TST Issues Brief: Oceans and Seas[1]

1. Stocktaking

Oceans, seas and coastal areas form an integrated and essential component of the Earth's ecosystem and are critical to sustainable development. The oceans cover more than two-thirds of the earth's surface and contain 97% of the planet's water.[2] In "The Future We Want", Member States stressed the importance of *"the conservation and sustainable use of the oceans and seas and of their resources for sustainable development, including through their contributions to poverty eradication, sustained economic growth, food security and creation of sustainable livelihoods and decent work, while at the same time protecting biodiversity and the marine environment and addressing the impacts of climate change"*.[3] This statement refers to the strong linkages between the oceans and other priority areas currently under consideration while developing the future sustainable development agenda. Member States have consistently recognized in the General Assembly resolutions on oceans and the law of the sea the important contribution of the sustainable development and management of the oceans and seas to the achievement of international development goals, including those contained in the United Nations Millennium Declaration.[4]

Oceans contribute to poverty eradication by creating sustainable livelihoods and decent work in fisheries and marine aquaculture, shipping and shipbuilding, ports, tourism, oil, gas, mining, and maritime transportation industries. At least 90 % of the volume of global trade is seaborne.[5] Over three billion people depend on marine and coastal resources for their livelihoods.[6] Women represent the majority in secondary activities related to marine fisheries and marine aquaculture, such as fish processing and marketing. In many places, employment opportunities have enabled young people to stay in their communities and have strengthened the economic viability of isolated areas, often enhancing the status of women in developing countries.[7] Coastal tourism and recreation contribute to economic growth in both developing and developed countries by creating job opportunities and providing an important source of income and foreign exchange earnings. Approximately half of all international tourists travel to coastal areas. In some developing countries, notably Small Island Developing States (SIDS), tourism can account for over 25% of GDP.[8] Oceans also hold considerable potential to provide economic growth and jobs in emerging sectors such as offshore renewable energy[9] as alternative to carbon-based energy, as well as in transitioning to more sustainable shipping, fishing and marine aquaculture operations.

Oceans are crucial for global food security and human health. They provide food and nutrition, directly through fishing and marine aquaculture, and indirectly through animal feeds. As a valuable source of nutrition globally, fish provide 4.3 billion people with about 15 per cent of their intake of animal protein.[10] The protein and trace elements present in animal feeds and derived from aquatic sources make intensive food production systems possible. With one in eight people in the world today being undernourished and approximately two billion suffering from micronutrient deficiencies[11], combined with the anticipated growth in the world population to 9.6 billion people by 2050[12], responsible and sustainable fisheries and marine aquaculture have an essential role to play in ensuring food security and nutrition for all. Fish also contain important trace elements that are critical for brain development and growth in children. The potential value of marine biotechnology is considered high, but has yet to be estimated accurately.[13]

---

[1] The Technical Support Team (TST) is co-chaired by the Department of Economic and Social Affairs and the United Nations Development Programme. Preparation of this issues brief has been co-led by DESA, ESCAP, FAO, UNDP, UNEP, UNESCO-IOC, World Bank, with contributions from CBD Secretariat, IAEA, ILO, IMO, OLA/DOALOS, OSAA, UNOOSA, UN Women, WMO and WTO.
[2] UNDP (2012): *Catalyzing ocean finance – Volume 1*.
[3] A/RES/66/288 (2012): *The Future We Want – Outcome Document of the Rio+20 Conference*.
[4] See for example General Assembly resolutions 63/111, 64/71, 65/37 A, 66/231 and 67/78.
[5] IMO (2012): *International Shipping Facts and Figures: Information Resources on Trade, Safety, Security, Environment*.
[6] Secretariat of the Convention on Biological Diversity (2012): *Booklet: Biodiversity for Development and Poverty Alleviation*.
[7] FAO (2012): *The State of World Fisheries and Aquaculture*.
[8] UNWTO, Secretariat of Ramsar Convention on Wetlands (2012): *Destination Wet Lands: Supporting Sustainable Tourism.*
[9] Mechanical energy from tides, wind and waves; thermal energy.
[10] FAO (2012): *The State of World Fisheries and Aquaculture*.
[11] FAO (2012): *The State of Food Insecurity in the World*.
[12] UNDESA (2012): *World Population Prospects: the 2012 Revision*.
[13] Millennium Ecosystem Assessment Series (2005): *Ecosystems and Human Well-Being*: *Current state and trends*.

