

TRADE AND ENVIRONMENT REVIEW 2023

Building a sustainable and resilient
ocean economy beyond 2030



**United
Nations**

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Geneva, 2023

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This publication has been edited externally.

United Nations publication issued by the United Nations Conference on Trade
and Development

UNCTAD/DITC/TED/2023/1

ISBN: 978-92-1-101474-7
eISBN: 978-92-1-002719-9
ISSN: 1810-5432
eISSN: 1810-9608
Sales No. E.23.II.D.10

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Acknowledgements

The *Trade and Environment Review 2023: Building a Sustainable and Resilient Ocean Economy beyond 2030* was prepared by the United Nations Conference on Trade and Development (UNCTAD) with substantive contributions from the Food and Agriculture Organization of the United Nations (FAO). The report team was comprised of Lahsen Ababouch, FAO Senior Adviser (fisheries) and, from the Trade, Environment, Climate Change and Sustainable Development Branch of the UNCTAD Division on International Trade and Commodities, David Vivas Eugui (Chief of Section), Claudia Contreras, Henrique Pacini and Carla Vaca Eyzaguirre (Economic Affairs Officers), and Maria Durleva and Ludovic Arnaud (Ocean Economy Experts).

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UNCTAD gratefully acknowledges the support of the Government of Portugal to the Ocean Economy and Fisheries Programme, through which the development of this report was made possible.

Editing and graphic design were undertaken by Claire Ward and Wendy Worrall.



Acronyms and abbreviations

BBNJ	(marine) biodiversity of areas beyond national jurisdiction (agreement under UNCLOS)
CHG	greenhouse gas
COFI	Committee on Fisheries (of the Food and Agriculture Organization of the United Nations)
COVID-19	coronavirus disease
EEZ	exclusive economic zone
GHG	greenhouse gas
ILO	International Labour Organization
IMO	International Maritime Organization
IUU	illegal, unreported and unregulated fishing
LDCs	least developed countries
MGRs	marine genetic resources
NTMs	non-tariff measures
ODA	official development assistance
RFMO	regional fisheries management organization
SDG	Sustainable Development Goal
SIDS	Small Island Developing States
SPS	sanitary and phytosanitary (measures)
TBT	technical barriers to trade
UNCTAD	United Nations Conference on Trade and Development
UNFCCC	United Nations Framework Convention on Climate Change
UNEP	United Nations Environment Programme
UNOC	United Nations Ocean Conference
VLSFO	very low sulphur fuel oil
WTO	World Trade Organization
WTO SCM	Subsidies and Countervailing Measures (agreement of the World Trade Organization)



Foreword

Foreword

Fifty to 80 per cent of life on Earth is found in the ocean. For centuries the ocean, which is the planet's life support system, was considered too vast to fail and its resources so infinite that they could be exploited imprudently. As these assumptions fade and global awareness of the ocean's tipping point, its finite resources and worsening vulnerability to climate change, pollution and biodiversity loss emerge, the need to address the ocean crisis in the broader context of achieving the Sustainable Development Goals (SDGs) now requires urgent integrated approaches and solutions.

As this paradigm shift rippled through global dialogues and agendas, it set off a “super year” for ocean action in 2022 that has traversed through early 2023. On the back of a new wave of commitments from the 2nd United Nations Ocean Conference in Lisbon, Portugal, being affirmed, ground-breaking multilateral efforts for the ocean have also transpired through: (i) an agreement to curb harmful fisheries subsidies (World Trade Organization [WTO]); (ii) the adoption by United Nations Member States of a mandate to negotiate a legally binding global instrument to end plastic pollution, including marine plastic pollution; (iii) the Kunming-Montreal Global Biodiversity Framework to protect 30 per cent of the ocean and coastal areas by 2030 (United Nations Convention on Biological Diversity [CBD]); (iv) the adoption of an agreement on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction under the United Nations Convention on the Law of the Sea (UNCLOS); (v) the growing inclusion of ocean in climate adaptation and mitigation discussions and decisions at the United Nations Climate Change (UNFCCC) Conference of the Parties (e.g., loss and damage fund for vulnerable countries); and (vi) increasing protection of more marine species under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Since February 2022, the war in Ukraine has placed additional strain on economic recovery, including in the ocean economy sectors. An increase in food insecurity, record price hikes for energy, fertilizers and food commodities, as well as the disruption of trade flows have had direct implications for ocean economy sectors such as maritime transport and fisheries, particularly in the Black Sea and the Baltic Sea.

