ADVANCE AND UNEDITED REPORTING MATERIAL

I. Introduction

1. The ocean has long served as a source of food for human beings. Food from the ocean contributes to global food security, nutrition and sustainable development. It is an important source of sustenance, livelihood and cultural and social benefits for millions of persons around the world, particularly in coastal communities. As global food systems are increasingly challenged by population growth, ecosystem degradation and a triple planetary crisis of climate change, biodiversity loss and pollution, the importance of the ocean as the source of sustainable food is recognized more than ever. This is demonstrated by the 2030 Agenda for Sustainable Development and its ocean-relevant goals, in particular Sustainable Development Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture and Sustainable Development Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development.

2. The legal and policy framework for the ocean as a source of sustainable food is drawn from a variety of binding and non-binding instruments. Of central importance among the binding instruments is the United Nations Convention on the Law of the Sea (the Convention), which sets out the legal framework within which all activities in the oceans and seas must be carried out. The legal regime in the Convention is complemented by two implementing agreements, including the 1995 United Nations Fish Stocks Agreement, as well as a wide range of other instruments relating to the conservation and management of marine living resources, the protection and preservation of the marine environment, sustainable development, trade, food security and human rights. A third implementing agreement to the Convention, the 2023 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[1] (BBNJ Agreement) is not yet in force.

3. The importance of maintaining and strengthening the role of the ocean as a source of sustainable food is underscored by the decision of the General Assembly, in resolution 78/69 of 5 December 2023, that the twenty-fourth meeting of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea would focus its discussions on the theme "The ocean as a source of sustainable food".

4. To facilitate discussions at the twenty-fourth meeting of the Informal Consultative Process, the present report provides an overview of the current role of the ocean as a source of sustainable food, identifies pressures on that role and highlights challenges and opportunities for strengthening the role. The report draws on the contributions submitted by Member States and relevant organizations and bodies,[2] as well as on other reports and studies related to the theme.

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[1] United Nations, *Treaty Series*, vol. 1833, No. 31363.

[2] The full text of the contributions is available from the website of the Division for Ocean Affairs

II. The current role of the ocean as a source of sustainable food

A. Background

5. The ocean provides various types of food that can be sourced sustainably (sustainable food), including fish, shellfish, cephalopods, crustaceans and other marine animals, as well as algae and other marine plants. Such foods can play an important role in addressing the increased demand for sustainable and nutritious food resulting from the continuous exponential growth of the global population.[3] Indeed, the contribution of the ocean and its resources to global food security and nutrition has already been recognized,[4] as it provides half of the world's population with a significant amount of animal protein and supplies macronutrients critical to human health for more than 3 billion people and essential micronutrients for 1 in 5 people.[5] In 2020, about 89 percent (over 157 million tonnes) of total fisheries and aquaculture production was utilized for direct human consumption.[6]

6. The use of the ocean as a sustainable food source can also contribute to sustainable development, economic growth, poverty eradication, and the development of climate-resilient food systems.[7] Foods from the ocean can help improve food and nutrition security with a relatively low environmental footprint.[8] However, the role of the ocean as a source of sustainable food requires the ocean and its resources to be conserved and effectively managed to ensure the continued sustainability of these resources.

B. Sources and Types of Sustainable Food from the Ocean

7. *Capture fisheries.* Capture fisheries in marine waters is the main source of marine animal production and the dominant method of production for several species, representing 44 per cent of the total fisheries production in 2020.[9] The global capture fisheries production reached an estimated value of USD 141 billion in 2020, including 78.8 million tonnes from marine waters, a decline of 4.0 per cent compared with the average of the previous three years.[10] The world production of fisheries and aquaculture destined for direct human consumption totalled 157 million tonnes against 20 million tonnes for non-food purposes, including fish meal and fish oil.

8. While fish production experienced a slight decline by 4.5 per cent in 2019 and further 2.1 per cent in 2020, world capture fisheries production is projected to increase in the coming decades, reaching 96 million tonnes in 2050,[11] as a result of recovering stocks of certain species owing to improved resource management, growth in catches of underfished resources, and reduced discards, waste and losses.[12] However, since

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and the Law of the Sea at www.un.org/depts/los/consultative_process/icp24. The full citations for this report are available at www.un.org/depts/los/consultative_process/icp24/ICP2024AdvanceUneditedReportingMaterial.pdf.

[3] Contributions of FAO, IAEA, Monaco, European Union, and SEAFO.

[4] Contributions of SEAFO, FAO, *The State of World Fisheries and Aquaculture 2022 (Rome, 2022)*.

[5] Contributions of Iceland, and the United States of America.

[6] Contribution of the United States of America.

[7] Contributions of the Spain and the United States of America.

[8] Contribution of Iceland.

[9] FAO, *The State of World Fisheries and Aquaculture 2022*, p. 8.

[10] FAO, *The State of World Fisheries and Aquaculture 2022*, p. 17.

[11] FAO, *The State of World Fisheries and Aquaculture 2022*, p. 221.

[12] FAO *The State of World Fisheries and Aquaculture 2022*, p.25.

1980, the number of wild fish stocks that are caught unsustainably has more than doubled, with 35.1 percent of the total capture fisheries being overfished, and 52 percent fully exploited.[13]

9. Recent studies have shown that effective fisheries management and the rebuilding of overfished stocks could increase fisheries production by up to 16.5 million tonnes a year.[14] Moreover, improvements in the fisheries supply chain, including to minimize bycatch and discards and food waste could also increase the overall yield from existing fisheries.

10. *Mariculture.* Mariculture, or marine aquaculture, continues to grow worldwide, being one of the fastest growing agri-food sectors globally. In 2020, global production of marine and coastal aquaculture was 68.1 million tonnes, including 33.1 million tonnes of aquatic animals and 35 million tonnes of algae.[15] By 2030, aquatic food production is forecast to increase by another 15%, driven largely by increases in sustainable aquaculture.

11. The cumulative contribution of aquaculture to the production of fisheries and aquaculture has shown a steady increase comparable to capture fisheries, from 13.4 percent in 1990 to 49.2 per cent in 2020. With the increased demand for fish and fishery products for human consumption, mariculture is increasingly recognized as holding potential for sustainably addressing the challenges of food and nutrition security.[16]

12. The Guidelines for Sustainable Aquaculture, which were approved at the Twelfth Session of the Sub-Committee on Aquaculture of the Food and Agriculture Organization of the United Nations (FAO) in 2023,[17] show how aquaculture can improve and better support the growing needs of the international community. Sustainable mariculture includes actions aimed at restoring ecosystem structure and function to support food provisioning, minimizing pollution, invasive alien species, waste and the emergence of diseases.[18] Certain types of aquacultures, such as bivalve shellfish and seaweed production, can also provide ecosystem services, such as mitigating the impacts of excess nutrients, ocean acidification, and habitat loss.

13. Aquaculture systems and methods may be more resilient, as they have the potential to effectively manage environmental conditions, including through the cultivation of selectively bred and cultured organisms that are adapted to varying conditions, such as water temperature and pH.

14. *Algae and other marine plants.* There are about 700 edible seaweed species that are rich in essential vitamins and minerals, producing digestible proteins, lipids and carbohydrates and that can be a source of human consumption.[19] Seaweed and other algae are still underexplored as a source of food for human consumption and there is insufficient data available on seaweed, microalgal production, including

[13] FAO, *The State of World Fisheries and Aquaculture 2022*, p. 25.
[14] FAO, *The State of World Fisheries and Aquaculture 2022*, p.16.
[15] FAO, *The State of World Fisheries and Aquaculture 2022*, p.37.
[16] Contribution of the United States of America.
[17] FAO, Committee on Fisheries, Sub-Committee on Aquaculture, "Summary of the Eleventh Session of the COFI Sub-Committee on Aquaculture," (FAO Document: COFI: FT/XIX/2023/Inf. 4).
[18] FAO, *The State of World Fisheries and Aquaculture 2022*, p.23.
[19] Contribution of Iceland; Diaz CJ, Douglas KJ, Kang K, Kolarik AL, Malinovski R, Torres-Tiji Y, Molino JV, Badary A, Mayfield SP. Developing algae as a sustainable food source. Front Nutr. 2023 Jan 19;9:1029841. doi: 10.3389/fnut.2022.1029841. PMID: 36742010; PMCID: PMC9892066.

phytoplankton as a source of the long-chain omega-3 polyunsaturated fatty acids,[20] and its utilization in most countries.

