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

A.

5.

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.

37. 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]

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. . 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

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.

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.

63. States and RMFO/As highlighted the significance of sustainably managing fisheries in relation to challenges posed by climate change, including climate adaptation solutions.

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. 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 provision

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.

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.

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 trans