exploitation of marine mammals more strictly than provided for under [the UNCLOS]”, State Parties should take into account the climate change impacts faced by the relevant species (and dependent species).

333. In addition, State Parties to the UNCLOS must strictly enforce conservation and management measures, established in conformity with their duty to maintain and improve the present condition of the marine environment, on their nationals, as well as vessels flying their flags.³⁸⁶ In the *South China Sea* arbitration, the tribunal clarified that “Article 192 includes a due diligence obligation to prevent the harvesting of species that are recognised internationally as being at risk of extinction and requiring international protection”.³⁸⁷

334. In implementing this obligation, careful consideration must be given to geographical location of individual State Parties with differentiated responsibilities accruing accordingly. Specifically, coastal States enjoy sovereignty in their territory and have sovereign rights in the Exclusive Economic Zone. They are therefore best placed to set policies, rules and regulations concerning the protection and preservation of the marine environment in those geographical areas. Further, interpreted in light of both the context in the UNCLOS, and the

³⁸³ See Article 119 UNCLOS (emphasis added).

³⁸⁴ BBNJ Agreement, available at

https://www.un.org/bbnj/sites/www.un.org/bbnj/files/draft_agreement_advanced_unedited_for_posting_v1.pdf, last accessed 14 June 2023 provides further duties of cooperation in respect of the conservation and sustainable use of resources of marine biological diversity in areas beyond national jurisdiction.

³⁸⁵ Note that one of the primary objectives of the obligations contained within the BBNJ agreement, including the obligation to conduct environmental impact assessments, is to “protect, preserve, restore and maintain biodiversity and ecosystems, including with a view to enhancing their productivity and health, and strengthen resilience to stressors, including those related to climate change, ocean acidification and marine pollution”. See, Article 14(c) of the BBNJ Agreement, available at

https://www.un.org/bbnj/sites/www.un.org/bbnj/files/draft_agreement_advanced_unedited_for_posting_v1.pdf, last accessed 14 June 2023.

³⁸⁶ ITLOS SFRC advisory opinion, para 120.

³⁸⁷ *South China Sea Arbitration (Philippines v China)*, Award of 12 July 2016, PCA Case No 2013-19, ICGJ 495 (PCA 2016), para 956.

international climate change regime, including the principle of CBDR-RC, Article 192 requires that in geographical areas where multiple States share the obligation (e.g., the high seas), developed States should carry the greater weight of the obligation, to ensure that any reduction the total amount of resources exploited is allocated amongst States such that it does not prejudice the right of developing States to sustainable development.

335. In sum, therefore, States are under a specific obligation to adapt, and maintain under review, their conservation and management measures, including those agreed through cooperation with other States, to account for the impacts of climate change.

D. Conclusion to Question 2

336. The general obligation to protect and preserve the marine environment under Article 192 requires States to protect the marine environment, including living resources and ecosystem, from future harm, and requires States to maintain or improve its present condition.

337. In order to meet this obligation in relation to climate change impacts such as ocean acidification, increased ocean temperatures, deoxygenation and sea level rise, the African Union has identified the following specific obligations of State Parties to the UNCLOS, namely:

- In respect of both climate change mitigation and adaptation, to cooperate, including by building institutions and providing financing to developing countries;
- In respect of climate change mitigation specifically, to:
 - adopt effective measures to reduce GHG emissions, as set forth above, in paragraph 241, response to Question 1;
 - conduct research and develop technology in support of mitigation efforts;
 - deploy mitigation technology, such as carbon capture and storage, in a manner consistent with the obligations to protect and preserve the marine environment; and
 - allocate the burden of each of these obligations in a manner consistent with UNCLOS obligation to cooperate, interpreted in light of both the context in the UNCLOS, and the international climate change regime, including the principle of CBDR-RC, such that developed States carry the greater weight of these obligations.
- In respect of climate change adaptation specifically, to:
 - conduct research and develop technology in support of adaptation efforts;
 - take adaptation actions to protect and preserve the marine environment physically, including through the creation of new infrastructure, with developed State Parties to assist and enable physical adaptation projects in developing States;

- adopt policies and take measures to address threats to marine ecosystems and habitats, including, where appropriate, the measures listed above, in paragraphs 323-325;
- take into account climate change impacts when designing their conservation and management policies for marine resources; any reduction the total amount of resources exploited must be allocated amongst States such that it does not prejudice the right of developing States to sustainable development;
- allocate the burden of each of these obligations in a manner consistent with UNCLOS obligation to cooperate, interpreted in light of both the context in the UNCLOS, and the international climate change regime, including the principle of CBDR-RC, such that developed States carry the greater weight of these obligations.

338. The African Union expresses its conviction that compliance with these specific UNCLOS obligations, through undertaking the required actions identified, will contribute significantly to maintaining and improving the condition of the marine environment in the face of the adverse impacts of climate change.

VIII. CONCLUSION

339. This is the very first time that the African Union appears in a proceeding before the ITLOS. On behalf of its 55 member States, and 1.216 billion people (a little over fifteen per cent of the world's population), the African Union has chosen to make the African voice heard in these proceedings, because of the unique significance of the issues placed before the ITLOS, for Africa and for the world. As we have explained above, while climate change is a global problem, its effects are asymmetric. Africa is one of the regions suffering the worst effects of climate change. As such, climate change is a global problem; it is also an African problem.

340. As the African Union noted at the beginning of this Written Statement, the ITLOS has before it an opportunity to address this problem in a way that “contribute[s] to ... the betterment of the majority of mankind”. The African Union urges the ITLOS to grab that opportunity, by (1) exercising its power to grant an advisory opinion, in the present proceedings; (2) setting out, in its opinion, actionable advice, that can guide the conduct of States; and (3) in doing so, identifying the specific obligations of the UNCLOS State Parties in relation to the effect of climate change on the marine environment, resulting from the interaction between various international law norms and principles. In doing so, the ITLOS should not lose sight of the universal consensus on the differentiated nature of responsibility in relation to climate change.

341. Specifically, the African Union requests that the ITLOS find the following in its advisory opinion:

- A. The ITLOS has the jurisdiction to grant an advisory opinion, and it would be appropriate to exercise that jurisdiction, in the present matter.**

B. In response to Question 1:

- 1. Atmospheric GHG emissions are a source of pollution of the marine environment, and engage the State Parties' obligation to "prevent, control and reduce pollution of the marine environment" under Article 194 of the UNCLOS.**
- 2. Article 194(1) of the UNCLOS, when applied in the context of climate change, places State Parties under the following specific obligations, namely, to:**
 - adopt collectively effective measures to reduce GHG emissions;
 - reduce emissions collectively, on an urgent basis, to an extent that allows them to meet the 1.5°C temperature level set under the international climate change regime, which will bring about a degree of "control" over the rate at which marine pollution increases;
 - reduce emissions collectively, on an urgent basis, beyond this level in order to fulfil their obligations to "prevent" further marine pollution and "reduce" accumulated marine pollution; and
 - allocate the burden of emissions reductions asymmetrically in line with the UNCLOS obligation to cooperate, interpreted in light of both the context in the UNCLOS, and the international climate change regime, including the principle of CBDR-RC.

C. In response to Question 2:

- 1. Irrespective of whether atmospheric GHG emissions are a source of pollution of the marine environment, they engage State Parties' obligation to protect and preserve the marine environment, under Article 192 of the UNCLOS.**
- 2. Article 192 of the UNCLOS, when applied in the context of climate change, places State Parties under the following specific obligations:**
 - In respect of both climate change mitigation and adaptation, to cooperate, including by building institutions and providing financing to developing countries;
 - In respect of climate change mitigation specifically, to:
 - adopt effective measures to reduce GHG emissions, as set forth above, in paragraph 241, in response to Question 1;

- conduct research and develop technology in support of mitigation efforts;
 - deploy mitigation technology, such as carbon capture and storage, in a manner consistent with the obligations to protect and preserve the marine environment; and
 - allocate the burden of each of these obligations in a manner consistent with UNCLOS obligation to cooperate, interpreted in light of both the context in the UNCLOS, and the international climate change regime, including the principle of CBDR-RC, such that developed States carry the greater weight of these obligations.
- In respect of climate change adaptation specifically, to:
 - conduct research and develop technology in support of adaptation efforts;
 - take adaptation actions to protect and preserve the marine environment physically, including through the creation of new infrastructure, with developed State Parties to assist and enable physical adaptation projects in developing States;
 - adopt policies and take measures to address threats to marine ecosystems and habitats, including, where appropriate, the measures listed above
 - take into account climate change impacts when designing their conservation and management policies for marine resources; any reduction the total amount of resources exploited must be allocated amongst States such that it does not prejudice the right of developing States to sustainable development;
 - allocate the burden of each of these obligations in a manner consistent with UNCLOS obligation to cooperate, interpreted in light of both the context in the UNCLOS, and the international climate change regime, including the principle of CBDR-RC, such that developed States carry the greater weight of these obligations.

SUMMARY OF ARGUMENTS

1. The African Union provides below a summary of its arguments made in response to the questions posed by Commission of Small Island States on Climate Change (“COSIS”), in the request for an advisory opinion (“**the Request**”). These questions are, to recall:

“What are the specific obligations of State Parties to the United Nations Convention on the Law of the Sea (the “UNCLOS”), including under Part XII:

(a) to prevent, reduce and control pollution of the marine environment in relation to the deleterious effects that result or are likely to result from climate change, including through ocean warming and sea level rise, and ocean acidification, which are caused by anthropogenic greenhouse gas emissions into the atmosphere?