Oceans are the primary regulator of the global climate and an important sink for greenhouse gases. They provide us with water and the oxygen we breathe. Oceans have a role in climate change mitigation as they capture and store about 30% of carbon dioxide produced by humans.[14] They absorb a majority of the sun's radiation and their surface currents redistribute heat around the world, thus enabling humans to live on this planet. Marine phytoplankton produces 50% of the oxygen on Earth.[15] The majority of rain that falls on land originates in the oceans, giving us water for drinking, hygiene and sanitation, agriculture and industrial development.[16] In the future, desalinated seawater could become an important source of freshwater.

The manifold employment opportunities, as well as ecosystem services, including cultural services, provided by the oceans, create the conditions for a global oceans-based economy, which is estimated at between USD 3-6 trillion/year.[17]

Yet, there are increasing, complex challenges in preserving and maintaining healthy, resilient and productive oceans for the prosperity of present and future generations. Coastal regions and SIDS are particularly vulnerable to these challenges as the oceans play a central role in their culture, while at the same time being tightly linked to their economies. Main threats to the oceans can be divided into five broad categories:

1. **Unsustainable extraction of marine resources,** which includes overfishing, illegal, unreported and unregulated (IUU) fishing and destructive fishing practices as well as the usage of harmful subsidies that contribute to IUU fishing and overcapacity. Already today, 30% of the world's fish stocks are over exploited, while more than half are fully exploited.[18] Inappropriate deployment and deployment in the wrong areas of fishing gear can result in mortalities of endangered, threatened and protected species, including marine mammals (e.g. dolphins), sea turtles and birds, as well as in the damaging of critical and vulnerable marine habitats. Abandoned, lost and otherwise discarded fishing gear (ALDFG) also capture and kill through a process of ghost fishing, contribute to degradation of fishing grounds and habitats, and represent a threat to navigation and safety of life at sea. Unsustainable extraction of marine living resources, including by-catch, is an important threat to the food chain in the oceans and to global food security, health and sustainable livelihoods. The unsustainable extraction of marine non-living resources (e.g. deep sea mining; offshore oil and gas drilling) is also cause for concern.

2. **Marine pollution**, which originates from a number of marine and land-based sources, including riverine discharges, agricultural and industrial run-off, urban outfalls, municipal or industrial wastewater, atmospheric deposition, illegal or indiscriminate dumping, accidents (e.g. oil spills), fishing operations, maritime transport and off-shore construction. Marine pollution occurs in the form of heavy metals, persistent organic pollutants (POPs), pesticides, nutrients (nitrogen and phosphorus), plastics, oil, hazardous substances, radioactive materials, and anthropogenic underwater noise. More than 80% of marine pollution is derived from land-based sources. Coastal settlements are growing, with some of the largest urban agglomerations based in coastal areas. Agriculture, in particular excessive and inefficient use of nitrogen fertilizers, can create low oxygen "hypoxic" conditions, harmful algal blooms and dead zones (over 500 globally).[19] At the same time, ocean-based sources such as ALDFG occur mostly in and around fishing grounds and become a hazard to marine life and navigation. Globally, an average of 13,000 pieces of plastic litter are estimated to be afloat on every square kilometer of ocean[20], with a potential to kill sea birds, sea mammals and fish each year, many of which are endangered, threatened or protected under national and international law.[21]

3. **Alien invasive species**, which have been transported into areas where they do not occur naturally (e.g. jellyfish), for example in ship ballast water or by attaching to exterior hulls, as 'hitch-hikers' clinging to scuba gear or packaging, carried by other organisms and via the aquarium industry. In favourable conditions, they may outcompete local marine species, in most cases threatening complex food webs and/or fouling marine infrastructure with negative impacts on marine ecology, local economies, food security and human health.