15. Seaweeds and microalgae are used for a variety of food and non-food products besides human consumption, including animal feeds, pharmaceuticals, nutraceuticals, textiles, biofertilizers, bio-packaging and biofuel.[21]

16. Global production of algae has experienced a rapid growth in the past few decades from 12 million tonnes in 2000 and 21 million tonnes in 2010.[22] In 2020, the total global production of algae was 35 million tonnes and trade in algae has reached USD 1.1. billion in total value.[23] Algae were produced by 36 countries out of 61 producing countries and territories reporting algae cultivation to the FAO production data, the equivalent of 98 per cent of the world production in 2020.[24]

17. In some regions, algae production has been viewed as a contributor of nature conservation and restoration, climate change adaptation and restoration. [25] Molluscs and algae farming could offer important ecosystem services, including carbon dioxide absorption and nutrients.[26]

C. Importance of Sustainable Food from the Ocean to Food Security and Nutrition

18. To adhere to the four pillars of food security, it is necessary for seafood to offer nutritional value ("utilization"), be consistently available in ample amounts ("availability"), be obtained by people at all times ("access"), and have stable supply to prevent price fluctuations or shortages ("stability").[27] [28][29]

19. *Utilization and nutritional value*. Foods from the ocean serve as a rich source of protein and Omega-3 fatty acids.[30] [31] They supply approximately 17 per cent of

[20] Contribution of the European Union.
[21] FAO, 'Algae can play a greater role in food security and nutrition, ' available in https://www.fao.org/fishery/en/news/41391
[22] FAO, *The State of World Fisheries and Aquaculture 2022*, p. 10.
[23] FAO, *The State of World Fisheries and Aquaculture 2022*, p.10.
[24] FAO, *The State of World Fisheries and Aquaculture 2022*, p.28.
[25] Contribution of the European Union; Diaz et al, 2023.
[26] Contribution of the European Union.
[27] A/69/71.
[28] Declaration of the World Summit on Food Security (Food and Agriculture Organization of the United Nations, document WSFS 2009/2).
[29] Recently, a new concept of food security has emerged, advocating the integration of "agency" and "sustainability" alongside the traditional four pillars to better address hunger and malnutrition, and ensure global food security in both present and future contexts. For example, in relation to agency, the ability of individuals and groups to provide input into governance processes and exert control over their circumstances are recognized as crucial for addressing disparities in food systems, particularly power imbalances among actors within these systems. It is also important to ensure greater participation and capabilities within food systems for marginalized groups, including small-scale producers, women, youth, and Indigenous peoples, through robust social protection programs and equitable access to resources. Efforts to uphold the rights of women, such as participatory research and involvement in decision-making processes, are needed for reducing inequities given their significant roles in food systems. Jennifer Clapp, William G. Moseley, Barbara Burlingame, Paola Termine, Viewpoint: The case for a six-dimensional food security framework, Food Policy, Volume 106, 2022, Page 1, 102164, ISSN 0306-9192, Available at https://doi.org/10.1016/j.foodpol.2021.102164.
[30] The State of World Fisheries and Aquaculture (SOFIA), FAO (2022), pp. vi, Available at https://www.fao.org/3/cc0461en/cc0461en.pdf
[31] Contributions of Iceland, pp. 1-2

animal protein for the global population,[32] [33] and more than 50 per cent in several developing countries. [34] [35] Foods from the ocean are also unique and diverse [36] providers of micronutrients, including calcium, iron, zinc, and selenium, which are essential for preventing malnutrition, improving maternal health, and supporting cognitive and physical health at critical stages during early childhood.[37] Consuming seafood can reduce the risk of stroke, depression, and Alzheimer's disease.[38] In addition, Omega-3 fatty acids contained in seafood are known to support the development of a child's brain and nervous system.[39] Enhanced seafood consumption is also linked to better neurological, cardiovascular, and ocular health, as well as reduced cancer risk and lower incidence of neurodegenerative diseases.[40] [41]

20. *Availability*. In 2020, global fisheries and aquaculture production surged to 214 million tonnes, increased from 213 million tonnes in 2018, primarily driven by aquaculture expansion, notably in Asia.[42] By 2030, 90% of aquatic animal production will be designated for human consumption, marking a 15% increase compared to 2020, with per capita consumption anticipated to rise from 20.2 kg to 21.4 kg, driven by heightened demand linked to growing incomes, urbanization, production expansion, and dietary shifts.[43] While seafood supply is projected to grow globally, concerns arise regarding declining per capita consumption in Africa, particularly in sub-Saharan Africa, posing challenges to food security.[44]

21. Access. The fisheries and aquaculture sectors play a vital role in providing access to seafood.[45] [46] [47] Seafood can be a more affordable and accessible source of protein than other animal proteins.[48] In low-income countries, people derive a higher proportion of protein from seafood compared to people in high-income countries,

[32] Second World Ocean Assessment, Vol. I, pp. 16
[33] Contributions of the United States of America, pp. 2
[34] Contributions of Zambia, pp. 1
[35] Second World Ocean Assessment, Vol. II, pp. 475
[36] The State of World Fisheries and Aquaculture (SOFIA), FAO (2022), pp. vi, Available at https://www.fao.org/3/cc0461en/cc0461en.pdf
[37] Contributions of the USA, pp. 2
[38] The State of World Fisheries and Aquaculture (SOFIA), FAO (2022), pp. 85, Available at https://www.fao.org/3/cc0461en/cc0461en.pdf
[39] The State of World Fisheries and Aquaculture (SOFIA), FAO (2022), pp. 85, Available at https://www.fao.org/3/cc0461en/cc0461en.pdf
[40] Chengchu Liu, Nicholas V.C. Ralston, Chapter Seven - Seafood and health: What you need to know?,
Editor(s): Fidel Toldrá, Advances in Food and Nutrition Research,
Academic Press, Volume 97, 2021, Page 311, ISSN 1043-4526, ISBN 9780128245804,
https://doi.org/10.1016/bs.afnr.2021.04.001.
[41] The benefit of consuming fish is supported by a study, which found that people who were randomly assigned to follow a Mediterranean dietary pattern had a 30% lower risk of heart attacks and strokes compared to those who did not adhere to this dietary plan. Contributions of Spain, pp. 2
[42] The State of World Fisheries and Aquaculture (SOFIA), FAO (2022), pp. xviii, Available at https://www.fao.org/3/cc0461en/cc0461en.pdf
[43] The State of World Fisheries and Aquaculture (SOFIA), FAO (2022), pp. xxv, Available at https://www.fao.org/3/cc0461en/cc0461en.pdf
[44] The State of World Fisheries and Aquaculture (SOFIA), FAO (2022), pp. xxv, Available at https://www.fao.org/3/cc0461en/cc0461en.pdf
[45] The State of World Fisheries and Aquaculture (SOFIA), FAO (2022), pp. xviii, Available at https://www.fao.org/3/cc0461en/cc0461en.pdf
[46] Contributions of Monaco, pp. 1
[47] Contributions of the USA, pp. 1
[48] The State of World Fisheries and Aquaculture (SOFIA), FAO (2022), pp. 85-86, Available at https://www.fao.org/3/cc0461en/cc0461en.pdf

despite having much lower per capita consumption.[49] Millions of people are relying on fisheries for their livelihood and nutrition, including people in the coastal communities of low-income countries.[50] Small-scale fisheries landings contribute between 90 – 95 per cent to the local communities' consumption.[51] A similar contribution is also provided by the aquaculture sector, which produces foods that enhance nutrition for low-income populations, particularly important for mothers and young children.[52]

21. *Stability*. Seafood pricing and supply fluctuate subject to a range of factors. It is estimated that income increase, population growth, robust demand, diminished supply, and heightened production costs stemming from prices of inputs like feed, energy, and fish oil will gradually result in a 33 percent increase in price (nominal terms) of globally traded aquatic products by 2030.[53]

23. A sustainable food system should be able to constantly provide sufficient economic and physical access to nutritious food for people to meet their dietary needs and preferences.[54] [55] [56] A shift towards sustainable food systems is emphasized by global initiatives like the Sustainable Development Goals (SDGs) and the UN Food Systems Summit, aiming for healthier, equitable, and more sustainable food systems.[57]

D. Importance of Sustainable Food from the Ocean to the Three Pillars of Sustainable Development

24. A sustainable ocean food system is one that can bring a positive or neutral impact on the environment, generate benefits for society, and allow a shift towards a blue economy that helps to diversify sustainable economic activities for its stakeholders.[58] A just and sustainable blue transition is crucial to ensuring that the ocean can continue to contribute to sustainable development by delivering economic, social and environmental benefits to current and future generations.[59] [60]

25. The importance of sustainable fishing and aquaculture on the economy is demonstrated through their role in providing income and employment for more than

[49] The State of World Fisheries and Aquaculture (SOFIA), FAO (2022), pp. 86, Available at https://www.fao.org/3/cc0461en/cc0461en.pdf
[50] Second World Ocean Assessment, Vol. II, pp. 473
[51] Second World Ocean Assessment, Vol. II, pp. 223
[52] Second World Ocean Assessment, Vol. II, pp. 238
[53] The State of World Fisheries and Aquaculture (SOFIA), FAO (2022), pp. xxv, Available at https://www.fao.org/3/cc0461en/cc0461en.pdf.
[54] Sustainable Food Systems: Concept and Framework, FAO (2018), pp. 1, Available at https://www.fao.org/3/ca2079en/CA2079EN.pdf
[55] An Introduction to the Basic Concepts of Food Security, FAO, 1996, pp. 1, Available at https://www.fao.org/3/al936e/al936e00.pdf
[56] Jennifer Clapp, William G. Moseley, Barbara Burlingame, Paola Termine, Viewpoint: The case for a six-dimensional food security framework, Food Policy, Volume 106, 2022, Page 4, 102164, ISSN 0306-9192, Available at https://doi.org/10.1016/j.foodpol.2021.102164.
[57] Jennifer Clapp, William G. Moseley, Barbara Burlingame, Paola Termine, Viewpoint: The case for a six-dimensional food security framework, Food Policy, Volume 106, 2022, Page 5, 102164, ISSN 0306-9192, Available at https://doi.org/10.1016/j.foodpol.2021.102164.
[58] Sustainable Food Systems: Concept and Framework, FAO (2018), pp. 1, Available at https://www.fao.org/3/ca2079en/CA2079EN.pdf
[59] Sustainable Food Systems: Concept and Framework, FAO (2018), pp. 1, Available at https://www.fao.org/3/ca2079en/CA2079EN.pdf
[60] Contribution of Zambia, pp. 3

10 per cent of the world's population. [61] The two sectors create 58.5 million jobs in the primary sector and support 600 million livelihoods.[62] Fish are also one of the world's most traded commodities. Ocean food systems also provide social and cultural benefits to fishers and coastal communities, including Indigenous Peoples.[63] Sustainable ocean food systems also provide environmental benefits, as living marine resources used for food are key components of marine ecosystems, critical to their health and resilience.[64] Seafood production systems have the potential to generate lower greenhouse gas emissions and be more sustainable compared to many land-based animal proteins.[65] [66] [67]

III. Pressures on current and future role of the ocean as a source of sustainable food

26. To benefit both current and future generations as part of a stable and reliable food system, foods sourced from the ocean must be sustainably and efficiently utilized. Current pressures on the role of the ocean as a source of sustainable food include unsustainable exploitation practices, other pressures on the marine environment and value and supply chain constraints.