(b) to protect and preserve the marine environment in relation to climate change impacts, including ocean warming and sea level rise, and ocean acidification? ”

2. The language of questions (a) and (b) in the Request tracks the treaty language of two UNCLOS provisions. Specifically, Question (a) tracks the language of Article 194(1) of the UNCLOS, which provides that:

*States shall take, individually or jointly as appropriate, all measures consistent with this Convention that are necessary to prevent, reduce and control pollution of the marine environment from any source, using for this purpose the best practicable means at their disposal and in accordance with their capabilities, and they shall endeavour to harmonize their policies in this connection.*³⁸⁸

3. Similarly, Question (b) tracks the language of Article 192 of the UNCLOS, which provides that: *States have the obligation to protect and preserve the marine environment.*³⁸⁹

4. For this reason, the African Union’s Written Statement focuses on identifying the specific obligations arising under each of these two provisions, in the context of climate change. The African Union’s Written Statement contains eight discrete sections, each of which is briefly summarised below.

³⁸⁸ Emphasis added.

³⁸⁹ Emphasis added.

5. In Section I, the African Union provides an introduction to its Written Statement; sets out the procedural history of the request for an advisory opinion; and provides a short “roadmap” of the sections to follow. (*See paras. 1-20*)

6. In Section II.A and II.B, the African Union provides an introduction to the climate crisis, setting out certain key background facts to the request. The African Union explains the concepts of “mitigation” (reducing emissions) and “adaptation” (addressing the effects of warming from emissions that have already occurred). The Intergovernmental Panel on Climate Change (“**IPCC**”) is also introduced; the African Union explains that the IPCC comprises thousands of scientists who periodically peer-review emerging scientific literature, to provide the international community with up-to-date, global scientific consensus on the risks and impacts of climate change.

7. The African Union also sets out the international community’s cooperative efforts to address climate change: these began most concretely with the 1992 United Nations’ Framework Convention on Climate Change (“**UNFCCC**”), and notably include the 2015 Paris Agreement. Under the Paris Agreement, the parties established a global temperature goal, based on IPCC guidance: “*holding the increase in the global temperature to well below 2.0°C*” and “*pursing efforts to limit the temperature increase to 1.5°C*”. To achieve that goal, the Paris Agreement sets forth binding obligations on all parties to *identify* and *publish* their proposed “nationally determined contribution” (“**NDC**”) to emissions reductions (while leaving the amount of the reduction, and the means for following it, to each parties’ discretion). The Paris Agreement also sets forth a global goal to “enhance adaptive capacity” to climate change, and commits to financial assistance for developing countries (since confirmed as USD 100 billion per year). With respect to the Paris Agreement, the African Union explains that the parties’ currently submitted NDCs are insufficient to achieve the temperature goals; and that there are large gaps in adaptation efforts and in delivering the promised financing for developing countries. (*see paras. 21-49*).

8. In Section II.C, the African Union explains that the African continent is among the lowest contributors of historical GHG emission; and that the IPCC has confirmed that Africa has “the lowest *per capita* GHG emissions of all regions currently”. At the same time, Africa is the continent most vulnerable to the effects of climate change, especially to the incremental effects of warming between 1.5°C and 2.0°C. Many African countries are already facing compounding risks from, among others: reduced food production across crops, livestock and fisheries; increases in mortality from heat and infectious diseases; biodiversity loss, and ecosystem damage. (*See paras. 50-56*).

9. Section II.D sets out the African Union’s own efforts to combat climate change, including its coordinated policy position presented to the international community. The African Union explains that, among others, it has consistently pushed for recognition of the concept of climate justice in international forums; a “one-size fits all” approach to these complex issues is neither just, nor equitable. (*See paras. 57-64*).

10. In Section III, the African Union explains that the Tribunal has jurisdiction to grant an advisory opinion pursuant to the Request, deriving from Article 21 of the Tribunal’s Statute. Article 21 of the Statute empowers the Tribunal to grant advisory opinions; that the COSIS Agreement and COSIS Request meets the requirements of Article 21; that the Request satisfies the prerequisites for the exercise of the Tribunal’s advisory function under Article

138 of the rules of procedure; and that there are no compelling reasons to refuse to give an advisory opinion. (*See* paras. 65-86).

11. In Section IV, the African Union sets out the established scientific consensus on the impact of climate change on the oceans, drawing from IPCC materials. The African Union explains how anthropogenic GHG emissions contribute to climate change; and how GHGs (primarily CO₂) and thermal energy are absorbed into the oceans. This causes four key drivers of harm to the oceans: increased ocean acidity; increased ocean temperatures; decreased oxygen levels; and rising sea levels. The African Union explains the complex and interrelated negative effects of each driver on the marine environment; as well as the consequences of these effects for the people of Africa. (*See* paras. 87-123).

12. In Section V, the African Union identifies certain key principles of treaty interpretation that inform its legal arguments.

13. *First*, the African Union explains the need to take into account developments in international law since the conclusion of the UNCLOS when interpreting the Convention, in particular the developments in the international climate change regime. The climate change regime constitutes “relevant rules of international law applicable between the parties” under Article 31(3)(c) of the Vienna Convention. Moreover, there are clear expressions within UNCLOS demonstrating that the treaty was intended to operate coherently with other rules of international law. In respect of protection of the marine environment, Article 197 of the UNCLOS requires State Parties to cooperate in establishing international rules. Where such rules have come into existence through cooperative efforts (as they have under the climate regime), State Parties have an UNCLOS obligation to abide by them. Of particular note in this regard is the international climate change regime’s incorporation of the principle of “common but differentiated responsibilities and respective capabilities” (“**CBDR-RC**”). The African Union introduces CBDR-RC, and explains the fundamental role it plays in cooperative efforts to address climate change. (*See* paras. 129-143)

14. *Second*, the African Union explains the need to take into account the current state of scientific knowledge, recalling that UNCLOS obligations are of “a continuing – and thus necessarily evolving” nature, especially in respect of protection of the marine environment, and prevention, control and reduction of pollution of the marine environment. (*See* paras. 144-146)

15. In Section VI and VII, the African Union presents its legal arguments in response to the Questions set out in the Request.

16. Section VI responds to the question under paragraph (a) presented in the Request (“**Question 1**”), and begins by setting out the legal standard applicable under Article 194(1). In sum, the African Union explains that the obligation is triggered when there is pollution, or risk of pollution, of the marine environment. In such circumstances, States Parties must identify the universe of measures which are necessary to prevent, reduce and control the relevant marine pollution; and States Parties have a due diligence obligation to adopt those measures.

17. The three verbs “prevent”, “control” and “reduce” impose distinct and cumulative obligations on State Parties. “Prevent[ing]” pollution of the marine environment involves

“put[ting] a stop to” ongoing pollution, and “preclud[ing]” further pollution. “Reduc[ing]” pollution entails diminishing the quantity of “pollution”. “Control[ling]” pollution requires managing, holding in check, and curbing the growth of pollution of the marine environment. In respect of all three verbs, the obligation is of a due diligence character.

18. The conduct that is required to meet the due diligence obligation under Article 194(1) is not fixed in time and space. The Seabed Disputes Chamber has clarified that “[d]ue diligence is a variable concept”. The concept varies in at least three inter-related ways:

- *First*, the level of diligence required varies depending on the level of the threat to the marine environment: the greater the threat, the greater the required level of diligence. As the Seabed Disputes Chamber said, “[t]he standard of due diligence has to be more severe for the riskier activities”.
- *Second*, the level of diligence varies as knowledge regarding a particular risk changes (through scientific research): for example, additional knowledge may highlight that a risk is lesser or a greater than previously understood (in terms of likelihood of materializing or the severity of the consequences if the risk materializes); or it may reveal some previously unknown new dimension of the risk.
- *Third*, the level of diligence required may also vary as technological knowledge changes (again, through research): for example, new technologies may present more effective and accessible means to address a particular risk.

19. State Parties may discharge their obligations under Article 194(1) individually or jointly, including through cooperative efforts such as those envisaged under Article 197; and such cooperative arrangements are relevant when assessing whether a State Party has fulfilled its obligations under Article 194(1). However, the obligations remain on each State Party individually, and Article 194(1) will not necessarily be discharged through the mere existence of cooperative efforts to address a pollution problem. (*See* paras. 151-190)

20. Next, the African Union applies the legal standard in Article 194(1) in the context of climate change. *First*, the African Union establishes that atmospheric GHG emissions are a source of pollution of the marine environment in the sense of Article 1(4) of the Convention: substances (CO₂) and energy (heat) are absorbed into the ocean and cause extensive deleterious effects (as outlined in Section IV of this Written Statement. (*See* paras. 193-200)

21. As a result, Article 194(1) places obligations on State Parties to take all measures necessary to “prevent”, “reduce” and “control” marine pollution resulting from GHG emissions. To do so, States must collectively reduce their GHG emissions. Emission reductions consistent with the 1.5°C temperature level, instead of the 2.0°C level, are necessary to achieve a higher degree of “control” over pollution of the marine environment and lesser deleterious effects. However, such emission reductions fall short of “prevent[ing]” further marine pollution or “reduc[ing]” its current cumulative levels. To meet the obligations imposed by these two verbs in Article 194(1), State Parties collectively need to do more.