[14] UNEP (2009): *The Natural Fix?: The Role of Ecosystems in Climate Mitigation.*
[15] IOC/UNESCO, IMO, FAO, UNDP (2011): *A Blueprint for Ocean and Coastal Sustainability*.
[16] UNEP (2009): *The Natural Fix?: The Role of Ecosystems in Climate Mitigation.*
[17] IOC/UNESCO, IMO, FAO, UNDP (2011): *A Blueprint for Ocean and Coastal Sustainability*.
[18] FAO (2012): *The State of World Fisheries and Aquaculture*.
[19] Secretariat of the Convention on Biological Diversity (2010): *Global Biodiversity Outlook 3*.
[20] FAO, UNEP (2009): *Abandoned, lost or otherwise discarded fishing gear*.
[21] UNEP (2006): *Ecosystems and Biodiversity in Deep Waters and High Seas*.

4. **Ocean acidification and climate change impacts,** which are caused by increasing atmospheric greenhouse gas concentrations. Negative effects of climate change include increased frequency and intensity of weather and climate extremes[22], ocean warming, sea-level rise, as well as changes in ocean circulation and salinity. They hamper the life-sustaining and regulating functions of the oceans, threaten marine biodiversity and negatively affect the sustainable development of coastal communities. Ocean acidification has increased by 26% since the beginning of the industrial revolution[23] and may have potentially devastating impacts on marine ecosystems, including loss of shellfish, coral reefs and calcareous plankton, the base of much of the marine food chain. SIDS and coastal regions are particularly affected by sea-level rise, coastal flooding and erosion, and extreme events (e.g. tsunamis and storm surges) due to undermined natural protective barriers, low levels of development combined with rapid population growth in low lying coastal areas and inadequate capacity to adapt. Sea-level is expected to continue to rise due to a combination of thermal expansion of seawater, melting of glaciers and other snow/ice, and continued increases in groundwater extraction.

   These challenges require enhanced (gender-sensitive) vulnerability and impact assessments, mitigation and adaptation plans, resilience building and disaster risk reduction strategies. Significant progress has been made in the establishment of observation and early warning systems at the national and regional levels, which have, together with improved effective emergency preparedness and response planning, resulted in a significant reduction of lives being lost. However, not all coastlines are yet covered. Space technology and its applications, including climate products and services at the regional and sub-regional scale, can play an important complementary role.

5. **Physical alteration and destruction of marine habitat**, which are caused by unsustainable coastal area development (e.g. direct construction on reef platforms), submarine infrastructure (e.g. submarine cables), unsustainable tourism, fishing operations in fragile or vulnerable marine areas (e.g. seagrass beds, coral reefs) and physical damage from ship groundings and anchors. Major marine ecosystems have been degraded or are being used unsustainably.[24] An estimated 20% of global mangroves have been lost, 19% of coral reefs have disappeared, and 29% of sea grass habitat has vanished.[25]

Oceans host huge reservoirs of biodiversity. They are characterized by a number of complex ecosystems such as mangroves, coral reefs and wetlands, pelagic waters, seamounts, submarine ridges and the seafloor itself, which host marine life and form marine habitats. At Rio+20 Member States recognized the importance of the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction. Under the MDG framework the oceans-related target 7.B of MDG7, which aimed to reduce the rate of biodiversity loss by 2010, has not been met. While progress has been made to develop and facilitate the use of diverse approaches and tools, including the ecosystem approach, the establishment of marine protected areas consistent with international law and based on scientific information, including representative networks and time/area closures for the protection of nursery grounds and periods, further efforts will be required to reach Aichi target 11 that, by 2020, 10 per cent of coastal and marine areas are conserved. The achievement of Aichi targets 6 and 10 will also play an important role in reversing the alarming trend of biodiversity loss and overfishing.