A. Unsustainable exploitation practices

27. Unsustainable exploitation practices include overexploitation, overcapacity, illegal, unreported or unregulated (IUU) fishing, pollution from fishing activities and destructive fishing practices. Other practices which can negatively impact fishers and the fishing sector, including abusive labour practices, gender inequality and insufficient protections for the rights of small scale and artisanal fishers, may also have long-term ramifications on the ocean as a source of sustainable food.

28. The effective management of fisheries and aquaculture in accordance with applicable legal instruments, including the Convention, the 1995 United Nations Fish Stocks Agreement and related instruments, is key to preserving the productivity of the ocean. Effective fisheries management systems address environmental, social and economic objectives.[68]

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[61] Second World Ocean Assessment, Vol. II, pp. 241

[62] The State of World Fisheries and Aquaculture (SOFIA), FAO (2022), pp. 109, Available at https://www.fao.org/3/cc0461en/cc0461en.pdf. Millions of people worldwide, including those from the least developed countries (LDCs) and small island developing States (SIDS), depend on fisheries as a source of income.[62] It is estimated that the transformation toward a more productive and sustainable aquatic food system can create millions of new jobs by 2030 and generate USD 7 trillion per year to address poverty and hunger. Aquaculture plays a significant role in the fisheries and aquaculture production of highly populated developing countries, contributing to over 50% of the total output. The sector is responsible for providing direct employment to a workforce exceeding 20 million individuals, while also generating employment opportunities for many others within the supply chain.

[63] The State of World Fisheries and Aquaculture (SOFIA), FAO (2022), pp. 110, Available at https://www.fao.org/3/cc0461en/cc0461en.pdf

[64] The State of World Fisheries and Aquaculture (SOFIA), FAO (2022), pp. 110, Available at https://www.fao.org/3/cc0461en/cc0461en.pdf

[65] Contribution of Iceland, pp. 4

[66] Contribution of NEAFC, pp. 1-2

[67] Contribution of the European Union, pp. 1

[68] FAO. 2022. Blue Transformation - Roadmap 2022–2030: A vision for FAO's work on aquatic food systems. Rome. https://doi.org/10.4060/cc0459en, 7.

29. The sustainability of marine living resources is undermined by overexploitation – overfishing in the case of fisheries. The Convention and the Agreement require States to prevent overfishing and maintain or restore populations of harvested species at levels which can produce the maximum sustainable yield. Target 14.4 of the 2030 Agenda set a clear commitment to end overfishing of marine fisheries by 2020, but world fisheries are moving away from achieving this target.[69] Sustained overfishing may lead to a loss of trillions of dollars of natural capital if allowed to continue.[70] Causes of overfishing include IUU fishing, overcapacity, poorly managed or unmanaged fisheries, knowledge or capacity gaps, in combination with external stressors which affect stocks status. Overfishing, both directly and indirectly,[71] contributes to the decline of fishery resources.[72] Although there is a decreasing trend of overfishing observed for some stocks, more than one third of the world's stocks remain overfished.[73]

30. Overcapacity[74] is an important contributory factor to overfishing. However, regulating fishing capacity is complicated by periodic improvements in fishing efficiency.[75] Harmful subsidies within the fisheries sector are a key factor in supporting overcapacity,[76] and such subsidies,[77] including fuel subsidies in the fisheries sector,[78] contribute to overfishing and IUU fishing more generally.[79] The World Trade Organization Agreement on Fisheries Subsidies, when it enters into force, will help address some of these concerns, by increasing systemic transparency and phasing out harmful fisheries subsidies.

31. IUU fishing[80] poses a threat to the sustainable exploitation of fish resources, as it undermines the effectiveness of fisheries conservation and management measures and other efforts to conserve and manage fish stocks.

32. Bycatch in capture fisheries,[81] including landings of bycatch, discards[82] and pre-catch losses, is a major concern.[83] Bycatch and discards constitute a sustainability threat in the fisheries sector through undue mortalities and food waste, which jeopardize food security and the livelihoods of coastal communities.[84] It affects marine ecosystems and poses a major threat to biodiversity.[85] Fisheries also severely impact birds[86] and marine mammals[87] as bycatch. Mitigation measures, including

[69] SOFIA 22, 56.
[70] WOA II, vol. 2, 217.
[71] FAO Fisheries and Aquaculture Report. No. 932. Rome, FAO. 2010, 2.
[72] SOFIA 22, xvi.
[73] SOFIA 22, 54.
[74] Contribution of UNCTAD.
[75] SOFIA 22, xvii.
[76] See https://www.wto.org/english/tratop_e/rulesneg_e/fish_e/fish_e.htm.
[77] Contributions of the European Union, UNCTAD and UNFCCC.
[78] Contribution of UNFCCC.
[79] See WTO, The WTO Agreement on Fisheries Subsides: What it does and what comes next, WTO Factsheet 2023, https://www.wto.org/english/tratop_e/rulesneg_e/fish_e/fish_factsheet_e.pdf, 1.
[80] Contributions of the European Union, Morocco, Peru, Spain, United States of America, ICCAT and UNCTAD.
[81] Contribution of Peru.
[82] Contribution of NEAFC.
[83] FAO. International Guidelines on Bycatch Management and Reduction of Discards. Rome, FAO. 2001, 3.
[84] FAO. Bycatch and discards: global and regional updates, COFI/2018/Inf.26, pg. 2.
[85] Hollie Booth, William N.S. Arlidge, Dale Squites and E. J. Milner-Gulland, Bycatch levies could reconcile trade-offs between blue growth and biodiversity conservation, Nature Ecology & Evolution 5, 2021, pg. 715.
[86] Contribution of NEAFC.
[87] Jeffrey E. Moore et al, Estimating bycatch mortality for marine mammals: concepts and best practices, Frontiers in Marine Science 8, 2021, 1, https://doi.org/10.3389/fmars.2021.752356.

technical measures and modelling, can improve sustainability. For example, reducing marine mammal bycatch improves ecosystem health and can aid in the recovery of endangered and threatened species, including target stocks.[88]

33. Destructive fishing practices impact marine living resources and the marine environment more broadly. The General Assembly has addressed the impacts of bottom fishing on vulnerable marine ecosystems and the long-term sustainability of deep-sea fish stocks.[89] In addition, although the General Assembly called for a moratorium on large-scale pelagic drift-net fishing on the high seas in 1992[90] due to its adverse impact on marine living resources, the practice still exists albeit more limited.[91] Other destructive fishing practices, such as blast fishing,[92] have negative environmental impacts, impact biodiversity and result in habitat destruction.[93]

34. Capture fisheries and aquaculture are also associated with various practices or consequences that impact marine living resources and damage the marine environment. Abandoned, lost or otherwise discarded fishing gear, or "ghost gear"[94] is the most harmful form of marine plastic pollution for marine animals and habitats,[95] and threatens aquatic life and fragile marine ecosystems, as well as constituting a threat to fisheries sustainability and livelihoods of fishers.[96] Carbon emissions from fishing fleets[97] also contribute to climate change.[98]

35. Mariculture provides an opportunity to supplement capture fisheries and increase food security, as well as providing ecosystem services such as mitigating the impacts of excess nutrients, ocean acidification, and habitat loss.[99] However, the sustainability of the sector may be compromised by issues such as habitat degradation, disruption of trophic systems, depletion of natural seedstock, transmission of diseases, introduction of alien invasive or genetically modified species and reduction of genetic variability.[100] There are also potential impacts on small-scale fisheries present in the same area.

B. Other pressures on the marine environment

[88] FAO. 2021. *Fishing operations. Guidelines to prevent and reduce bycatch of marine mammals in capture fisheries.* FAO Technical Guidelines for Responsible Fisheries No.1, Suppl. 4. Rome. https://doi.org/10.4060/cb2887en, 3.
[89] General Assembly resolutions 61/105, 78/76.
[90] General Assembly resolution 46/215.
[91] General Assembly resolution 78/76, para. 149.
[92] Melissa Hampton Smith, Deborah S. Bower, Sarah Mika, A review of the current global status of blast fishing: Causes, implications and solutions, Biological Conservation vol 262, Oct 2021, https://doi.org/10.1016/j.biocon.2021.109307.
[93] Contribution of United States.
[94] Contribution of Peru.
[95] Drinkwin, J. 2022. Reporting and retrieval of lost fishing gear: recommendations for developing effective programmes. Rome, FAO and IMO. https://doi.org/10.4060/cb8067en.
[96] See https://www.fao.org/fishery/en/news/41372.
[97] Contributions of UNCTAD and UNFCCC.
[98] UNCTAD, Energy transition of fishing fleets: Opportunities and challenges for developing countries (2024), 7.
[99] Contribution of United States.
[100] CBD, Solutions for sustainable mariculture – avoiding the adverse effects of mariculture on biological diversity, CBD Technical series No. 12 (2004), 3.