22. Turning to the required level of due diligence with respect to these obligations under Article 194(1), the African Union recalls that the level varies according to (i) the level of risk

(likelihood of the risk materializing and the severity of its consequences); (ii) the level of knowledge regarding that risk; and (iii) the level of knowledge regarding the means to address the risk. In the case of climate change, the level of diligence required must be set, to borrow the expression used by the Sea Bed Disputes Chamber, at its most “severe”. The risks have long-since passed from theoretical to real, with the marine environment already suffering severe consequences. It is known that, with continued emissions at today’s elevated levels, climate change poses existential threats – to biodiversity, ecosystems and habitats; to food security; to human cultures and ways of life; to the territory of States; and even, in the worst case scenarios, to humanity itself. It is also well-understood that the means to mitigate these risks of future harm are steep and sustained emission reductions.

23. In these extreme circumstances, the African Union cannot simply repeat words used by previous international adjudicators to describe the level of diligence required under the UNCLOS. No previous international legal proceeding, contentious or advisory, has addressed known existential risks of the nature, severity and urgency of those presented today by climate change.

24. Accordingly, although the Tribunal could rely on vocabulary from previous proceedings – for example, States must do their “utmost” and deploy “all the means at [their] disposal” to reduce GHG emissions – the African Union urges the Tribunal to imbue its reasoning with the immense urgency of the crisis facing the marine and broader planetary environment today. The responsibility of State Parties to act urgently under Article 194(1) to prevent and reduce marine pollution, by reducing emissions, must, therefore, be expressed in the strongest terms.

25. Interpreted in light of both the context in the UNCLOS, and the international climate change regime, including the principle of CBDR-RC, Article 194(1) casts the greater weight of each of the specific obligations arising under it on developed States. Thus, developed States must take the lead in achieving collective GHG emission reductions that would be consistent with the obligation to prevent, control and reduce pollution of the marine environment.

26. In light of the above considerations, Article 194(1) of the UNCLOS, when applied in the context of climate change, places State Parties under the following specific obligations, namely, to:

- adopt collectively effective measures to reduce GHG emissions (*See* paras. 204-209)
- reduce emissions collectively, on an urgent basis, to an extent that allows them to meet the 1.5°C temperature level set under the international climate change regime, which will bring about a degree of “control” over the rate at which marine pollution increases (*see* paras. 211-221).
- reduce emissions collectively, on an urgent basis, beyond this level in order to fulfil their obligations to “prevent” further marine pollution and “reduce” accumulated marine pollution (*see* paras. 222-231)

- allocate the burden of emissions reductions asymmetrically in line with the UNCLOS obligation to cooperate, interpreted in light of both the context in the UNCLOS, and the international climate change regime, including the principle of CBDR-RC (*see* paras. 232-239)

27. Section VII responds to the question under paragraph (b) presented in the Request (“**Question 2**”).

28. The African Union begins by setting out the legal standard under Article 192. Article 192 requires State Parties to *protect* (guard from danger or injury) and *preserve* (keep from perishing; make lasting) the marine environment. The obligation extends to both the protection of the marine environment from future damage and the maintenance and improvement of its present condition. The obligation in Article 192 applies to States according to their differing geographical situations and, interpreted in its full context, is differentiated according to each State’s national circumstances (*see* paras. 247-259)

29. Next, the African Union applies the legal standard in Article 192 in the context of climate change. Having demonstrated that atmospheric GHG emissions are a threat to the marine environment, the African Union identifies several specific obligations arising under Article 192 in relation to climate change mitigation and climate change adaptation actions. Interpreted in light of both the context in the UNCLOS, and the international climate change regime, including the principle of CBDR-RC, Article 194(1) casts the greater weight of each of the specific obligations arising under it on developed States

30. In light of the above considerations, Article 192 of the UNCLOS, when applied in the context of climate change, places State Parties under the following specific obligations:

- In respect of both climate change mitigation and adaptation, to cooperate, including by building institutions and providing financing to developing countries (*see* paras. 262-275);
- In respect of climate change mitigation specifically, to:
 - adopt effective measures to reduce GHG emissions, as set forth above, in response to Question 1 (*see* paras. 279-281);
 - conduct research and develop technology in support of mitigation efforts (*see* paras. 282-291)
 - deploy mitigation technology, such as carbon capture and storage, in a manner consistent with the obligations to protect and preserve the marine environment (*see* paras. 292-295); and
 - allocate the burden of each of these obligations in a manner consistent with UNCLOS obligation to cooperate, interpreted in light of both the context in the UNCLOS, and the international climate change regime, including the principle of CBDR-RC, such that developed States carry the greater weight of these obligations.

- In respect of climate change adaptation specifically, to:
 - conduct research and develop technology in support of adaptation efforts (*see* paras. 301-310)
 - take adaptation actions to protect and preserve the marine environment physically, including through the creation of new infrastructure, with developed State Parties to assist and enable physical adaptation projects in developing States (*see* paras. 311-320)
 - adopt policies and take measures to address threats to marine ecosystems and habitats, including, where appropriate, the measures listed above (*see* paras. 321-326)
 - take into account climate change impacts when designing their conservation and management policies for marine resources; any reduction the total amount of resources exploited must be allocated amongst States such that it does not prejudice the right of developing States to sustainable development (*see* paras. 327-335).
 - allocate the burden of each of these obligations in a manner consistent with UNCLOS obligation to cooperate, interpreted in light of both the context in the UNCLOS, and the international climate change regime, including the principle of CBDR-RC, such that developed States carry the greater weight of these obligations.

31. Section VIII concludes the African Union's Written Statement and sets out its formal request for findings from the Tribunal. The African Union notes that this marks the first time the African Union has appeared in a proceeding before the Tribunal; a testimony to the unique significance of these issues.

LIST OF ONLINE MATERIAL CITED

Online Material Cited
15th Conference of the Parties to the UNFCCC, 2/CP.15 Copenhagen Accord, adopted on 18 December 2009, FCCC/CP/2009/11/Add.1 (hereafter “Copenhagen Accord”), available at https://unfccc.int/resource/docs/2009/cop15/eng/l07.pdf , last accessed 15 June 2023
21st Conference of the Parties to the UNFCCC, Paris Agreement, adopted on 12 December 2015, 3156 U.N.T.S. (hereafter “Paris Agreement”), available at https://treaties.un.org/doc/Treaties/2016/02/20160215%2006-03%20PM/Ch_XXVII-7-d.pdf , last accessed 15 June 2023
Africa Renewal, “Africa’s chief climate negotiator: We must have tangible and actionable climate decisions for a successful COP27”, available at https://www.u.n.org/africarenewal/magazine/june-2022/africa%E2%80%99s-chief-climate-negotiator-we-must-have-tangible-and-actionable-climate , last accessed 18 May 2023
African Natural Resources Centre (ANRC), The Future of Marine Fisheries in the African Blue Economy, (African Development Bank 2022), p. 42, available at https://www.afdb.org/fr/documents/future-marine-fisheries-african-blue-economy#:~:text=With%20the%20African%20population%20expected,19%20million%20tonnes%20in%202050 , last accessed 12 June 2023
African Union Commission and African Union Development Agency, “Second Continental Report on the Implementation of Agenda 2063”, 1st ed., 2022, p. 28, available at https://au.int/sites/default/files/documents/41480-doc-2nd_Continental_Progress_Report_on_Agenda_2063_English.pdf , last accessed 12 June 2023
African Union Commission, “Agenda 2063”, 1st ed., 2015, (hereafter “Agenda 2063”), available at https://au.int/sites/default/files/documents/36204-doc-agenda2063_popular_version_en.pdf , last accessed 12 June 2023
African Union, “Statement by H.E. Cyril Ramaphosa, President of the Republic of South Africa and Outgoing Coordinator of the Committee of African Heads of State and Government on Climate”, 6 February 2022, available at https://au.int/es/node/41459 , last accessed 12 June 2023
Al Jazeera, “Global warming made Horn of African drought possible: WWA study”, 27 April 2023, available at https://www.bing.com/search?q=Al+Jazeera%2C+%E2%80%9CGlobal+warming+made+Horn+of+African+drought+possible%3A+WWA+study&form=ANNH02&ref=634ffce0f47147e5b17bd380629b1d3b , last accessed 12 June 2023
<i>Alleged Violations of Sovereign Rights and Maritime Spaces in the Caribbean Sea (Nicaragua v. Colombia)</i> , Judgment of 21 April 2022, I.C.J., available at https://www.icj-cij.org/sites/default/files/case-related/155/155-20220421-JUD-01-00-EN.pdf , last accessed 13 June 2023
<i>Application of the Convention on the Prevention and Punishment of the Crime of Genocide (Bosnia and Herzegovina v. Serbia and Montenegro)</i> , Judgment, I.C.J. Reports 2007, p. 43, available at https://www.icj-cij.org/sites/default/files/case-related/155/155-20220421-JUD-01-00-EN.pdf , last accessed 13 June 2023
<i>Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda)</i> , Judgment, I.C.J. Reports 2005, p. 168, available at https://www.icj-cij.org/sites/default/files/case-related/116/116-20051219-JUD-01-00-EN.pdf
ASEAN, “ASEAN State of Climate Change Report, available at https://asean.org/wp-content/uploads/2021/10/ASCCR-e-publication-Correction_8-June.pdf , last accessed 12 June 2023
<i>Barcelona Traction, Light and Power Company, Limited</i> , Judgment, I.C.J. Reports 1970, p. 3, Separate Opinion of Judge Padilla Nervo, p. 248, available at https://www.icj-cij.org/sites/default/files/case-related/50/050-19700205-JUD-01-08-EN.pdf
Biliana Cicin-Sai, et al., “Towards a Strategic Roadmap on Oceans and Climate: 2016 to 2021” (Washington DC: Global Ocean Forum 2016) available at https://nicholasinstitute.duke.edu/sites/default/files/publications/strategic_action_roadmap_on_oceans_and_climate_november_2016.pdf , last accessed 13 June 2023
<i>Southern Bluefin Tuna (New Zealand v. Japan; Australia v. Japan)</i> , Provisional Measures, Order of 27 August 1999, ITLOS Reports 1999, p. 280, available at