Considerable progress has been made toward the oceans-related targets and goals set out in Agenda 21 and the Johannesburg Plan of Implementation (JPOI), particularly by enhancing scientific understanding and monitoring, and strengthening legal and policy frameworks, institutions and cooperation mechanisms. Nevertheless, further work is required building on previously made commitments. In this regard, it is recalled that United Nations Convention on the Law of the Sea (UNCLOS) lays down a comprehensive regime of law and order establishing rules governing all uses of the oceans and their resources. It enshrines the notion that all problems of ocean space are closely interrelated and need to be addressed as a whole, while at the same time providing the framework for further development of specific areas of the law of the sea.

Despite a steady increase toward universal participation in UNCLOS, the Part XI Agreement and the United Nations Fish Stocks Agreement, effective compliance with, and enforcement of, their provisions remains a challenge, in particular for developing countries and especially for SIDS, given the disproportionally large

[22] WMO (2013): *The Global Climate 2001-2010: A Decade of Climate Extremes*; UNISDR,WMO (2012): *Disaster Risk and Resilience: Thematic Think Piece.*
[23] IOC/UNESCO, IMO, FAO, UNDP (2011): *A Blueprint for Ocean and Coastal Sustainability*.
[24] IOC/UNESCO, IMO, FAO, UNDP (2011): *A Blueprint for Ocean and Coastal Sustainability*.
[25] UNDP (2012): *Catalyzing ocean finance – Volume 1*.

ocean areas under their jurisdiction, which require capacity development. At Rio+20, parties to UNCLOS and the United Nations Fish Stock Agreement were urged to fulfil their obligations and to advance implementation. Member States also reiterated their commitment to conclude multilateral disciplines on fisheries subsidies that will give effect to the mandates of the World Trade Organization Doha Development Agenda and the Hong Kong Ministerial Declaration to strengthen disciplines on subsidies in the fisheries sector.[26]

The provisions of UNCLOS and its implementing agreements[27] are supplemented by various other Conventions[28] and instruments[29] adopted by competent intergovernmental organizations, agencies, bodies and entities. The General Assembly reviews on an annual basis development in ocean affairs and the law of the sea and it has established a number of processes[30] to assist it in this work. The General Assembly has consistently called for a number of actions to address the threats mentioned above in its annual resolutions on oceans and the law of the sea and sustainable fisheries.

Within the UN system, there have been initiatives and reports[31] that can provide useful background information. The implementation of regional programmes[32] can offer valuable lessons as many of them already contain indicators to monitor their objectives and goals[33].

2. Overview of proposals

A broad range of oceans-related issues were addressed in Agenda 21, the Johannesburg Plan of Implementation (JPOI) and the Barbados Programme of Action. Oceans-related goals and targets can also be drawn from the MDG framework with its target 7.B of MDG7 and its two ocean-related indicators: 7.4 proportion of fish stocks within safe biological limits and 7.6 proportion of terrestrial and marine areas protected. Furthermore, the Rio+20 outcome document contains several oceans-related goals. In "The Future We Want", Member State parties were urged to fully implement UNCLOS and the 1995 Fish Stocks Agreement and other relevant international instruments.

Relevant goals and targets can also be found in the annual resolutions of the General Assembly on oceans and the law of the sea and on sustainable fisheries, as well as in the decisions and resolutions of a number of competent international organizations. For example, the Strategic Plan for Biodiversity for 2011-2020 adopted by the Conference of the Parties to the Convention on Biological Diversity, contains the oceans-related Aichi targets 6, 10 and 11.[34]

More recently, in the discussions on sustainable development goals (SDGs), proposals have been made to try integrating oceans issues into SDGs. The first set of proposals aims at developing a dedicated stand-alone Sustainable Development Goal on Oceans. The second set of proposals revolves around addressing ocean-related issues in a cross-cutting manner under different SDGs.