36. The ocean and its living resources are under immense pressure, with recent studies indicating that more than 90% of the global aquatic food production faces substantial risks from environmental changes. [101]

1. Climate pressures and ocean acidification

37. *Ocean warming and extreme weather events.* As global warming continues to accelerate due to anthropogenic emissions leading to increasing concentrations of greenhouse gases in the atmosphere, ocean temperatures have reached record levels in recent years, and marine heatwaves have become more frequent. [102] Ocean warming has been linked to extreme weather events as increasing seawater temperatures provide more energy for storms, and could potentially affect ocean current patterns.[103]

38. The impact of climate change on aquatic foods is a complex issue due to their diversity – more than 3,000 species of marine and freshwater animals and plants are used for food.[104] Since each species and system has unique sensitivities and responses to various stressors, environmental changes can present both challenges and opportunities. [105] However, ocean warming makes fish stocks less productive overall and causes shifts in composition. [106] From a socioeconomic perspective, these shifts may benefit the (often higher developed) regions at middle or moderately high latitudes at the expense of low latitude regions, many of which are developing countries, where small-scale, subsistence fishing is important for food security.[107] This issue is of particular concern for small island developing States.[108] The changes in distribution and abundance of fish species also makes fisheries management more difficult.[109]

39. Although climate change is a threat to all marine ecosystems,[110] warm water coral reefs are particularly sensitive to higher water temperatures, which can cause mass coral mortalities due to bleaching. [111] Coral bleaching has already significantly

[101] Contributions of UNCTAD and Iceland, citing Cao, L., Halpern, B.S., Troell, M. et al. Vulnerability of blue foods to human induced environmental change, Nat Sustain 6, 1186–1198 (2023), available at https://doi.org/10.1038/s41893-023-01156-y.

[102] See World Meteorological Organization, "State of the global climate in 2022", pp. 5-6, 9-10, available at https://wmo.int/publication-series/state-of-global-climate-2022. The impacts of climate change on marine ecosystems can be further periodically exacerbated by weather phenomena like, el nino/la nina,

[103] Report of the Secretary-General, Oceans and the law of the sea, on "The effects of climate change on oceans", A/72/70, para. 26.

[104] Contribution of Iceland, citing the Blue Food Assessment - The Vital Roles of Blue Foods in the Global Food System (2021), pp. 2-3, available at https://sc-fss2021.org/wp-content/uploads/2021/06/FSS_Brief_Blue_Economy.pdf.

[105] Contribution of Iceland.

[106] IPCC Special Report on the Ocean and Cryosphere in a Changing Climate (2022), pp. 451, 503 and 505, available at https://doi.org/10.1017/9781009157964.007 (it results in expansion of species to higher latitudes and an increased dominance of warm water species); see also contribution of SEAFO.

[107] Report of the Secretary-General, Oceans and the law of the sea, on "The effects of climate change on oceans", A/72/70, para. 11.

[108] Report of the Secretary-General, Oceans and the law of the sea, on "The role of seafood in global food security", A/69/71, para. 66.

[109] IPCC Special Report on the Ocean and Cryosphere in a Changing Climate (2022), p. 451, available at https://doi.org/10.1017/9781009157964.007.

[110] Contribution of SEAFO.

[111] IPCC Special Report on the Ocean and Cryosphere in a Changing Climate (2022), p. 545, available at https://doi.org/10.1017/9781009157964.007.

damaged most coral reefs around the world and is projected to become more frequent and severe with climate change.[112]

40. In the mariculture sector, climate change risks include losses of production and infrastructure due to extreme weather events, and increased risks of diseases, parasites and harmful algal blooms.[113] Climate change may also affect the thermal tolerance of farmed fish and thus the choice of species available for breeding.[114]

41. *Sea-level rise*. Ocean warming, ice loss from glaciers and ice sheets, and changes in land water storage contribute to a continuous rise in the global mean sea level.[115] Rising sea levels are projected to threaten coastal ecosystems with indirect effects on fisheries and aquaculture through adverse impacts on habitats, facilities and infrastructure.[116] Sea-level rise also increases the risk of saline intrusion in low-lying coastal areas, which can trigger land use changes of land or freshwater ponds to brackish or saline aquaculture, such as shrimp or rice-shrimp systems, with impacts on the environment, livelihoods and income stability. [117]

42. *Ocean acidification*. Oceans are a major sink of carbon dioxide, having absorbed around 25% of anthropogenic CO2 emissions between 1960 and 2021.[118] This has slowed the pace of global warming, but ocean uptake of carbon dioxide also changes the seawater chemistry, making it more acidic, in a process called ocean acidification. [119] As a result, the physiology of many marine organisms is altered and it is more difficult for many species, such as corals, shellfish and marine plankton, to build their shells and skeletons. [120] This poses a risk to wild and farmed species that are of interest to global food security, and negatively affects biodiversity and ecosystems. [121]

2. Anthropogenic pollution

43. A wide variety of substances enter the marine environment from multiple marine and land-based sources, with the largest share of all marine pollution originating from

[112] Report of the Secretary-General, Oceans and the law of the sea, on "The effects of climate change on oceans", A/72/70, para. 12.
[113] FAO, Impacts of climate change on fisheries and aquaculture (2018), abstract, p. v, available at https://www.fao.org/3/i9705en/I9705EN.pdf.
[114] FAO, Impacts of climate change on fisheries and aquaculture (2018), pp. 12-13, available at https://www.fao.org/3/i9705en/I9705EN.pdf.
[115] See World Meteorological Organization, "State of the global climate in 2022", pp. 7-8; available at https://wmo.int/publication-series/state-of-global-climate-2022.
[116] Report of the Secretary-General, Oceans and the law of the sea, on "Sea-level rise and its impacts", A/75/70, paras. 13-14.
[117] Ibid, para. 18; IPCC Special Report on the Ocean and Cryosphere in a Changing Climate (2022), p. 381, available at https://doi.org/10.1017/9781009157964.006.
[118] World Meteorological Organization, "State of the global climate in 2022", pp. 10-11; available at https://wmo.int/publication-series/state-of-global-climate-2022; see also Report of the Secretary-General, Oceans and the law of the sea, on "The effects of climate change on oceans", A/72/70, para. 6.
[119] Report of the Secretary-General, Oceans and the law of the sea, on "The effects of climate change on oceans", A/72/70, para. 6; see also the Second World Ocean Assessment, Vol. II, 2021, p. 63.
[120] Report of the Secretary-General, Oceans and the law of the sea, on "The impacts of ocean acidification on the marine environment", A/68/71, para. 24.
[121] Contribution of Monaco.

land-based activities. [122] Pollutants[123] have a negative impact on marine habitats, ecosystems and biodiversity, as well as on food security and safety. [124]

44. Some pollutants, such as toxic metals, chemicals, radioactive waste or plastics, may kill or harm marine fauna and flora directly. [125] Pollutants may also destroy marine habitats, for example through eutrophication caused by the excessive input of nutrients into coastal ecosystems, which leads to hypoxic or "dead zones" with low oxygen levels in surface water.[126] Dead zones are linked with mass mortality events of fish and marine mammals.[127] Eutrophication and deoxygenation also increase the occurrence of harmful algal blooms and pathogenic organisms in coastal areas, which affect both the quantity and quality of aquatic foods.[128] Human health can be affected when seafood contaminated with pollutants, pathogens, hormones, antibiotics, microplastics, or other hazardous substances is consumed.[129]

45. A wide range of human activities such as shipping, oil and gas exploration and extraction, and the installation of underwater infrastructure, contribute to ocean noise.[130] Noise in the marine environment may cause physical damage to marine mammals, fish and invertebrates, disrupt communication among animals and displace them from their preferred breeding, nursery or feeding grounds, with potential effects on their breeding success and survival.[131] This may lead to a decline in catch rates in some commercially important species, thus affecting negatively revenues from fisheries.[132]

3. Destruction of marine ecosystems and habitats

46. The various types of coastal ecosystems such as mangroves, seagrass meadows, kelp forests, salt marshes, wetlands and coral reefs provide breeding, nursery and feeding grounds and thus play a vital role in the reproductive cycles of many fish and marine species. [133] However, many of these habitats are degrading due to the cumulative effects of the pressures described above and other human activities such as unsustainable coastal development and tourism.[134] Furthermore, there are concerns

[122] UNCTAD, Trade and Environment Review 2023 – Building a sustainable and resilient ocean economy beyond 2030, (2023), p. 7, available at https://unctad.org/publication/trade-and-environment-review-2023.

[123] Contaminants include toxic metals such as mercury, chemicals, radionuclides, nutrients such as nitrogen and phosphorus, plastics and other marine litter, sewage, and other organic and inorganic waste. Contributions of IAEA and UNCTAD; see also the Second World Ocean Assessment, Vol. I, 2021, pp. 8-9.

[124] The Second World Ocean Assessment, Vol. I, 2021, p. 7; see also contribution of UNCTAD.

[125] Churchill, Lowe, Sander, The law of the sea, 4th edition 2022, p. 600.

[126] The Second World Ocean Assessment, Vol. I, 2021, p. 8; see also contribution of Monaco.

[127] Interim report of the Special Rapporteur on the right to food, A/67/268, para. 17.

[128] IPCC Special Report on the Ocean and Cryosphere in a Changing Climate (2022), p. 451, available at https://doi.org/10.1017/9781009157964.007; see also Cao, L., Halpern, B.S., Troell, M. et al. Vulnerability of blue foods to human-induced environmental change, Nat Sustain 6, 1186–1198 (2023), p. 1187, available at https://doi.org/10.1038/s41893-023-01156-y.

[129] The Second World Ocean Assessment, Vol. II, 2021, p. 42.

[130] The Second World Ocean Assessment, Vol. I, 2021, pp. 9-10.

[131] Report of the Secretary-General, Oceans and the law of the sea, on "Anthropogenic underwater noise", A/73/68, para. 5.

[132] Report of the Secretary-General, Oceans and the law of the sea, on "Anthropogenic underwater noise", A/73/68, para. 35.