https://www.itlos.org/fileadmin/itlos/documents/cases/case_no_3_4/published/C34-O-27_aug_99.pdf , last accessed 13 June 2023
C. Freitas, <i>et al.</i> , “Behavioural responses of Atlantic cod to sea temperature changes”, (<i>Ecology and Evolution</i> , vol. 5, issue 10, 2015), 2070, pp. 2070-2083, available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4449760/pdf/ece30005-2070.pdf , last accessed 13 June 2023
C. Mackenzie, <i>et al.</i> , “Ocean Warming, More than Acidification, Reduces Shell Strength in a Commercial Shellfish Species during Food Limitation”, (<i>PLoS one</i> , vol. 9, 2014), 1, p. 2, available at https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0086764#:~:text=Data%20from%20the%20maximum%20loading,C%2C%20regardless%20of%20pH%20level
CARICOM, “Community Climate Change Centre”, available at https://caricom.org/institutions/caribbean-community-climate-change-centre-cccc/ , last accessed 12 June 2023
<i>Chagos Marine Protected Area Arbitration</i> (Mauritius v. United Kingdom), Award of 18 March 2015, PCA Case N°2011-03, available at https://files.pca-cpa.org/pcadocs/MU-UK%2020150318%20Award.pdf , last accessed 13 June 2023
Ciesin Studies, Ibe, A. C., and L. F. Awosika, “Sea level rise impact on African coastal zones”. In <i>A change in the weather: African perspectives on climate change</i> ed. S.H. Omide and C. Juma, 105-12. Nairobi, Kenya: African Centre for Technology Studies. A Change in the Weather: African Perspectives on Climatic Change (ciesin.org), available at http://www.ciesin.org/docs/004-153/004-153.html , last accessed 13 June 2023
Constitutive Act of the African Union, done at Lomé, 11 July 2000, available at https://au.int/sites/default/files/pages/34873-file-constitutiveact_en.pdf , last accessed 24 April 2023
<i>Continental Shelf</i> , 29 April 1958, Geneva, Article 5(7), available at https://legal.un.org/ilc/texts/instruments/english/conventions/8_1_1958_continental_shelf.pdf , last accessed 13 June 2023
Convention on Biological Diversity on 19th December 2022 (decision 15/4), available at https://www.cbd.int/doc/decisions/cop-15/cop-15-dec-04-en.pdf , last accessed 13 June 2023
Convention on the Continental Shelf, adopted on 29 April 1958, 499 U.N.T.S. 311, Article 5(7), available at https://legal.un.org/ilc/texts/instruments/english/conventions/8_1_1958_continental_shelf.pdf , last accessed 13 June 2023
<i>Corfu Channel (United Kingdom v. Albania)</i> , Judgment of 9 April 1949, <i>I.C.J. Reports 1949</i> , p. 4, available at https://www.icj-cij.org/sites/default/files/case-related/1/001-19480325-JUD-01-00-EN.pdf , last accessed 13 June 2023
CDP Africa, “ <i>CDP Africa Report: Benchmarking Progress towards Climate Safe Cities, States, and Regions</i> ”, 1st ed. (CDP Worldwide, 2020), available at https://cdn.cdp.net/cdp-production/cms/reports/documents/000/005/023/original/CDP_Africa_Report_2020.pdf , last accessed 12 June 2023
D. Obura, <i>et al.</i> , “Vulnerability to collapse of coral reef ecosystems in the Western Indian Ocean”, <i>Nature Sustainability</i> , vol. 5 (2022), 104, available at https://www.nature.com/articles/s41893-021-00817-0 , last accessed 13 June 2023
<i>Delimitation of the Maritime Boundary in the Atlantic Ocean (Ghana/Côte d’Ivoire)</i> , Provisional Measures, Order of 25 April 2015, ITLOS Reports 2015, available at https://www.itlos.org/fileadmin/itlos/documents/cases/case_no.23_prov_meas/23_published_texts/2015_23_Ord_25_Avr_2015-E.pdf , last accessed 13 June 2023
European Council, “fit for 55”, available at https://www.consilium.europa.eu/en/policies/green-deal/fit-for-55-the-eu-plan-for-a-green-transition/ , last accessed 12 June 2023
FAO, IFAD, UNICEF, WFP and WHO, “ <i>The State of Food Security and Nutrition in the World 2022. Repurposing food and agricultural policies to make healthy diets more affordable</i> ”, available at https://data.unicef.org/resources/sofi-2022/#:~:text=The%202022%20edition%20of%20The,shocks%2C%20combined%20with%20growing%20inequalities , last accessed 12 June 2023
FCCT/CP/2010/7/Add.1, available at https://documents-dds-ny.un.org/doc/UNDOC/GEN/G11/605/50/PDF/G1160550.pdf?OpenElement , last accessed 14 June 2023
Food and Agriculture Organization of the United Nations (FAO), “ <i>Climate change and aquatic systems</i> ” in <i>Impacts of climate change on fisheries and aquaculture: Synthesis of current knowledge, adaptation and mitigation options</i> , (FAO Fisheries and Aquaculture technical paper n°627, 2018), Chapter 1, available at https://www.fao.org/3/I9705EN/i9705en.pdf , last accessed 12 June 2023

Food and Agriculture Organization of the United Nations (FAO), “ <i>The State of World Fisheries and Aquaculture 2022: Towards Blue Transformation</i> ”, p. 201, available at https://www.fao.org/3/cc0461en/cc0461en.pdf , last accessed 12 June 2023
Gabčíkovo-Nagymaros Project (Hungary/Slovakia), <i>Judgment</i> , I.C.J. Reports 1997, p. 7, p. 7, available at https://www.icj-cij.org/sites/default/files/case-related/92/092-19970925-JUD-01-00-EN.pdf , last accessed 13 June 2023
GESAMP 1983: Report of the 13th Session No. 18, available at file:///C:/Users/pnatali/Downloads/report-of-the-13th-session-en.pdf , last accessed 15 June 2023
GESAMP, “Interchange of Pollutants Between the Atmosphere and the Oceans”, <i>Reports and Studies</i> , Report No. 13, 1980, available at http://www.gesamp.org/site/assets/files/1190/interchange-of-pollutants-between-the-atmosphere-and-the-ocean-en.pdf , last accessed 13 June 2023
GESAMP, 1969: Report of the 1st Session, GESAMP I/11, 1969, available at http://www.gesamp.org/site/assets/files/1172/report-of-the-1st-session-1969-en-1.pdf , last accessed 13 June 2023
GESAMP, 1976: Report of the 8th Session GESAMP VIII/11, available at http://www.gesamp.org/site/assets/files/1181/report-of-the-8h-session-en.pdf , last accessed 13 June 2023
GESAMP, 1978: Report of the 10th Session (Rep. Stud. GESAMP (9), Annex V, available at http://www.gesamp.org/site/assets/files/1186/report-of-the-10th-session-en.pdf , last accessed 13 June 2023
Global Environment Facility, “Comoros : Adapting Water Resource Management in Comoros to increase capacity to cope with climate change” (2009), available at https://www.uncclearn.org/wp-content/uploads/library/gef56_0.pdf , last accessed 12 June 2023
Global Environment Facility, “Project Identification Form (PIF): Strengthening resilience to climate change of coastal communities in Togo” (2019), available at https://www.thegef.org/sites/default/files/web-documents/10165_LDCF_Togo_PIF.pdf , last accessed 9 June 2023
Global Environment Facility, “Project Identification Form (PIF): Enhancing Resilience of Vulnerable Coastal Areas and Communities to Climate Change in the Republic of Gambia”, (2011), available at https://publicpartnershipdata.azureedge.net/gef/PMISGEFDocuments/Climate Change/Gambia - %284724%29 - Enhancing Resilience of Vulnerable Coastal Areas a/12-21-2011_ID4724_PIF_Gambia Coastal Adaptation 20 December 2011 %28v%29.pdf , last accessed 9 June 2023
Heger, M.P., Vashold, L., “ <i>Disappearing coasts in the Maghreb: Coastal erosion and its costs</i> , World Bank Group, N°4, p. 6, (2021), available at https://thedocs.worldbank.org/en/doc/8320c30ab5eee11e7ec39f7f9496b936-0280012021/original/Note-Cost-of-Coastal-Erosion-En.pdf , last accessed 15 June 2023
Hoegh-Guldberg, <i>et al.</i> , 2014: The Ocean. In: <i>Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change</i> [V.R. Barros, <i>et al</i> (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, available at https://www.ipcc.ch/site/assets/uploads/2018/07/WGIIAR5-Chap30_OLSM.pdf , last accessed 12 June 2023
<i>In the matter of the Indus Waters Kishenganga Arbitration (Pakistan v India), Partial Award of 18 February 2013, ICGJ 476 (PCA 2013)</i> , available at https://pcacases.com/web/sendAttach/1681 , last accessed 13 June 2023
International Energy Agency “ <i>Global Methane Tracker 2022</i> ”, available at https://www.iea.org/reports/global-methane-tracker-2022/methane-and-climate-change , last accessed 12 June 2023
International Union for Conservation of Nature, “ <i>Ocean deoxygenation</i> ”, available at https://www.iucn.org/resources/issues-brief/ocean-deoxygenation-on-15-May-2023 , last accessed 12 June 2023
IPCC 1995: Technical Summary. In: <i>Climate Change 1995: The Science of Climate Change. Contribution of Working Group I to the Second Assessment Report of the Intergovernmental Panel on Climate Change</i> . [J. T. Houghton, L.G. Meira Filho, B.A. Callander, N. Harris, A. Kattenberg and K. Maskell (eds.)], p. 22, available at https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_sar_wg_i_full_report.pdf , last accessed 15 June 2023.
IPCC, “ <i>Urgent climate action can secure liveable future for all</i> ”, 20 March 2023, available https://www.ipcc.ch/report/ar6/syr/downloads/press/IPCC_AR6_SYR_PressRelease_en.pdf , last accessed 14 June 2023
IPCC, 1992: 1992 IPCC Supplement. In: <i>Climate Change: The 1990 and 1992 IPCC Assessments. IPCC First Assessment Report Overview and Policymaker Summaries and 1992 IPCC Supplement</i> , p. 8, available