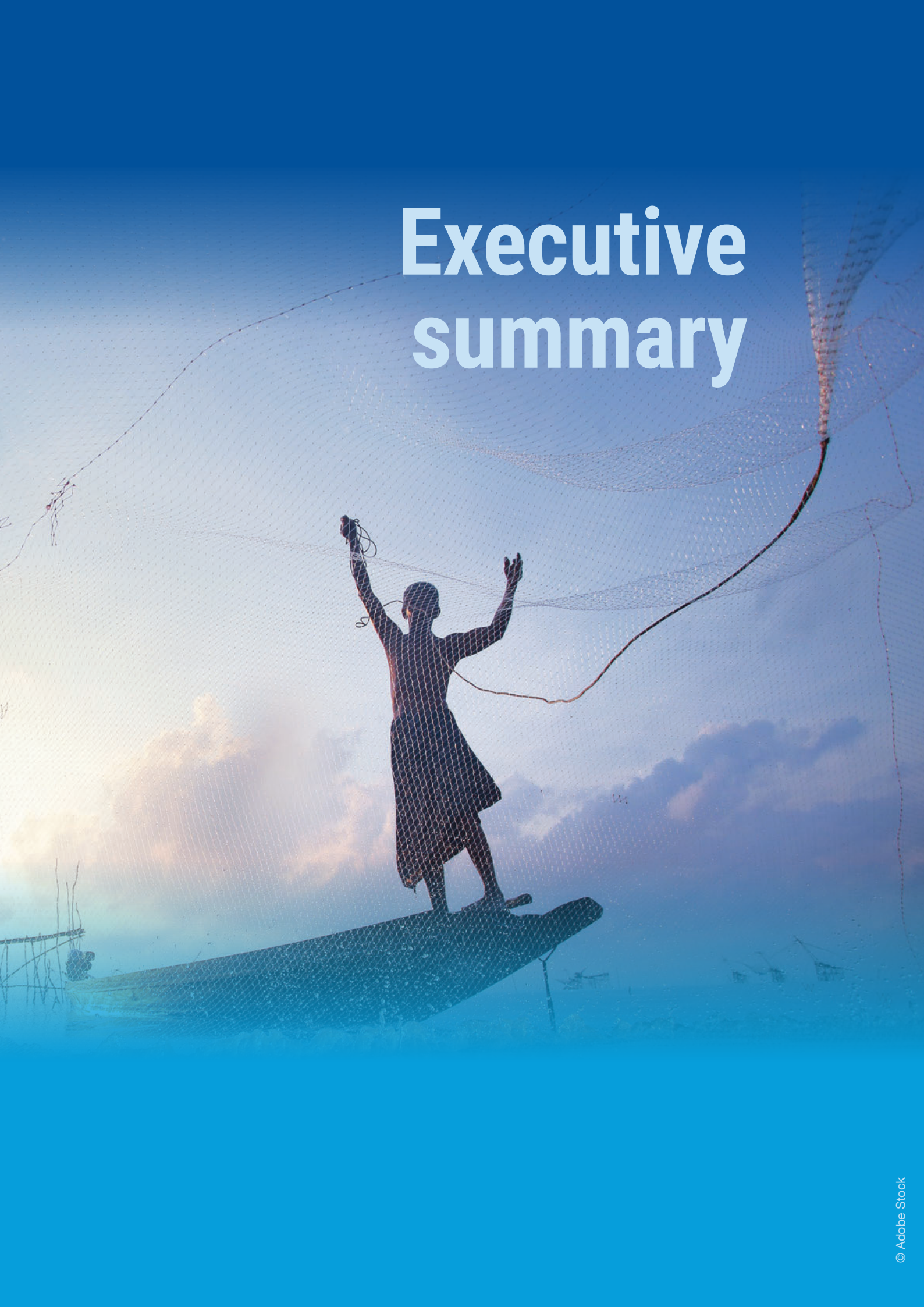
Against this background, the *Trade and Environment Review 2023: Building a sustainable and resilient ocean economy beyond 2030* addresses the current and emerging cross-cutting role of the ocean in advancing economic growth, social inclusion and environmental sustainability. The Review builds on the discussions and outcomes of the 4th United Nations Oceans Forum on trade-related aspects of SDG 14, life below water, which took place in Geneva from 6 to 8 April 2022. The Forum proved to be a unique global platform from which to take stock, exchange experiences and explore options to implement trade-related targets