Report of the Secretary-General, Oceans and the law of the sea, on "The role of seafood in global food security", A/69/71, para. 59.

[134] Ibid.; see also the Second World Ocean Assessment, Vol. I, 2021, p. 11.

about the potential impacts of the construction of underwater infrastructure or extractive activities on the marine environment.[135]

4. Invasive alien species

47. Globally, about 2,000 marine species have been introduced outside their natural range because of human activities.[136] In favourable conditions, alien species may become invasive and out-compete local marine species which can have a negative impact on native biodiversity and ecosystem functioning, diminish fisheries and aquaculture production and even threaten human health if the alien species are human pathogens or create toxins. [137]

C. Value and supply chain constraints

48. Aquatic food value and supply chains face several risks and constraints. Food loss and waste,[138] including through discards,[139] occur throughout the entire seafood value and supply chain, affecting the food quality and quantity.[140] The third target of Sustainable Development Goal 12 seeks to reduce per capita global food waste at the retail and consumer levels as well as to reduce food losses along production and supply chains (including post-harvest losses) by 2030.[141] Similarly, FAO developed a Code of Conduct for Food Loss and Waste, including aquatic food. One of the main factors of food loss is the inefficiency of value chains and, in particular, the lack of adequate infrastructure, services, knowledge and technologies.[142]

49. Climate and environmental concerns[143] are also amongst the factors behind the failure of the global food system to provide safe, nutritious, sustainable and equitable diets.[144] These challenges affect a wide variety of products, including those derived from low trophic aquaculture.[145] Initiatives exist to monitor these challenges and assess their impact on seafood production and resources, such as the IAEA Marine Environment Laboratories which supports the development of capabilities to detect and reliably measure contaminants in the marine environment and in seafood.[146] It is equally important that the value and supply chains of aquatic foods promote environmental sustainability, including through increased transparency and traceability. In addition, alternative fuels and engines can be used to reach global, regional, and national emission reduction objectives for the fisheries and seafood value chains.[147] Decarbonizing the entire value and supply chain of aquatic food production, including fishing vessels and aquaculture practices, is an integral part of

[135] Report of the Secretary-General, Oceans and the law of the sea, on "New maritime technologies: challenges and opportunities", A/78/67, para. 30; see also the Second World Ocean Assessment, Vol. II, 2021, pp. 329-330.
[136] The Second World Ocean Assessment, Vol. I, 2021, p. 11.
[137] Report of the Secretary-General, Oceans and the law of the sea, on "The role of seafood in global food security", para. 62; The Second World Ocean Assessment, Vol. II, 2021, p. 345, 348-349; see also contributions of the US and Peru.
[138] Contributions of Spain, United States, and FAO.
[139] Contribution of United States of America.
[140] SOFIA, p. 81.
[141] SOFIA p. 137.
[142] SOFIA, p. 80.
[143] ICCAT, p. 2.
[144] Contribution of FAO.
[145] Contribution of Iceland. Low trophic aquaculture involves species at the bottom end of the food web, which generally take less inputs and energy to grow.
[146] Contribution of IAEA.
[147] Contribution of UNCTAD.

the just transition to renewable sources of energy and low carbon practices.[148] Developing countries and small island developing States face uniquely significant challenges, as many depend heavily on marine resources and are thus substantially vulnerable to the consequences of ocean degradation and climate change. As such, it is important to develop measures to protect the marine environment which take into account impacts on economic development and livelihoods so as to achieve a balanced and just transition.

50. The global growing consumption of seafood also has a direct impact on value and supply chains. This growth in consumption creates a greater reliance on imports in some States, and creates a burden on exporting countries,[149] [150] from capture to final export.[151] In addition, the products are expected to possess the qualities of healthy, safe and high-quality aquatic food.[152] The burden may be even higher after natural disasters, crisis and emergencies, when the rehabilitation of the aquatic food value and supply chain is at stake.[153] In this respect, the COVID-19 pandemic caused challenges for the fisheries sector, including disruption of supply chains.[154] Threats to maritime safety and security, such as piracy or armed robbery at sea, also have direct adverse effects on aquatic food production, impacting international trade and the global economy.[155]

51. The value of the seafood chain relies on the respect of international labour standards. However, key labour issues effect resilience and sustainability in supply chains.[156] Such issues may include child labour,[157] health and safety issues[158], lack of inclusivity[159] and gender inequality.[160] In particular, women and girls face stigmas that prevent employment[161] and they may suffer abuse within the sector.[162]

IV. Opportunities for, and challenges to, strengthening the role of the ocean as a source of sustainable food, in particular through enhanced cooperation and coordination at global, regional and subregional levels

A. Management approaches to human activities that affect the productivity of marine ecosystems and the safety of seafood

52. Effective management of the ocean and its resources is key to maintaining and strengthening its role as a source of sustainable food.

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[148] Contribution of UNFCCC.
[149] SOFIA, p. 87.
[150] Contribution of Spain.
[151] FAO, p. 12; ICCAT.
[152] FAO, p. 7.
[153] FAO, p. 12.
[154] WOA II, vol 2, pg. 9-10.
[155] Contribution of Peru.
[156] Contribution of ILO.
[157] Contribution of ILO, p. 2; ILO, *Guidance on addressing child ILO in fisheries and acquaculture*, available at: https://www.ilo.org/ipec/Informationresources/WCMS_IPEC_PUB_22655/lang--en/index.htm.
[158] Contribution of Monaco.
[159] Contribution of United States of America.
[160] Contributions of United States of America and FAO.
[161] Contribution of United States of America.
[162] Contribution of FAO.

53. Within the legal and policy framework for oceans described above, management approaches to human activities generally comprise both processes that provide a framework for making decisions and implementing ocean policy, as well as management tools that regulate and modify human activities impacting the marine environment and thus affecting the productivity of marine ecosystems and the safety of seafood.[163]

54. Such decision-making processes[164] are used by competent authorities to identify appropriate policy and management objectives in the development and implementation of management approaches and strategies.[165] Management tools include both area-based approaches,[166] as well non-area-based tools,[167] and are used to govern human activity within a particular system.[168]

55. Current approaches to ocean management thus cover a wide range of tools tailored to specific issues at various scales, as influenced by social, cultural, economic and governance contexts, including the norms and value systems that impact decision-making.[169]

56. Management tools can also contribute to mitigating and adapting to climate change, such as networks of marine protected areas, which can enhance ecosystem resilience.[170] Alongside area-based management tools, resilience-based management uses knowledge of current and future drivers that influence ecosystem function to prioritize, implement and adapt management actions that sustain ecosystems and human well-being, including through reduction of stressors, such as pollution and destructive fishing pressures.[171]

57. With respect to fisheries, States and RFMO/As reported on a range of priorities in the use of management measures, including to address IUU fishing,[172] overfishing,[173] habitat destruction, chemical, metal, nutrient and plastic pollution and threats from invasive species,[174] as well as to improve flag State control.[175] States emphasized the need to promote maritime spatial planning and to take fisheries and aquaculture into account within the framework of integrated coastal zone management.[176] States and RFMO/As further highlighted the importance of ecosystem and precautionary approaches in the context of fisheries management.[177]

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[163] WOA II, Vol. II, pp. 443, 449-458.

[164] E.g., marine spatial planning, integrated ecosystem assessments, strategic environmental assessments, ecosystem-based fisheries management, systematic conservation planning, community-based resource management, source-to-sea approaches and integrated coastal zone management.

[165] WOA II, Vol. II, pp. 449-50.

[166] E.g., marine protected areas, particularly sensitive sea areas, world heritage sites, fisheries closures, infrastructure closures and treaty designations.

[167] E.g., catch, effort and technology controls, emission caps and market-based tools.

[168] WOA II, Vol. II, pp. 451-458. For further details on management approaches in fisheries, see the Report of the Secretary-General to the resumed Review Conference in accordance with paragraph 60 of General Assembly resolution 74/18 to assist it in discharging its mandate under article 36 (2) of the Agreement, A/CONF.210/2023/1 at paras. 86-96.

[169] WOA II, Vol. II, pp. 443. Strategies for integrated management are also influenced by existing paradigms for ocean management, most significantly, the ecosystem approach with its three main pillars, namely, the environmental, social and economic management of human interactions with oceans and coasts at multiple levels.

[170] WOA II, Vol. II, pp. 458-9.

[171] WOA II, Vol. II, pp. 458-9.

[172] Contributions of Monaco, p. 1; Peru; USA, p. 4; SEAFO p. 3.

[173] Contributions of the European Union, pp. 3-5; Monaco, p. 1; USA, p. 4; SEAFO p. 3.

[174] Contribution of the United States of America, p. 4.

[175] Contribution of Monaco, p. 1.

[176] Contributions of Monaco, p. 2; Peru

[177] Contributions of Peru; SEAFO p. 3.