at https://www.ipcc.ch/site/assets/uploads/2018/05/ipcc_90_92_assessments_far_full_report.pdf , last accessed 14 June 2023.
IPCC, 2005: Summary for Policymakers [Juan Carlos Abanades, Makoto Akai, <i>et al.</i>]. In: <i>IPCC Special Report: Carbon Dioxide Capture and Storage. A Special Report of Working Group III of the Intergovernmental Panel on Climate Change</i> [Bert Metz, Manuela Loos, <i>et al.</i> (eds.)], p. 3, available at https://www.ipcc.ch/site/assets/uploads/2018/03/srccs_summaryforpolicymakers-1.pdf , last accessed 15 June 2023.
IPCC, 2007: Changes in Atmospheric Constituents and in Radiative Forcing [Forster, P., V. Ramaswamy, P. Artaxo, T. Bernsten, R. Betts, D.W. Fahey, J. Haywood, J. Lean, D.C. Lowe, G. Myhre, J. Nganga, R. Prinn, G. Raga, M. Schulz and R. Van Dorland]. In: <i>Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change</i> [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)], (hereafter “IPCC 2007, Changes in Atmospheric Constituents and in Radiative Forcing, <i>The Physical Science Basis</i> ”), p. 212, available at https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg1-chapter2-1.pdf , last accessed 15 June 2023.
IPCC, 2007: Couplings Between Changes in the Climate System and Biogeochemistry [Denman, K.L., G. Brasseur, A. Chidthaisong, P. Ciais, P.M. Cox, R.E. Dickinson, D. Hauglustaine, C. Heinze, E. Holland, D. Jacob, U. Lohmann, S. Ramachandran, P.L. da Silva Dias, S.C. Wofsy and X. Zhang]. In: <i>Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change</i> [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)], p. 515, available at https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg1-chapter7-1.pdf , last accessed 15 June 2023
IPCC, 2007: Technical Summary [Solomon, S., D. Qin, M. Manning, R.B. Alley, T. Bernsten, N.L. Bindoff, Z. Chen, A. Chidthaisong, J.M. Gregory, G.C. Hegerl, M. Heimann, B. Hewitson, B.J. Hoskins, F. Joos, J. Jouzel, V. Kattsov, U. Lohmann, T. Matsuno, M. Molina, N. Nicholls, J. Overpeck, G. Raga, V. Ramaswamy, J. Ren, M. Rusticucci, R. Somerville, T.F. Stocker, P. Whetton, R.A. Wood and D. Wratt]. In: <i>Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change</i> [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)], (hereafter “IPCC 2007, Summary for Policymakers, <i>Mitigation of Climate Change</i> ”), p. 77, available at https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg1-ts-1.pdf , last accessed 15 June 2023.
IPCC, 2014: Summary for Policymakers. In: <i>Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change</i> [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)], available at https://www.ipcc.ch/site/assets/uploads/2018/02/ar5_wgII_spm_en.pdf , last accessed 12 June 2023.
IPCC, 2014: The Ocean [Hoegh-Guldberg, O., R. Cai, E.S. Poloczanska, P.G. Brewer, S. Sundby, K. Hilmi, V.J. Fabry, and S. Jung]. In: <i>Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change</i> [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)], (hereafter “IPCC 2014, The Ocean, <i>Impacts, Adaptation, and Vulnerability</i> ”), p. 1658, https://www.ipcc.ch/site/assets/uploads/2018/02/WGIAR5-Chap30_FINAL.pdf , last accessed 15 June 2023.
IPCC, 2018: Mitigation Pathways Compatible with 1.5°C in the Context of Sustainable Development [Collins M., M. Sutherland, L. Bouwer, S.-M. Cheong, T. Frölicher, H. Jacot Des Combes, M. Koll Roxy, I. Losada, K. McLInnes, B. Ratter, E. Rivera-Arriaga, R.D. Susanto, D. Swingedouw, and L. Tibig]. In: <i>Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty</i> [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)], available at https://www.ipcc.ch/site/assets/uploads/sites/2/2019/02/SR15_Chapter2_Low_Res.pdf , last accessed 15 June 2023.

<p>IPCC, 2018: Strengthening and Implementing the Global Response [de Coninck, H., A. Revi, M. Babiker, P. Bertoldi, M. Buckeridge, A. Cartwright, W. Dong, J. Ford, S. Fuss, J.-C. Hourcade, D. Ley, R. Mechler, P. Newman, A. Revokatova, S. Schultz, L. Steg, and T. Sugiyama]. In: <i>Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty</i> [Masson Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)], (hereafter “IPCC 2018, Strengthening and Implementing the Global Response, <i>Special Report on Global Warming of 1.5°C</i>”), pp. 375-380, available at https://www.ipcc.ch/site/assets/uploads/sites/2/2019/02/SR15_Chapter4_Low_Res.pdf, last accessed 15 June 2023.</p>
<p>IPCC, 2018: Summary for Policymakers. In: <i>Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty</i> [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)], (hereafter “IPCC 2018, Summary for Policymakers, <i>Special Report on Global Warming of 1.5°C</i>”), p. 5, available at https://www.ipcc.ch/site/assets/uploads/sites/2/2022/06/SPM_version_report_LR.pdf, last accessed 15 June 2023.</p>
<p>IPCC, 2018: Technical Summary [Allen, M.R., H. de Coninck, O.P. Dube, O. Hoegh-Guldberg, D. Jacob, K. Jiang, A. Revi, J. Rogelj, J. Roy, D. Shindell, W. Solecki, M. Taylor, P. Tschakert, H. Waisman, S. Abdul Halim, P. Antwi-Agyei, F. Aragón-Durand, M. Babiker, P. Bertoldi, M. Bindi, S. Brown, M. Buckeridge, I. Camilloni, A. Cartwright, W. Cramer, P. Dasgupta, A. Diedhiou, R. Djalante, W. Dong, K.L. Ebi, F. Engelbrecht, S. Fifita, J. Ford, P. Forster, S. Fuss, V. Ginzburg, J. Guiot, C. Handa, B. Hayward, Y. Hijioka, J.-C. Hourcade, S. Humphreys, M. Kainuma, J. Kala, M. Kanninen, H. Kheshgi, S. Kobayashi, E. Kriegler, D. Ley, D. Liverman, N. Mahowald, R. Mechler, S. Mehrotra, Y. MuLugetta, L. Mundaca, P. Newman, C. Okereke, A. Payne, R. Perez, P.F. Pinho, A. Revokatova, K. Riahi, S. Schultz, R. Sférian, S.I. Seneviratne, L. Steg, A.G. Suarez Rodriguez, T. Sugiyama, A. Thomas, M.V. Vilariño, M. Wairiu, R. Warren, K. Zickfeld, and G. Zhou]. In: <i>Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty</i> [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)], pp. 27-46, p. 37, available at https://www.ipcc.ch/site/assets/uploads/sites/2/2022/06/SR15_Full_Report_HR.pdf, last accessed 15 June 2023.</p>
<p>IPCC, 2019: Changing Ocean, Marine Ecosystems, and Dependent Communities [Bindoff, N.L., W.W.L. Cheung, J.G. Kairo, J. Aristegui, V.A. Guinder, R. Hallberg, N. Hilmi, N. Jiao, M.S. Karim, L. Levin, S. O’Donoghue, S.R. Purca Cuicapusa, B. Rinkevich, T. Suga, A. Tagliabue, and P. Williamson]. In: <i>IPCC Special Report on the Ocean and Cryosphere in a Changing Climate</i> [H.-O. Pörtner, D.C. Roberts, V. Masson-Delmotte, P. Zhai, M. Tignor, E. Poloczanska, K. Mintenbeck, A. Alegria, M. Nicolai, A. Okem, J. Petzold, B. Rama, N.M. Weyer (eds.)], (hereafter “IPCC 2019, Changing Ocean, Marine Ecosystems, and Dependent Communities, <i>Special Report on the Ocean and Cryosphere in a Changing Climate</i>”), p. 456, available at https://www.ipcc.ch/site/assets/uploads/sites/3/2022/03/07_SROCC_Ch05_FINAL.pdf, last accessed 14 June 2023.</p>
<p>IPCC, 2019: Extremes, Abrupt Changes and Managing Risk [Collins M., M. Sutherland, L. Bouwer, S.-M. Cheong, T. Frölicher, H. Jacot Des Combes, M. Koll Roxy, I. Losada, K. McInnes, B. Ratter, E. Rivera-Arriaga, R.D. Susanto, D. Swingedouw, and L. Tibig]. In: <i>IPCC Special Report on the Ocean and Cryosphere in a Changing Climate</i> [H.-O. Pörtner, D.C. Roberts, V. Masson-Delmotte, P. Zhai, M. Tignor, E. Poloczanska, K. Mintenbeck, A. Alegria, M. Nicolai, A. Okem, J. Petzold, B. Rama, N.M. Weyer (eds.)], available at https://www.ipcc.ch/site/assets/uploads/sites/3/2022/03/08_SROCC_Ch06_FINAL.pdf, last accessed 15 June 2023.</p>
<p>IPCC, 2019: Sea Level Rise and Implications for Low-Lying Islands, Coasts and Communities [Oppenheimer, M., B.C. Glavovic, J. Hinkel, R. van de Wal, A.K. Magnan, A. Abd-Elgawad, R. Cai, M. Cifuentes-Jara, R.M. DeConto, T. Ghosh, J. Hay, F. Isla, B. Marzeion, B. Meyssignac, and Z. Sebesvari]. In:</p>