for SDG 14. The focus of the 4th Forum, “A shift to a sustainable ocean economy: Facilitating post-COVID-19 recovery and resilience,” allowed participants to identify opportunities and challenges for the ocean economy and trade to contribute to post-COVID-19 recovery and resilience within the mandates of the outcome document of UNCTAD’s 15th quadrennial conference (UNCTAD15) – the Bridgetown Covenant. The recommendations agreed during the Forum were shared with all Member States by Mauritius, as the chair of the Forum, as part of UNCTAD’s preparations and the holding of the Second United Nations Ocean Conference (UNOC 2022) in Lisbon, Portugal in 2022.

The *Trade and Environment Review 2023* examines several key and emerging topics for the ocean economy, including the seaweed sector as a lever for a sustainable economic recovery; fisheries subsidies and non-tariff measures (NTMs); the decarbonization of shipping and maritime supply chains; and plastic litter and other ocean waste challenges. It explores these issues, identifies the main opportunities and challenges and concludes by offering a bottom-up menu of action-oriented policy recommendations for Small Island Developing States (SIDS) and coastal developing countries. It calls for a “Blue Deal” on trade and finance to accelerate the implementation of SDG 14 and identify practical yet far-reaching development paths towards a sustainable, resilient and inclusive ocean economy by 2030 and beyond.

Miho Shirotori
Acting Director, Division on International Trade and Commodities
UNCTAD

Executive summary



Executive summary

The ocean provides significant social, economic, and environmental benefits to humanity and the planet. At present there is no commonly agreed definition of the “sustainable ocean economy”. UNCTAD understands the ocean economy as *“a vehicle toward a more sustainable and inclusive economic path on the marine and coastal environment. It encompasses all industries that sustainably utilize and contribute to the conservation of ocean, seas and coastal resources for human benefit in a manner that maintains all ocean resources over time”* (UNCTAD, 2020).

Estimates indicate that the value of the ocean economy ranges between \$3 trillion to \$6 trillion per year, sustaining at least 150 million direct jobs across a wide range of sectors, including but not limited to fishing, aquaculture, shipping, tourism, offshore wind energy, oil and gas, mining and marine biotechnology. It is also central to global food security, contains rich, biodiverse habitats, provides invaluable ecosystem services and absorbs significant amounts of heat and carbon dioxide.

In 2020 alone, the **export value of ocean-based goods and services** was \$1.3 trillion, which represents about 6 per cent of global trade (total global trade in 2020 was \$23 trillion). Exports of ocean-based goods are estimated to be \$681.4 billion, and exports of ocean-based services \$628.2 billion, showing their importance as a key tradable cluster. Europe, Asia and the Americas are the leading exporters. These values remain below pre-pandemic estimate levels, but growth has been strong and trade in ocean-based goods is expected to continue to recover despite multiple subsequent and sometimes overlapping crises.