58. States also reported on management measures for the sustainable use of fisheries and associated fauna, including minimum catch sizes, bycatch and juvenile specimens, fishing areas and quotas or catch limits.[178] One group of States noted significant progress in the number of its sustainably managed fish stocks and reported on an action plan to protect and restore marine ecosystems for sustainable and resilient fisheries, including by reducing the impact of fishing activities on marine ecosystems, by-catch of sensitive species, marine food webs and the seabed.[179]

59. One group of States reported on a strategy to implement the Kunming-Montreal Global Biodiversity Framework and a commitment to protect 30 per cent of its seas, including through marine protected areas in order to protect fish spawning and nursery areas, reduce fish mortality rates and restore core areas for sensitive species and habitats.[180] One State emphasized the need to establish marine protected areas and other area-based conservation measures as complementary tools, employing biotechnology for the recovery of populations or stocks of overexploited fishing resources, promoting an ecosystem approach in the development and implementation of fisheries management measures and minimizing the environmental impact of maritime economic activities, including fishing, aquaculture, transportation and hydrocarbon-related activities.[181]

60. FAO noted that effective fisheries management was needed to address ecological, social and economic objectives, with priorities including monitoring and reporting on the state of fisheries and supporting the development, implementation and promotion of fisheries management plans, strategies and measures.[182] NEAFC reported on a range of measures to manage fisheries, including an ecosystem-based approach to fisheries, as well as improvements in monitoring, control and enforcement measures, highlighting cooperative arrangements with other organizations to protect vulnerable marine ecosystems from human activities other than fishing, including recent developments on other effective area-based conservation measures.[183]

61. Regarding aquaculture, one State emphasized the need for integrated decisions on site selection and management, selection of species and stocks adapted to the local environment, types and sources of fish food, use of veterinary medicines as well as impacts on wildlife and aspects of the marine environment.[184] This State also highlighted the importance of restoring dead zones linked to a lack of oxygen by reducing land-based pollution.[185] Another State noted that mariculture could contribute to restoring and conserving wild species and ecosystems in a productive and safe manner.[186]

62. FAO highlighted that innovative technology and management could support the expansion of sustainable and resilient aquaculture systems.[187] Governance frameworks were needed to increase preparedness to reduce impacts from, and support rehabilitation of, the aquatic food sector after natural disasters, crises and emergencies.[188]

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[178] Contributions of the EU, p. 5; Peru.
[179] Contribution of EU, pp. 5-6.
[180] Contribution of EU, pp. 5-6.
[181] Contribution of Peru.
[182] Contribution of FAO, p. 11.
[183] Contribution of NEAFC, p. 5.
[184] Contribution of Monaco, p. 2.
[185] Contribution of Monaco, p. 2.
[186] Contribution of the United States of America, p. 3.
[187] Contribution of FAO, p. 7.
[188] Contribution of FAO, p. 8.

63. States and RMFO/As highlighted the significance of sustainably managing fisheries in relation to challenges posed by climate change, including climate adaptation solutions.[189] States emphasized the importance of research to understand the effects of climate change on fish stock abundance and distribution and to develop more flexible, responsive, and adaptive management strategies.[190] States also highlighted the implications of ocean acidification, ocean warming, sea level rise or extreme weather events on ocean resources, whether wild or farmed.[191] One State noted that shifts in fish stocks caused by climate change reinforced the need for international cooperation in managing capture fisheries, in particular straddling fish stocks and highly migratory fish stocks.[192] Another State noted that a comprehensive approach was required, taking into account the varied vulnerabilities and exposure of different species and production systems to a range of stressors.[193]

B. Protecting and restoring the health, productivity and resilience of marine ecosystems

64. By resolution 73/284 of 1 March 2019, the General Assembly declared 2021–2030 as the United Nations Decade on Ecosystem Restoration and reiterated the linkages between ecosystem restoration and conservation and the implementation of the 2030 Agenda.[194] More recently, in resolution 78/69 of 11 December 2023, it highlighted the need for an urgent response and the setting of priorities for management actions aimed at conserving ecosystem integrity.

65. *Taking a comprehensive, holistic and cross-sectoral approach to ocean management.* Approaches to ocean management have gradually evolved from single-sectoral to more integrated, cross-sectoral, with a view to addressing the impact of cumulative human activities on the ocean and its ecosystems.[195][196]

66. Given the high dependency of the fisheries sector on healthy marine ecosystems[197], the sustainability of food from the ocean calls for a comprehensive, ecosystem-based approach[198], including through mainstreaming fisheries and

[189] Contributions of the European Union, pp. 3-7; Spain, p.1; the USA, p. 2; SEAFO, p.3.
[190] Contribution of the United States of America, p. 2.
[191] Contributions of the European Union, p.5; Iceland, p. 6; Monaco, p. 2; USA, p.2.
[192] Contribution of the United States of America, p. 4.
[193] Contribution of Iceland, p. 8.
[194] Outcome document of the United Nations Conference on Sustainable Development, entitled "The future we want", annexed to General Assembly resolution 66/288 of 27 July 2012, paragraphs 158 et seq.
[195] United Nations (2021). *World Ocean Assessment II*. Vol. II, pp. 443-4.
[196] Both the first and second UN Ocean Conferences recognized the importance of using effective and appropriate area-based management tools, along with other integrated, cross-sectoral approaches, and the application of the precautionary and ecosystem approaches, to enhance ocean resilience and ensure the conservation and sustainable use of marine biodiversity. Declaration entitled "Our ocean, our future, our responsibility" adopted by the high-level United Nations Conference to Support the Implementation of Sustainable Development Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development (New York, 5 to 9 June 2017), annex to General Assembly resolution 76/296 of 21 July 2022; Declaration entitled "Our ocean, our future: call for action" adopted by the high-level United Nations Conference to Support the Implementation of Sustainable Development Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development (Lisbon, 27 June to 1 July 2022), annex to General Assembly resolution 71/312 of 6 July 2017. Furthermore, the second *World Ocean Assessment* stressed that management grounded in the ecosystem approach is key to achieve the integrated set of global priorities and objectives set out in the Sustainable Development Goals, United Nations (2021). *World Ocean Assessment II*. Vol. II, pp. 323.
[197] Contribution of Spain.
[198] Contribution of Iceland.

aquaculture in the framework of integrated coastal zone management and maritime spatial planning.[199] In a transboundary context, the Large Marine Ecosystem approach shares the same goal of promoting ecosystem-based management of coastal and marine resources.[200]

67. *Promoting international cooperation and coordination.* To ensure truly holistic management of the ocean, it is crucial to promote cross-sectoral cooperation in different fora through the active engagement of all interested stakeholders, including States, intergovernmental organizations and civil society, and by leveraging the best available science along with traditional knowledge of Indigenous Peoples and local communities that rely on the ocean for their livelihoods. [201] [202] With a scope of application covering nearly two thirds of the ocean, and the incorporation of the ecosystem approach and an integrated approach to ocean management among its guiding principles and approaches, the new BBNJ Agreement promotes cross-sectoral cooperation through the establishment of specific mechanisms to implement its provisions and thus has the potential to profoundly impact management of ocean activities towards more holistic and integrated approaches. The 2023 Ocean and Climate Change dialogue under the United Nations Framework Convention on Climate Change (UNFCCC) confirmed the importance of strengthening institutional linkages between partners at national and international levels and across UN mandates and processes such as the BBNJ Agreement and the Kunming-Montreal Global Biodiversity Framework[203], to enhance global ambition and action for a climate resilient ocean[204]

68. *Increasing scientific understanding and strengthening the science-policy interface.* Improving understanding of the impacts of climate change on fisheries and aquaculture is essential to supporting the resilience of the marine ecosystems[205]. Concerned by the declining state of the ocean, the General Assembly established the Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socioeconomic Aspects, with the objective to provide an evaluation of the state of the global ocean, the services that it provides and the human activities that influence its state.[206] Likewise, the proclamation of the years 2021-2030 as the United Nations Decade of Ocean Science for Sustainable Development, with the identification of the protection and restoration of ecosystems and biodiversity among its core challenges, can stimulate ocean science and catalyze new opportunities. [207] Furthermore, in recognition of the need to strengthen the understanding of, and action on, ocean and climate change, the Ocean and Climate

[199] While their spatial focus may be different, marine spatial planning and integrated coastal zone management are similar in many ways, as they both aim to maximize compatibilities among human activities and reduce conflicts both among human uses and between human uses and the environment. As such, they both contribute to the effective implementation of an integrated, ecosystem-based approach that serves the objective of maintaining the ocean in a healthy, productive and resilient condition. Ehler, Charles, and Douvere, Fanny (2009). Marine Spatial Planning: a step-by-step approach toward ecosystem-based management. Intergovernmental Oceanographic Commission and Man and the Biosphere Programme. IOC Manual and Guides No. 53, ICAM Dossier No. 6. Paris: UNESCO, p. 22.

[200] See IOC-UNESCO and UNEP (2016). Large Marine Ecosystems: Status and Trends. United Nations Environment Programme (UNEP), Nairobi.

[201] United Nations (2021). *World Ocean Assessment II*. Volume II, p. 463.

[202] Such cross-sectoral cooperation is also key to achieving coordination across many different global, regional, and sectoral fora that deal with the management of human activities taking place in marine areas both within and beyond national jurisdiction. Contribution of Iceland.

[203] See Conference of the Parties to the Convention on Biological Diversity decision 15/4.

[204] Contribution of the UNFCCC.

[205] Contribution of the United States of America.

[206] General Assembly resolutions 57/141 of 12 December 2002 and 58/240 of 23 December 2003.

[207] Contribution of Iceland.

Change dialogues were launched under the UNFCCC in 2019, with the 2023 dialogue focusing on coastal ecosystem restoration, and fisheries and food security.[208] The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services is also aimed at strengthening the science-policy interface for biodiversity and ecosystem services.