<p>IPCC <i>Special Report on the Ocean and Cryosphere in a Changing Climate</i> [H.-O. Pörtner, D.C. Roberts, V. Masson-Delmotte, P. Zhai, M. Tignor, E. Poloczanska, K. Mintenbeck, A. Alegria, M. Nicolai, A. Okem, J. Petzold, B. Rama, N.M. Weyer (eds.)], (hereafter “IPCC 2019, Sea Level Rise and Implications for Low-Lying Islands, Coasts and Communities, <i>Special Report on the Ocean and Cryosphere in a Changing Climate</i>”), p. 411, available at https://www.ipcc.ch/site/assets/uploads/sites/3/2022/03/06_SROCC_Ch04_FINAL.pdf, last accessed 15 June 2023.</p>
<p>IPCC, “<i>History of the IPCC</i>”, available at https://www.ipcc.ch/about/history/, last accessed 12 June 2023.</p>
<p>IPCC, 2021: Ocean, Cryosphere and Sea Level Change [Fox-Kemper, B., H.T. Hewitt, C. Xiao, G. Aðalgeirsdóttir, S.S. Drijfhout, T.L. Edwards, N.R. Golledge, M. Hemer, R.E. Kopp, G. Krinner, A. Mix, D. Notz, S. Nowicki, I.S. Nurhati, L. Ruiz, J.-B. Sallée, A.B.A. Slangen, and Y. Yu]. In <i>Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change</i> [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)], p. 1216, available at https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Chapter09.pdf, last accessed 15 June 2023.</p>
<p>IPCC, 2021: Summary for Policymakers. In: <i>Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change</i> [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)], (hereafter “IPCC 2021, Summary for Policymakers, <i>The Physical Science Basis</i>”), para. A.1, available at https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf, last accessed 14 June 2023.</p>
<p>IPCC, 2022: Africa [Trisos, C.H., I.O. Adelekan, E. Totin, A. Ayanlade, J. Efitre, A. Gameda, K. Kalaba, C. Lennard, C. Masao, Y. Mgaya, G. Ngaruiya, D. Olago, N.P. Simpson, and S. Zakieldean]. In: <i>Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change</i> [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegria, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)], (hereafter “IPCC 2022, Africa, <i>Impacts, Adaptation and Vulnerability</i>”), p. 1290, available at https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter09.pdf, last accessed 12 June 2023.</p>
<p>IPCC, 2022: Emissions Trends and Drivers [Dhakal, S., J.C. Minx, F.L. Toth, A. Abdel-Aziz, M.J. Figueroa Meza, K. Hubacek, I.G.C. Jonckheere, Yong-Gun Kim, G.F. Nemet, S. Pachauri, X.C. Tan, T. Wiedmann]. In <i>IPCC, 2022: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change</i> [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)], p. 273, available at https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_FullReport.pdf, last accessed 15 June 2023.</p>
<p>IPCC, 2022: International cooperation [Patt, A., L. Rajamani, P. Bhandari, A. Ivanova Boncheva, A. Caparrós, K. Djemouai, I. Kubota, J. Peel, A.P. Sari, D.F. Sprinz, J. Wettstad]. In <i>IPCC, 2022: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change</i> [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)], p. 1471, available at https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_Chapter14.pdf, last accessed 13 June 2023.</p>
<p>IPCC, 2022: Mitigation and development pathways in the near- to mid-term [Lecocq, F., H. Winkler, J.P. Daka, S. Fu, J.S. Gerber, S. Kartha, V. Krey, H. Lofgren, T. Masui, R. Mathur, J. Portugal-Pereira, B. K. Sovacool, M. V. Vilarinho, N. Zhou]. In <i>IPCC, 2022: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change</i> [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)], (hereafter “IPCC 2022, Mitigation and development pathways in the near- to mid-term, <i>Mitigation of Climate Change</i>”), p.</p>

476, available at https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_FullReport.pdf , last accessed 15 June 2023.
IPCC, 2022: Oceans and Coastal Ecosystems and Their Services [Cooley, S., D. Schoeman, L. Bopp, P. Boyd, S. Donner, D.Y. Ghebrehiwet, S.-I. Ito, W. Kiessling, P. Martinetto, E. Ojea, M.-F. Racault, B. Rost, and M. Skern-Mauritzen]. In: <i>Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change</i> [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)], (hereafter “IPCC 2022, Oceans and Coastal Ecosystems and Their Services, <i>Impacts, Adaptation and Vulnerability</i> ”) p. 410, available at https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter03.pdf , last accessed 15 June 2023.
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: <i>Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change</i> [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)], (hereafter “IPCC 2022, Summary for Policymakers, <i>Impacts, Adaptation and Vulnerability</i> ”), paras. B.1.1-B.1.3, available at https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_SummaryForPolicymakers.pdf , last accessed 12 June 2023.
IPCC, 2022: Technical Summary [M. Pathak, R. Slade, P.R. Shukla, J. Skea, R. Pichs-Madruga, D. Ürgen-Vorsatz]. In: <i>Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change</i> [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)], p. 110, available at https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_FullReport.pdf , last accessed 15 June 2023.
IPCC, 2023: Summary for Policymakers. In: <i>Climate Change 2023: Synthesis Report. A Report of the Intergovernmental Panel on Climate Change. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change</i> [H. Lee and J. Romero (eds.)], p. 6, available at https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf , last accessed 14 June 2023.
ITLOS, Dossier submitted by the Commission of Small Island States on Climate Change and International Law, available at https://www.itlos.org/en/main/cases/list-of-cases/request-for-an-advisory-opinion-submitted-by-the-commission-of-small-island-states-on-climate-change-and-international-law-request-for-advisory-opinion-submitted-to-the-tribunal/dossier-submitted-by-the-commission-of-small-island-states-on-climate-change-and-international-law/ , last accessed 12 June 2023
ITLOS, Rules of the Tribunal, Adopted on 28 October 1997 (amended on 15 March and 21 September 2001, on 17 March 2009, on 25 September 2018, on 25 September 2020 and on 25 March 2021), (hereafter “ <i>Rules of the Tribunal</i> ”), available at https://www.itlos.org/fileadmin/itlos/documents/basic_texts/Itlos_8_E_17_03_09.pdf , last accessed 13 June 2023
Khan Academy, “ <i>What is Thermal Energy?</i> ”, available at https://www.khanacademy.org/science/physics/work-and-energy/work-and-energy-tutorial/a/what-is-thermal-energy , last accessed 3 May 2023
<i>Legal Consequences for States of the Continued Presence of South Africa in Namibia (South West Africa) notwithstanding Security Council Resolution 276 (1970)</i> , <i>Advisory Opinion</i> , <i>I.C.J. Reports 1971</i> , p. 16, available at https://www.icj-cij.org/sites/default/files/case-related/53/5597.pdf#:~:text=In%20its%20advisory%20opinion%20on%20the%20question%20put,by%20the%20United%20Nations%20with%20regart%20to%20Namibia. , last accessed 12 June 2023
<i>Legality of the Threat or Use of Nuclear Weapons</i> , <i>Advisory Opinion</i> , <i>I.C.J. Reports 1996</i> , available at https://www.icj-cij.org/sites/default/files/case-related/95/095-19960708-ADV-01-00-EN.pdf , last accessed 13 June 2023
M. Hood, W. Broadgate, E. Urban, O. Gaffney, “ <i>Ocean Acidification: A Summary for Policymakers from the Second Symposium on the Ocean in a High CO₂ World</i> ”, p.5, available at https://www.unclearn.org/wp-content/uploads/library/unesco62.pdf , last accessed 12 June 2023