---

[26] Paragraph 173, A/RES/66/288 (2012): *The Future We Want – Outcome Document of the Rio+20 Conference*.
[27] Agreement relating to the implementation of Part XI of UNCLOS; Agreement for the Implementation of the Provisions of UNCLOS relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks
[28] See for example Convention on Biological Diversity; Int. Convention for the Control and Management of Ships Ballast Water and Sediments; London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 and its 1996 Protocol.
[29] See for example UN Agreement on Port State Measures and Int. Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing; Code of Conduct for Responsible Fisheries; Global Programme of Action for the Protection of the Marine Environment from Land-based Activities; Int. Plan of Action for the Management of Fishing Capacity; Int. Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing.
[30] See for example United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea; Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction; Ad Hoc Working Group of the Whole on the Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socio-Economic Aspects.
[31] See for example IOC/UNESCO, IMO, FAO, UNDP (2011): *A Blueprint for Ocean and Coastal Sustainability*; Global Partnership for Oceans: http://www.globalpartnershipforoceans.org/; UNDP (2012): *Catalyzing ocean finance*; IMO (2013): *Concept of a Sustainable Maritime Transportation System*.
[32] See for example UNEP's Regional Seas and GEF Large Marine Ecosystem programmes, Pacific Oceanscape.
[33] See for example Mediterranean Strategy for Sustainable Development.
[34] CBD (2010): *The Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets. Decision X/2 of the Convention on Biological Diversity*.

(A) A stand-alone Sustainable Development Goal on Oceans

Proposals for a stand-alone Sustainable Development Goal on Oceans[35] recognize the fundamental importance of oceans for sustainable development. They stress that oceans issues require focused attention due to their complex nature and significant contribution to the three dimensions of sustainable development. In the outcome of the recently held inter-regional preparatory meeting for the Third International Conference on Small Island Developing States, Member States underscored that the achievement of healthy, productive, and resilient oceans is crucial. They concluded that oceans should be prominently reflected in the SDGs and the post-2015 agenda, including through consideration of a thematic Sustainable Development Goal on Oceans.

(B) Inclusion of oceans-related aspects in different sustainable development goals

Proposals for the inclusion of ocean-related aspects in different SDGs in the form of targets recognize the importance of oceans, but consider that they should be dealt with in a cross-cutting manner.[36] Two categories of inclusion can be found: (1) Inclusion in SDGs that relate to a healthy and resilient planet and productive ecosystems, environmental sustainability, respect for planetary boundaries and/or the maintenance of the global commons. (2) Inclusion in SDGs that relate to determinants of human well-being, such as food security and good nutrition.

3. Way forward

In 2013, the report of the High-Level Panel of Eminent Persons on the Post-2015 Development Agenda emphasized that, without environmental sustainability, poverty cannot be ended and that the oceans and seas should not be forgotten in the development of a post-2015 development agenda.[37]

In "The Future We Want", Member States noted that the new SDGs should focus on priority areas for the achievement of sustainable development, while being guided by the outcome document, of which oceans comprised a considerable part.

The majority of existing proposals made with regard to oceans in the context of SDGs are based on the common understanding that the achievement of healthy, productive and resilient oceans is indispensable to poverty eradication and sustainable development. In this regard, and despite the fact that other ocean-related topics remain of utmost importance, the following elements could be taken into closer consideration, which are based on the "The Future We Want":

- **Ensure conservation and sustainable use of the oceans and seas and of their resources:** Effectively apply an ecosystem approach and the precautionary approach in the management, in accordance with international law, of activities having an impact on the marine environment; Meet the 2015 (JPoI) target on an urgent basis and maintain or restore all fish stocks at least to levels that can produce the maximum sustainable yield, in the shortest time feasible, as determined by their biological characteristics; Develop and implement science-based management plans, including by reducing or suspending fishing catch and fishing effort commensurate with the status of the stock; Enhance action to manage by-catch, discards and other adverse ecosystem impacts from fisheries, including by eliminating destructive fishing practices; Eliminate, prevent and combat IUU fishing; Eliminate subsidies that contribute to IUU fishing and overcapacity; Implement area-based conservation measures, including marine protected areas.
- **Reduce the incidence and impacts of marine pollution**, including marine debris, especially plastic, persistent organic pollutants, heavy metals and nitrogen-based compounds, from a number of marine and land-based sources; take action to achieve, by 2025, based on collected scientific data, significant reductions in marine debris to prevent harm to coastal and marine environment.
- **Prevent introduction of alien invasive species and manage their adverse environmental impacts.**
- **Address ocean acidification and the impacts of climate change:** accelerate the reduction of global greenhouse gas emissions; prevent further ocean acidification; adapt to climate change; enhance resilience of marine ecosystems and coastal communities; reduce disaster risk and build resilience to natural disasters.