69. At the regional level, improving understanding of the interactions between climate change and fisheries and aquaculture, and promoting the integration of broader climate change and biodiversity considerations in the work of RFMO/As can inform policy decision making and contribute to the adoption of adaptation and mitigation policies and biodiversity related measures to support the resilience of fish stocks.[209] Within this context, the North East Atlantic Fisheries Commission (NEAFC) relies on the International Council for the Exploration of the Sea (ICES) for independent scientific advice, to assist it in the performance of its management and policy functions.[210]

70. *Strengthening the relevant legal and policy framework.* The FAO's Blue Transformation Roadmap 2022-2030 provides a framework for maximizing the contribution of aquatic (both marine and inland) food systems to food security, nutrition and affordable healthy diets for all, while addressing sustainability challenges. Reconciling conservation and sustainable use of marine living resources and biodiversity is crucial for healthy and resilient marine ecosystems. The BBNJ Agreement, along with the Kunming-Montreal Global Biodiversity Framework, is expected to significantly contribute to efforts to reverse the degradation of ecosystems and biodiversity loss. Building on the latter, the European Commission adopted, in 2023, an Action plan for protecting and restoring marine ecosystems for sustainable and resilient fisheries, aiming at reducing the adverse impact of fishing activities on marine ecosystems, while also delivering on the EU Biodiversity Strategy for 2030.[211]

71. Furthermore, cognizant of the threats posed by plastic pollution, the United Nations Environment Assembly (UNEA) decided in 2022 to task an intergovernmental negotiating committee to develop an internationally legally binding instrument on plastic pollution, including in the marine environment, with the ambition of completing its work by the end of 2024.[212]

72. *Mobilizing additional funding.* Although the ocean covers more than 70 per cent of our planet and contributes to 2.5 per cent of the world's gross value added, only 1.1 per cent of national research budgets were directed to ocean science on average between 2013 and 2021.[213] Sustainable Development Goal 14 is in fact the most underfunded of the 17 Sustainable Development Goals and international efforts must be concentrated on actions towards the conservation and sustainable use of the ocean,[214] through the mobilization of additional financial resources and, where appropriate, public-private partnerships.[215] The 2023 Ocean dialogue under the UNFCCC highlighted the need to increase, scale up, and ensure stable and accessible

[208] Contribution of the UNFCCC.
[209] Contribution of the European Union.
[210] Contribution of NEAFC.
[211] Contribution of the European Union.
[212] See United Nations Environment Assembly resolution 5/14 of 7 March 2022. UNEP/EA.5/Res.14.
[213] United Nations (2023). *Progress towards the Sustainable Development Goals: towards a rescue plan for people and planet. Report of the Secretary-General (special edition).* A/78/80-E/2023/64, p. 21.
[214] Contribution of Iceland.
[215] In *The future we want*, Member States recognized that the active participation of the private sector can contribute to the achievement of sustainable development, including through the important tool of public-private partnerships. Annex to General Assembly resolution 66/288 of 27 July 2012, paragraph 46.

finance flows to aid the implementation of sustainable fishing practices and management and restoration of coastal ecosystems.[216] Responding to the same need, at the regional level, the West Africa Sustainable Ocean Programme (WASOP) is a EUR 59 million program, aiming to reinforce ocean governance, including by supporting the management and monitoring in critical marine and coastal protected areas.[217]

C. Potential roles of small-scale fisheries and aquaculture in global food security

73. The significance of small-scale and artisanal fisheries and aquaculture in global food security is becoming more acknowledged, particularly in light of climate change.[218] They are instrumental in ensuring food and nutrition security and act as vital sources of employment and income,[219] especially for coastal communities,[220] and are considered generally more sustainable. The adverse impacts of climate change and biodiversity loss have rendered small-scale fisheries vulnerable, adding to the need for holistic cross-sectoral solutions.[221]

74. Yet, the full contribution of small-scale fisheries and aquaculture is poorly understood due to underreporting in national data systems and the limited resources and capacity for monitoring and reporting.[222] Due to the informal and localized nature and, in some cases seasonality, of small-scale fisheries, their contributions are still often overlooked or hidden in national fisheries, or narrowly measured.[223] The vital role of traditional and local knowledge in maintaining the sustainability of small-scale and artisanal fisheries and aquaculture is often undervalued. The unique characteristics and data uncertainty of small-scale fisheries necessitate tailored management measures that align with their specific data, technical and enforcement capacities.[224]

75. In response to these challenges, the FAO Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines)[225] further highlighted the importance of enhancing data collection systems, access to markets, and trading opportunities for small-scale fishers and fish farmers, thereby enhancing their role in food security and socio-economic growth.[226][227] The International Labour Organisation (ILO) is advancing decent work in the aquaculture sector, encouraging cooperative development among

[216] Contribution of UNFCCC.
[217] Contribution of the European Union.
[218] Contribution of the United States of America.
[219] Contribution of Monaco.
[220] Contribution of Iceland.
[221] FAO Committee on Fisheries. 2024. COFI:FM/I/2024/INF/6. Para 9.
[222] FAO, Duke University & WorldFish. 2023. Illuminating Hidden Harvests – The contributions of small-scale fisheries to sustainable development. Rome. https://doi.org/10.4060/cc4576en. Chapter 4.
[223] FAO, Duke University & WorldFish. 2023. Illuminating Hidden Harvests – The contributions of small-scale fisheries to sustainable development. Rome. https://doi.org/10.4060/cc4576en. p. 85.
[224] FAO Committee on Fisheries. 2024. COFI:FM/I/2024/INF/6. Para 7.
[225] FAO. 2022. Blue Transformation - Roadmap 2022–2030: A vision for FAO's work on aquatic food systems. Rome. https://doi.org/10.4060/cc0459en.
[226] FAO, Duke University & WorldFish. 2023. Illuminating Hidden Harvests – The contributions of small-scale fisheries to sustainable development. Rome. https://doi.org/10.4060/cc4576en. Contribution of the European Union.
[227] FAO. 2021. 2021 COFI Declaration for Sustainable Fisheries and Aquaculture. Rome. https://doi.org/10.4060/cb3767en.

small-scale fish farmers to further enhance the socio-economic aspect of small-scale fisheries in Latin America and the Caribbean.[228]

76. Adaptive management measures are being implemented in some small-scale fisheries and aquaculture to mitigate climate impacts and enhance productivity, ensuring the long-term health of marine resources. To reduce the carbon footprint of fishing fleets, the UNFCCC reported strategies like using alternative fuels, cold storage, electrification, and hybrid technology, are being employed, with programs to support small-scale coastal fleets in replacing their engines more environmentally friendly alternatives by 2050.[229]

D. Potential innovations in seafood production

77. Technological innovation can strengthen both the ability for the ocean to act as a source of food and improve the sustainability of the farming and harvesting of consumables,[230] including through assisting with the application of the ecosystem approach.[231] Technological advancement has the potential to uncover new food sources[232] or help to stabilise and improve the status of dwindling resources, including through biotechnology aiding in the recovery of overexploited fish stocks.[233]

78. In both the Guidelines for Sustainable Aquaculture[234] and FAO's Blue Transformation Roadmap,[235] aquaculture has been called on to develop and innovate[236] with priority actions of the Roadmap including the facilitation of climate-smart aqua-business; investment in digital, technological and management innovations; and innovative data collection and management; as well as supporting the sustainable use and development of genetic resources to improve supply of quality seed for enhanced production efficiency.

79. The potential for low trophic aquaculture, which focuses on species which are lower in the food chain such as seaweed and bivalves,[237] or multi-trophic aquaculture[238] has been put forward with technological advances increasing the potential for upscaling production sustainability, however challenges have also been identified.[239] Seaweed in particular can be used for direct food consumption but also for aquatic animal and livestock feed and biofertilizers, amongst other non-food related uses.[240] Macroalgae also needs to be better understood and its usage optimized including by examining its role as a food.[241] In addition to production challenges difficulties with consumer acceptance have been identified, including for algae and cell-cultured fish.[242] It has been estimated that, with appropriate technological

[228] Contribution of ILO.
[229] Contribution of UNFCCC.
[230] FAO, 2022. Blue Transformation - Roadmap 2022–2030: A vision for FAO's work on aquatic food systems. Rome. https://doi.org/10.4060/cc0459en and Contribution of the Institute of the Sea of Peru (IMARPE), Peru.
[231] Contribution of the Institute of the Sea of Peru (IMARPE), Peru.
[232] Contributions of National Service of Natural Areas Protected by the State (SERNANP), Peru; Directorate of Hydrography and Navigation (DHN), Peru; and Portugal.
[233] Contribution of the Ministry of Environment (MINAM), Peru.
[234] Approved by the twelfth session of the COFI Sub-Committee on Aquaculture in 2023.
[235] FAO, 2022. Blue Transformation - Roadmap 2022–2030: A vision for FAO's work on aquatic food systems. Rome. https://doi.org/10.4060/cc0459en.
[236] Contribution of the United States.
[237] Contributions of Iceland and Portugal.
[238] Contribution of UNFCCC.
[239] Contribution of Iceland.
[240] Contribution of UNCTAD.
[241] Contribution of Portugal.
[242] Giacalone, D. and Jaeger, S. R., "Consumer acceptance of novel sustainable food technologies: A multi-country survey", Journal of Cleaner Production 408 (2023) 137119.

improvement and policy reform, edible seafood could increase by 36-74% compared to current yields by 2050 particularly in the area of mariculture.[243]

80. FAO's Roadmap also calls for the support of enhanced technical innovation in fishing operations;[244] in this regard advanced technologies such as artificial intelligence to enhance monitoring, control and surveillance measures are being embraced.[245] The need for decarbonization of the entire fisheries value chain, as well as aquaculture practices, has been underscored in the 2023 Ocean and climate change dialogue[246] and alternative fuel sources for fishing vessels have been identified as well as alternative measures such as electric and hybrid engines and wind propulsion.[247] These and other aspects of decarbonizing fishing vessels such as looking into cold storage have been studied.[248]

81. New marine technologies can also assist with addressing pollution of the marine and coastal environment.[249] IAEA has launched the NUTEC Plastics initiative[250] which aims to develop marine microplastics identification and quantification methods as well as facilitate capacity building for laboratories to monitor microplastics in the marine environment including seafood.[251]

82. Additionally, innovative data collection and management at all scales as well as improving access to data and information is also called for,[252] with the need for real-time access highlighted.[253]

E. Value and supply chains

83. In light of the health and nutritional benefits of seafood consumption, at the national level, there are information campaigns to encourage seafood consumption[254] and policies promote the integration of ocean-sources foods in daily diets and particularly in school meals.[255] More broadly, States also seek to facilitate inclusion of aquatic foods in national food security and nutrition policies, strategies, and programmes,[256] which may be supported through bilateral aid programs or funding.[257] Sustained investment, including from the private sector, is important for improving fisheries value and supply chains.