<p><i>Migratory Species and Climate Change: Impacts of a Changing Environment on Wild Animals</i> (United Nations Environment Programme and the Secretariat of the Convention on the Conservation of Migratory Species of Wild Animals, 2006), available at https://www.cms.int/sites/default/files/document/ScC14_Inf_09_Migratory_Species&Climate_Change_E_0.pdf, last accessed 13 June 2023</p>
<p>National Aeronautics and Space Administration, “<i>World of Change: Global Temperatures</i>”, available at https://earthobservatory.nasa.gov/world-of-change/global-temperatures, last accessed 12 June 2023</p>
<p>National Environment Management Authority, “Programme Proposal, Integrated Programme to Build Resilience to Climate Change & Adaptive Capacity of Vulnerable Communities in Kenya”, (2014), available at https://pubdocs.worldbank.org/en/107731532335172942/8-Kenya-Climate-Change-Adaptation-programme-proposal-full.pdf, last accessed 9 June 2023</p>
<p>Norwegian Nobel Committee, “<i>The Nobel Prize 2007</i>”, 12 October 2007, available at https://www.nobelprize.org/prizes/peace/2007/press-release/, last accessed 18 May 2023</p>
<p><i>Nuclear Tests (Australia v. France), Judgment, I.C.J. Reports 1974</i>, p. 253, available at https://www.icj-cij.org/sites/default/files/case-related/58/058-19741220-JUD-01-00-EN.pdf, last accessed 13 June 2023</p>
<p>OECD/FAO, 2019, <i>OECD-FAO “Agricultural Outlook 2019-2028”</i>, OECD Publishing, Paris/Food and Agriculture Organization of the United Nations, Rome, available at https://www.oecd-ilibrary.org/docserver/b91999c4-en.pdf?expires=1684177249&id=id&accname=guest&checksum=D89F1D5BEFBD9618AD8F4D39AE6D7D8A, last accessed 12 June 2023</p>
<p>Order of the ITLOS 2023/1 of 15 February 2023, available at https://www.itlos.org/fileadmin/itlos/documents/cases/31/C31_Order_2023-1_15.02.2023_Readable.pdf, last accessed 12 June 2023</p>
<p>Oxford English Dictionary, Definition of “<i>control, v.</i>”, available at https://www.oed.com/view/Entry/40563?rskey=ZoZAIi&result=2&isAdvanced=false#eid, last accessed 13 June 2023</p>
<p>Oxford English Dictionary, Definition of “<i>energy, n.</i>”, available at https://www.oed.com/view/Entry/62088?redirectedFrom=energy#eid, last accessed 3 May 2023</p>
<p>Oxford English Dictionary, Definition of “<i>environment, n.</i>”, available at, https://www.oed.com/view/Entry/63089?redirectedFrom=environment#eid, last accessed 13 June 2023</p>
<p>Oxford English Dictionary, Definition of “<i>marine, n. and adj.</i>”, available at https://www.oed.com/view/Entry/114122?rskey=GxSLyV&result=1&isAdvanced=false#eid, last accessed 13 June 2023</p>
<p>Oxford English Dictionary, Definition of “<i>necessary, adj. and ..</i>”, available at (Oxford University Press 2023), https://www.oed.com/view/Entry/125629?redirectedFrom=necessary#eid, last accessed 13 June 2023</p>
<p>Oxford English Dictionary, Definition of “<i>preserve, v.</i>”, available at https://www.oed.com/view/Entry/150728?rskey=RxZVN5&result=2#eid, last accessed 2 May 2023</p>
<p>Oxford English Dictionary, Definition of “<i>prevent, v.</i>”, available at https://www.oed.com/view/Entry/151073?rskey=L80Vys&result=2&isAdvanced=false#eid, last accessed 13 June 2023</p>
<p>Oxford English Dictionary, Definition of “<i>protect, v.</i>”, available at https://www.oed.com/view/Entry/153127?redirectedFrom=protect#eid, last accessed 2 May 2023</p>
<p>Oxford English Dictionary, Definition of “<i>reduce, v.</i>”, available at https://www.oed.com/view/Entry/160503?rskey=pxR8Yd&result=2&isAdvanced=false#eid, last accessed 13 June 2023</p>
<p>Oxford English Dictionary, Definition of “<i>substance, n.</i>”, available at https://www.oed.com/view/Entry/193042?redirectedFrom=substance#eid, last accessed 3 May 2023</p>
<p>PIF’s “<i>Framework for Resilient Development in the Pacific</i>, available at https://www.forumsec.org/frdp/#:~:text=The%20Framework%20for%20Resilient%20Development%20in%20the%20Pacific,change%20and%20disaster%20risk%20management%20in%20the%20region, last accessed 12 June 2023</p>
<p><i>Pulp Mills on the River Uruguay (Argentina v Uruguay), Judgment, I.C.J. Reports 2010</i>, available at https://www.icj-cij.org/sites/default/files/case-related/135/135-20100420-JUD-01-00-EN.pdf, last accessed 13 June 2023</p>

<p>Republic of Kenya, “National Statement by Cabinet Secretary, Hon. Keriako Tobiko, EGH, SC during Opening Session of the Resumed UNEA 5.2 on 1st March 2022”, available at https://wedocs.unep.org/bitstream/handle/20.500.11822/38641/CS%20UNEA%205.2%20%20NATIONAL%20STATEMENT.pdf?sequence=1&isAllowed=y, last accessed 12 June 2023</p>
<p><i>Request for an Advisory Opinion submitted by the Sub-Regional Fisheries Commission (SRFC) (Request for Advisory Opinion submitted to the Tribunal)</i>, 2 April 2015, <i>ITLOS Reports 2015</i>, para. 55, available at https://www.itlos.org/fileadmin/itlos/documents/cases/case_no.21/advisory_opinion_published/2015_21_advop-E.pdf, last accessed 13 June 2023</p>
<p><i>Responsibilities and obligations of States sponsoring persons and entities with respect to activities in the Area (Request for Advisory Opinion submitted to the Seabed Disputes Chamber)</i>, 1 February 2011, <i>ITLOS Reports 2011</i>, p. 10, available at https://www.itlos.org/fileadmin/itlos/documents/cases/case_no_17/17_adv_op_010211_en.pdf, last accessed 12 June 2023</p>
<p>IPCC, 2022: Summary for Policymakers [P.R. Shukla, J. Skea, A. Reisinger, R. Slade, R. Fradera, M. Pathak, A. Al Khouradajie, M. Belkacemi, R. van Diemen, A. Hasija, G. Lisboa, S. Luz, J. Malley, D. McCollum, S. Some, P. Vyas, (eds.)]. In: <i>Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change</i> [P.R. Shukla, J. Skea, R. Slade, A. Al Khouradajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)], (hereafter “IPCC 2022, Summary for Policymakers, <i>Mitigation of Climate Change</i>”), para. B.5., available at https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_SummaryForPolicymakers.pdf, last accessed 14 June 2023.</p>
<p>See UNFCCC, “<i>Climate Change: Small island developing States</i>”, 1st ed. (Climate Change Secretariat (UNFCCC), 2005)</p>
<p>Separate Opinion of Judge Lucky, available at https://www.itlos.org/fileadmin/itlos/documents/cases/case_no.21/advisory_opinion_published/2015_21_SO_Luck-E.pdf, last accessed 12 June 2023</p>
<p><i>South China Sea Arbitration (Philippines v China)</i>, Award of 12 July 2016, <i>PCA Case No 2013-19, ICGJ 495 (PCA 2016)</i>, available at https://pcacases.com/web/sendAttach/2086, last accessed 13 June 2023</p>
<p>Status of the Kyoto Protocol to the United Nations Framework Convention on Climate Change, available at https://treaties.un.org/Pages/ViewDetails.aspx?src=IND&mtdsg_no=XXVII-7-a&chapter=27&clang=en, last accessed 15 June 2023</p>
<p>Statute of the International Tribunal for the Law of the Sea, Annex VI to the United Nations Convention on the Law of the Sea, done at Montego Bay, 10 December 1982, 1833 UNTS 397, available at https://www.un.org/depts/los/convention_agreements/texts/unclos/annex6.htm, last accessed 12 June 2023</p>
<p>the African Union’s Climate Change and Resilient Development Strategy and Action Plan (2022-2032), (hereafter “African Union, Climate Change Strategy Plan, available at https://au.int/sites/default/files/documents/41959-doc-CC_Strategy_and_Action_Plan_2022-2032_08_02_23_Single_Print_Ready.pdf, last accessed 14 June 2023</p>
<p>The Agreement for the establishment of the Commission of Small Island States on Climate Change and International Law, adopted on 31 October 2021 (hereafter “COSIS Agreement”), available at https://treaties.un.org/doc/Publication/UNTS/No%20Volume/56940/Part/I-56940-08000002805c2ace.pdf, last accessed 12 June 2023.</p>
<p>The Guardian, “<i>More than 400 weather stations beat heat records in 2021</i>”, available at https://www.theguardian.com/world/2022/jan/07/heat-records-broken-all-around-the-world-in-2021-says-climatologist, last accessed 12 June 2023</p>
<p>The World Bank data on CO₂ emissions, available at https://data.worldbank.org/indicator/EN.ATM.CO2E.PC?name_desc=false, last accessed 12 June 2023</p>
<p><i>Trail smelter case (United States, Canada)</i>, Award of 16 April 1938 and 11 March 1941, 3 U.N.R.I.A.A. 1905, available at https://legal.un.org/riaa/cases/vol_III/1905-1982.pdf, last accessed 13 June 2023</p>
<p>UN General Assembly, Convention on the Law of the Sea, adopted on 10 December 1982, 1833 U.N.T.S. 397 (hereafter “UNCLOS”), available at https://treaties.un.org/doc/Treaties/1994/11/19941116%2005-26%20AM/Ch_XXI_06p.pdf, last accessed 15 June 2023</p>
<p>UN General Assembly, Convention on the Law of the Sea, adopted on 10 December 1982, 1833 U.N.T.S. 397 (hereafter “UNCLOS”), available at https://treaties.un.org/doc/Treaties/1994/11/19941116%2005-26%20AM/Ch_XXI_06p.pdf, last accessed 15 June 2023</p>