[35] Proposals can for example be found at: http://tracker.post2015.org and http://www.sustainabledevelopment2015.org.
[36] Proposals can for example be found at: http://tracker.post2015.org and http://www.sustainabledevelopment2015.org.
[37] High Level Panel on the Post-2015 Development Agenda (2013): *A New Global Partnership: Eradicate Poverty and Transform Economies through Sustainable Development.*

Effective implementation and the bridging of implementation gaps, strengthened compliance and enforcement together with the adoption of necessary measures, including through the development of national, regional and global action plans, strategies, policies, institutional and fiscal reforms as well as protocols, would contribute to better addressing the ongoing challenges on the path towards sustainable development. In particular, the strengthened compliance with, and enforcement of, UNCLOS and its implementing agreements, as well as the other instruments adopted by competent international organizations, specialized agencies, Funds and Programmes and other relevant bodies, would significantly contribute to the protection, conservation and sustainable use of the oceans and their resources, including through the promotion of capacity-building, cooperation in marine scientific research, and the transfer of marine technology.

Capacity-building programmes, when tailored to the needs of the different regions and aimed at human resource development, knowledge transfer and the strengthening of institutional capacity in the law of the sea and marine affairs, including planning, management and monitoring capacities, can have significant impacts. Together with the transfer of marine technologies which are accessible, affordable and adaptable to needs and particular circumstances of countries, such capacity-building programmes will play an important role on the path to sustainable development. To increase citizen engagement, dedicated oceans-related curricula should be an essential part of education for sustainable development to raise public awareness and change consumer behavior.

Improved governance, political will and the targeted allocation of sufficient resources will be essential to the achievement of SDGs, including a possible stand-alone goal on oceans. The building of an improved interface between science and decision-making in oceans-related issues and the proper valuing of goods and services provided by marine and coastal ecosystems are likewise essential. New financing mechanisms that leverage available funding and increase efficiency in development aid, public private partnerships, together with investments in the oceans-based economy, can play an important role. As the various basins of the oceans are interconnected, even smaller projects can have significant impacts on a global scale. The promotion of decent work and respect for international labour standards[38] can further contribute to improve labour conditions for women and men, safety of navigation and maritime security, thus not only protecting seafarers, fishers and their communities, but also ensuring their effective stewardship of the marine environment and resources.

It will be crucial to improve our knowledge about the state of the oceans and marine ecological processes. In 2014, the first World Ocean Assessment under the Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socioeconomic Aspects, will provide decision makers with timely information. Understanding changes in the oceans in real time is vital in order to enable timely and effective responses. The creation of an enabling environment is crucial, including through maintaining and expanding ocean observation, data management and information systems[39]. Additional centers for the coordination of scientific activities at global scale[40] would be beneficial. The need of adapting to climate change and supporting climate-sensitive sectors (e.g. fisheries, tourism) in coastal regions and SIDS will require the development of information products and services based on climate predictions.

Increased cooperation and (cross-sectoral) coordination among all stakeholders at local, national, regional and global levels are crucial toward a new global partnership for sustainable development, especially in the areas of technical and scientific cooperation, information sharing and resource mobilization.

While the manner in which oceans will be dealt with in the future SDG framework is yet to be defined (stand-alone goal or cross-cutting inclusion), these elements are crucial in the way forward.

[38] See for example ILO Maritime Labour Convention, 2006 and ILO Work in Fishing Convention, 2007 (No. 188).
[39] See for example Global Ocean Observing System (GOOS), International Oceanographic Data and Information Exchange (IODE), Ocean Biogeographic Information System (OBIS), and Marine Information System (MARiS).
[40] See for example Ocean Acidification International Coordination Centre (OA-ICC).