84. The collection of data and the analysis of marine food consumption and nutrient composition contributes to the ability to mainstream marine food consumption.[258] At the global level, the UNICEF-WHO-World Bank Group Joint Child Malnutrition Estimates provide information on child nutrition, malnutrition and health and can be

[243] Costello, C., et al. "The future of food from the sea", Nature 588, 95–100 (2020). https://doi.org/10.1038/s41586-020-2616-y.
[244] FAO, 2022. Blue Transformation - Roadmap 2022–2030: A vision for FAO's work on aquatic food systems. Rome. https://doi.org/10.4060/cc0459en.
[245] Contribution of the South East Atlantic Fisheries Organization (SEAFO).
[246] Contribution of UNFCCC see also https://unfccc.int/topics/ocean/ocean-and-climate-change-dialogue.
[247] Contribution of UNCTAD.
[248] Contribution of UNFCCC.
[249] Contribution of the Institute of the Sea of Peru (IMARPE), Peru.
[250] Nuclear Technology for Controlling Plastic Pollution.
[251] Contribution of IAEA.
[252] FAO, 2022. Blue Transformation - Roadmap 2022–2030: A vision for FAO's work on aquatic food systems. Rome. https://doi.org/10.4060/cc0459en and Contribution of the Institute of the Sea of Peru (IMARPE), Peru.
[253] Contribution of the Institute of the Sea of Peru (IMARPE), Peru.
[254] Contribution of EU (Portugal), p. 10.
[255] Contributions of Iceland and FAO.
[256] Contributions of United States and FAO.
[257] Contributions of the European United and United States.
[258] Contributions of the European Union and FAO.

used to highlight local marine food species which would be most practical and affordable to catch or cultivate to meet nutritional needs.[259]

85. Food security through marine food is also increasingly taken into account in global and regional fora. The UNFCCC and CBD require the incorporation of such foods into relevant national policies.[260] RFMO/As may consider food security as an element in the determination catch levels and quotas.[261] International momentum such as through the 2022 International Year for Artisanal Fisheries and Aquaculture[262] or the EU International Ocean Governance agenda[263] and the World Food Summit, the 2023 UN Food System Summit +2 Stocktaking Moment and the 2024 Summit for the Future[264] are opportune to mainstream seafood and trigger cooperation for ensuring food security.

86. The opportunities of integrating aquatic blue foods into national policies and strategies, such as Nationally Determined Contributions (NDCs), National Adaptation Plans (NAPs) and the Long-Term Low-Emissions Development Strategies (LT-LEDS) under the Paris Agreement, were noted.[265] Forty per cent of NDC adaptation components already refer to fisheries and aquaculture,[266] 47 per cent of LT-LEDS considered significant potential in the restoration of peatlands and wetlands, including 19 per cent that made explicit reference to blue carbon. resilience of coastal and ocean ecosystems and biodiversity is reflected as one of the key transformational adaptation priorities in the LT-LEDS submitted to UNFCCC. One in five LT-LEDS included measures for adapting ocean ecosystems focusing on protecting and restoring blue carbon ecosystems (mangroves, seagrass beds) and coral reefs; creating marine protected areas; promoting synergies between mitigation and adaptation; providing education; and awareness-raising (LT-LEDS synthesis report 2023). However, more effective integration required building capacity at the national and local levels, including through training, education, and the dissemination of best practices in sustainable fisheries and aquaculture management.[267]

87. Ensuring the safety of seafood is a high priority and work to strengthen the capacity of States to detect and reliably measure contaminants, including microplastics, in the marine environment and in seafood, was reported.[268]

F. Capacity-building and transfer of technology

88. Capacity-building and technology transfer will be crucial to ensuring that the ocean remains a source of sustainable food amid the many challenges faced by the seafood industry. The need for capacity-building for governments, along with skill development and training for fishing communities, was highlighted, as was the need to enhance the resilience of small-scale fisheries, including through the implementation of the FAO Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries.[269]

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[259] Contribution of Iceland.
[260] Contribution of Iceland.
[261] Contribution of ICCAT.
[262] Contribution of the EU.
[263] Contribution of the EU.
[264] www.un.org/en/common-agenda/summit-of-the-future.
[265] Contribution of Iceland.
[266] Contribution of UNFCCC.
[267] Contribution of Iceland.
[268] An initial case study Namibia aimed at reducing seafood waste was being conducted. Contribution of IAEA.
[269] UNFCCC.

89. The importance of open-access education and technical training systems for the collection and exchange of observational data on the marine ecosystem was noted.[270] The need for greater access for developing countries to new technologies being introduced to improve compliance and enforcement through training and technology transfer was highlighted.[271]

90. Some delegations emphasized the importance of empowering women and girls in the fisheries and aquaculture sectors,[272] including for alleviating poverty, malnutrition, and food insecurity. One delegation stated that the Informal Consultative Process should consider capacity-building opportunities for women in the blue foods sector, with emphasis on building climate resilience.[273] ILO reported on its work building the capacity of its constituents to promote decent work and enable a just transition to a sustainable future of work in the sector, as well as on workshops strengthening aquaculture cooperatives to advance decent work, promote formalization, and improve productivity.[274]

91. It was also noted that in the absence of a wider application of human and social protection standards in the fisheries sector, the energy transition could have implications for the working conditions of fishers, and that investment in and use of modern technologies and protective equipment, beyond energy efficiency or energy transition, can contribute to reducing occupational hazards and accidents at sea.[275] However, the introduction of modern technologies and practices required safety training and capacity building programmes for fishers, in particular women.[276] Trade in goods and services could enable a sound energy transition in fishing fleets by facilitating the transfer and acquisition of the latest technologies in energy efficiency, smart navigation, fishing systems, renewable fuels, low-emission engines and vessels.[277] The transfer of technology will also have a key role to play in improving livelihoods, including by making use of patent pools and preferential green licensing.[278] The need for access to cutting-edge technology, technology transfer, and funding for new technologies, especially for mesopelagic fisheries, deep-sea fishing, and aquaculture systems, to reduce fossil fuel intensity and emissions, was emphasized.[279]

92. Targeted capacity-building is needed to address the impacts of climate change and ocean acidification on the ocean food system.[280] Experimental research and capacity-building efforts to address these issues were ongoing.[281]

V. Conclusions

93. The ocean has a significant potential to be a more sustainable, equitable and less environmentally impactful source of food for generations to come. In order to preserve and strengthen this role, it is necessary to ensure the sustainability of the

[270] Contribution of Peru.
[271] Contribution of Peru.
[272] Contribution of United States of America, Food and Agriculture Organization of the United Nations,
[273] Contribution of United States of America.
[274] Contribution of International Labor Organization.
[275] Contribution of UNCTAD.
[276] Contribution of UNCTAD.
[277] Contribution of UNCTAD.
[278] Contribution of UNCTAD.
[279] Contribution of UNFCCC.
[280] Contribution of IAEA.
[281] Contribution of IAEA.

resources that are currently utilized, ensuring that they remain accessible and further developing under-utilized resources, protecting and preserving the marine environment, and promoting awareness of the role and state of the ocean. Fully meeting the commitments set out in the 2030 Agenda for Sustainable Development and its ocean-relevant goals is more important than ever. Concerted efforts must be taken to strengthen the ocean food system in a sustainable way.

94. Improving the management of the ocean and its resources, by ensuring that relevant international instruments are fully and effectively implemented at all levels, would contribute significantly to this goal. However, additional steps must be taken to ensure the long-term sustainability of the ocean as the source of food. Raising awareness of ocean's current and potential future role to maximize the global benefits of food from the ocean will be of utmost importance, including for improving food security and nutrition.

95. It is equally important to address factors that undermine effective management, such as IUU fishing, lack of adequate scientific data and lack of capacity. The current and potential future impacts of the triple planetary crisis on ocean ecosystems and resources should be considered in management approaches, with a precautionary approach applied where information is uncertain, unavailable or inadequate. Eliminating fisheries subsidies which contribute to overfishing and IUU fishing by bringing into force the WTO Agreement on Fisheries Subsidies and concluding ongoing negotiations on outstanding issues should remain a priority.

96. The yield of sustainable food from the ocean can be increased to meet future demand by allowing overexploited fisheries to recover, eliminating food waste, reducing by-catch and discards, improving food safety and streamlining value and supply chains. There is also potential to continue to develop under-utilized resources, including through sustainable mariculture for algae, plants, fish and other marine living resources. The new FAO Guidelines on Sustainable Aquaculture can promote aquaculture growth that is economically, socially and environmentally sustainable.

97. Finally, it is paramount to protect and preserve the marine environment and biodiversity to maintain the health, resilience and productivity of marine ecosystems, including through the full and effective implementation of the relevant provisions of the Convention. Some crucial steps in this regard may be bringing into force the BBNJ Agreement, implementing the Kunming-Montreal Global Biodiversity Framework, and concluding negotiations on an ambitious treaty to address plastic pollution, including in the marine environment. The third United Nations Ocean Conference, to held in Nice, France in June 2025 and the 2025 United Nations Food Systems Summit +4, can serve to catalyze further discussion and progress in this regard.