UN General Assembly, United Nations Framework Convention on Climate Change, adopted on 9 May 1992, 48th session, 1771 U.N.T.S. 107 (hereafter “UNFCCC”), available at https://treaties.un.org/doc/Treaties/1994/03/19940321%2004-56%20AM/Ch_XXVII_07p.pdf , last accessed 15 June 2023
UNDP, Ensuring climate resilient water supplies in the Comoros Islands, available at https://www.adaptation-undp.org/projects/Comoros-water-GCF , last accessed 12 June 2023
UNEP, COP 10 Decision X/33, Biodiversity and climate change, available at https://www.cbd.int/doc/decisions/cop-10/cop-10-dec-33-en.pdf , last accessed 13 June 2023
UNEP/CBD/COP/DEC/IX/16, p. 7, para. 4), available at https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.cbd.int%2Fdoc%2Fdecisions%2Fcop-09%2Fcop-09-dec-16-en.doc&wdOrigin=BROWSELINK , last accessed 14 June 2024
UNEP/CBD/COP/DEC/X/29, para. 10, available at https://www.cbd.int/doc/decisions/cop-10/cop-10-dec-29-fr.pdf , last accessed 13 June 2023
UNESCO, Technical report on the status of coastal vulnerability in Central African countries, p. 35, available at https://unesdoc.unesco.org/ark:/48223/pf0000373623 , last accessed 12 June 2023
UNFCCC, Copenhagen Accord of 18 December 2009, UN Doc. No. FCCC/CP/2009/11/Add.1, pp. 5-7, para. 8, available at https://documents-dds-ny.un.org/doc/UNDOC/GEN/G10/605/63/PDF/G1060563.pdf?OpenElement , last accessed 13 June 2023
UNFCCC, Report of the Conference of the Parties on its twenty-seventh session, held in Sharm el-Sheikh from 6 to 20 November 2022, UN Doc. FCCC/CP/2022/10/Add.2, p. 2, available at https://unfccc.int/sites/default/files/resource/cp2022_10a02E.pdf
UNFCCC, Report of the Conference of the Parties on its twenty-sixth session, held in Glasgow from 31 October to 13 November 2021, UN Doc. FCCC/CP/2021/12/Add.1, available at https://unfccc.int/sites/default/files/resource/cp2021_12_adv.pdf , last accessed 13 June 2023
United Nations Assembly Resolution 3281(xxix) of 12 December 1974, Article 2(1) available at https://investmentpolicy.unctad.org/international-investment-agreements/treaty-files/2778/download#:~:text=No%20State%20may%20use%20or,exercise%20of%20its%20sovereign%20rights , last accessed 13 June 2023
United Nations Climate Change, “ <i>Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts (WIM)</i> ”, available at https://unfccc.int/topics/adaptation-and-resilience/workstreams/loss-and-damage/warsaw-international-mechanism#_Enhancing-knowledge-and-understanding-of-comprehensive-risk-management-approaches-to-address-loss-and-damage-associated-with-the-adverse-effects-of-climate-change-including-slow-onset-impacts-by-facilitating-and-promoting), last accessed 18 May 2023
United Nations Conference on the Human Environment, Declaration of the United Nations Conference on the Human Environment, adopted on 16 June 1972, U.N. Doc. A/CONF.48/14/Rev.1 (hereafter “Stockholm Declaration”), available at https://digitallibrary.un.org/record/523249?ln=en , last accessed 13 June 2023.
United Nations Department of Economic and Social Affairs, “ <i>Goal 13 – Take urgent action to combat climate change and its impacts</i> ” available at https://sdgs.un.org/goals/goal13 , last accessed 18 May 2023
United Nations Department of Economic and Social Affairs, “ <i>The 17 Goals</i> ”, available at https://sdgs.un.org/goals , last accessed 18 May 2023
United Nations Development Programme, “ <i>Enhancing the resilience of vulnerable coastal communities in Sinoe County of Liberia: Key results and outputs</i> ”, available at https://www.adaptation-undp.org/projects/enhancing-resilience-vulnerable-coastal-communities-sinoe-county-liberia , last accessed 9 June 2023
United Nations Development Programme, Government of Republic of Guinea-Bissau, “ <i>Project Document for nationally implemented projects financed by the Least Developed Countries Fund (LDCF)</i> ”, (2019), available at https://info.undp.org/docs/pdc/Documents/GNB/4978_LDCF_Guinea%20Bissau_PRODOC_April%202019.pdf , last accessed 9 June 2023
United Nations Economic Commission for Africa, “ <i>African Group of Negotiators consolidate Common Draft Position in lead up to COP 27</i> ”, available at https://www.uneca.org/stories/african-group-of-negotiators-consolidate-common-draft-position-in-lead-up-to-cop-27 , last accessed 18 May 2023

United Nations Economic Commission for Africa, “African small island developing states”, available at https://archive.uneca.org/africansmallislanddevelopingstates/pages/african-small-island-developing-states , last accessed 12 June 2023
United Nations Environment Programme and the Secretariat of the Convention on the Conservation of Migratory Species of Wild Animals, “ <i>Migratory Species and Climate Change: Impacts of a Changing Environment on Wild Animals</i> ”, 2006, available at https://www.cms.int/sites/default/files/document/ScC14_Inf_09_Migratory_Species&Climate_Change_E_0.pdf , last accessed 13 June 2023
United Nations Environment Programme, “Climate Adaptation in Tanzania with Ecosystem Restoration & Flood Defence Infrastructure - UNEP Lessons in Climate Change Adaptation” (2022), available at https://wedocs.unep.org/handle/20.500.11822/40369 , last accessed 9 June 2023
United Nations Environment Programme/Climate and Clean Air Coalition (2022). Global Methane Assessment: 2030 Baseline Report. Nairobi, available at https://www.iea.org/reports/global-methane-tracker-2022/methane-and-climate-change , last accessed 12 June 2023
United Nations Framework Convention on Climate Change, done at New York, United States of America, 9 May 1992, 1771 U.N.T.S., “ <i>History of the Convention</i> ”, available at https://unfccc.int/process/the-convention/history-of-the-convention#Essential-background , last accessed 12 June 2023
United Nations General Assembly, 11th Plenary Meeting on 23 September 2021, 76th Session, U.N. Doc. A/76/PV.11, p. 68, available at https://documents-dds-ny.un.org/doc/UNDOC/GEN/N21/262/85/PDF/N2126285.pdf?OpenElement , last accessed 13 June 2023.
United Nations General Assembly, 77th Session, Second Committee, Summary record of the 11th meeting on 22 November 2022, U.N. Doc. A/C.2/77/SR.11, para. 27, available at file:///C:/Users/pnatali/Downloads/A_C.2_77_SR.11-EN.pdf , last accessed 13 June 2023
United Nations General Assembly, Draft Agreement under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, 4 March 2023 (hereafter “BBNJ Treaty”), available at https://www.un.org/bbnj/sites/www.un.org/bbnj/files/draft_agreement_advanced_unedited_for_posting_v1.pdf , last accessed 13 June 2023
United Nations General Assembly, Summary record of the 11th meeting on 22 November 2022, 77th Session, Second Committee, U.N. Doc. A/C.2/77/SR.11, para. 27, available at https://documents-dds-ny.un.org/doc/UNDOC/LTD/N22/622/29/PDF/N2262229.pdf?OpenElement , last accessed 13 June 2023.
United Nations General Assembly, The human right to a clean, healthy and sustainable environment: resolution adopted by the General Assembly on 28 July 2022, 76th session, UN Doc. A/RES/76/300, available at https://digitallibrary.un.org/record/3983329?ln=en , last accessed 14 June 2023.
United nations, “Declaration on the Establishment of a New International Economic Order” General Assembly resolution 3201 (S.VI) of 1 May 1974, available at http://www.un-documents.net/s6r3201.htm#:~:text=The%20right%20of%20every%20country,resources%20and%20all%20economic%20activities.
United Nations, “Permanent sovereignty over natural resources” General Assembly resolution 1803 (XVII) of 14 December 1962, available at https://legal.un.org/avl/pdf/ha/ga_1803/ga_1803_ph_e.pdf , last accessed 13 June 2023
United Nations, A/CONF.164/37, 8 September 1995, Article 6, available at https://www.un.org/Depts/los/convention_agreements/texts/fish_stocks_agreement/CONF164_37.htm , last accessed 13 June 2023
United Nations, Convention on the Continental Shelf, adopted on 29 April 1958, 499 U.N.T.S. 311, available at https://legal.un.org/ilc/texts/instruments/english/conventions/8_1_1958_continental_shelf.pdf , last accessed 13 June 2023
United Nations, Convention on the High Seas, adopted on 29 April 1958, 450 U.N.T.S. 11, available at https://www.gc.noaa.gov/documents/8_1_1958_high_seas.pdf , last accessed 13 June 2023;
United States Environmental Protection Agency, “ <i>Sources of Greenhouse Gas Emissions</i> ”, available at https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions , last accessed 12 June 2023
World Bank Group, Climate Change and Marine Fisheries in Africa: Assessing Vulnerability and Strengthening Adaptation Capacity, World Bank 2019, p. 6, available at https://documents1.worldbank.org/curated/en/280891580715878729/pdf/Climate-Change-and-Marine-

[Fisheries-in-Africa-Assessing-Vulnerability-and-Strengthening-Adaptation-Capacity.pdf](#), last accessed 12 June 2023

World Meteorological Organization (WMO), “Greenhouse Gas Bulletin”, available at <https://public.wmo.int/en/greenhouse-gas-bulletin>, last accessed 12 June 2023

World Meteorological Organization (WMO), “Greenhouse Gas Bulletin”, available at <https://public.wmo.int/en/greenhouse-gas-bulletin>, last accessed 12 June 2023