Unfortunately, the ocean is under immense pressure from a wide range of unsustainable patterns involving human activities, both on land and in the sea. These activities pollute the ocean with sewage, mineral and organic contaminants, litter, plastics and agricultural runoffs. Rapid urbanization of coastal zones further aggravates pollution, habitat loss and pressure on fragile marine resources and ecosystems. Ineffective fisheries management and illegal, unreported and unregulated (IUU) fishing have resulted in overfishing and the collapse of many fish stocks. Climate change is causing global warming, sea level rise and ocean acidification, all of which exacerbate the strain on many valuable marine species, habitats and ecosystems. As a result, the past decades have seen the ocean become warmer, stormier, more acidic, elevated and oxygen-depleted, as well as less predictable and resilient. Bringing this issue to a head – neither the problems the ocean face nor the economic wealth it generates is distributed fairly and equitably.

The situation has deteriorated further since March 2020, when the unprecedented COVID-19 pandemic swept through continents and countries, unleashing severe health, social and

economic damage worldwide, including to vital sectors of the ocean economy, many of which were halted or severely disrupted. These disruptions have led to cascading and interrelated impacts affecting millions of people, especially the most vulnerable. Aggravating these vulnerabilities is the war in Ukraine which started on 24 February 2022 and has dragged on, further causing multidimensional consequences for the global economy and human well-being – particularly in the energy market and various ocean economy sectors, food security, environment and livelihoods.

Building on the findings and conclusions of the **4th United Nations Oceans Forum** – and other recent high-level international environmental conferences and events relating to the ocean, this Review analyses current trends and perspectives for a sustainable ocean economy, with a specific emphasis on the implications for coastal developing countries and SIDS and the challenges that undermine their realization of SDG 14 and other related SDG targets. It also analyses the current impacts and implications of COVID-19 and the war in Ukraine on the ocean economy, and the opportunities emerging from these crises to promote international policy coherence and scale-up actions based on science, technology and innovation to support the implementation of SDG 14.

In particular, this Review focuses on the ocean economy sectors addressed at the 4th United Nations Oceans Forum on trade-related aspects of SDG 14, held in Geneva from 6 to 8 April 2022. The Forum was titled, “A shift to a sustainable ocean economy: Facilitating post-COVID-19 recovery and resilience” and considered the following topics:

- The seaweed sector as a lever for a sustainable ocean economic recovery
- Transparency, NTMs and fisheries subsidies reform
- Social sustainability of fisheries and aquaculture value chains
- Marine litter and plastic pollution
- Sustainable and resilient maritime transport and logistics.

The Forum’s conclusions and recommendations **called for** urgent and dedicated efforts to bridge the gap in ocean finance through a **“Blue Deal” to increase the amount of official development assistance (ODA) and private finance aimed at supporting the growth of the ocean economy**. This is essential to make ocean management policies more efficient for accelerating the implementation of SDG 14 and its trade-related targets, with a special focus on ocean science, a key to achieving a truly sustainable blue economy. A “Blue Deal” can also support a faster post-COVID-19 recovery in the ocean economy, in particular by filling governance gaps, implementing efforts to create incentives and tools, and coordinating stakeholders and their actions to protect, monitor and guarantee an adequate economic use of the ocean, its protection and sustainable use. It requires accelerating the adoption of digitalization, e-commerce systems and automation technologies across the ocean-based private sector and public administration, developing closer and shorter value chains, and promoting economic diversification, connectivity and the right mix of energy security measures as essential elements for resilience.

ODA should catalyse ways and means for leveraging adequate public and private finance necessary to sustain ocean health, infrastructure and governance to promote a sustainable ocean economy. This includes:

- Fostering an enabling environment for attracting sustainable ocean finance, in conjunction with developing attractive incentives for public and private investment and/or partnerships around the ocean economy.

- Promoting public–private partnerships to create and better mobilize a full suite of financial tools and approaches, insurance, fiscal and market incentives, while making the benefits they generate accessible to all, especially to women, youth and marginalized communities.
- Identifying ways to de-risk private investment capital, by supporting public and philanthropic funding sources, ensuring policy and regulatory certainty and advancing reforms and innovative use of policy and finance instruments to catalyse private investment in novel industries and business models.

The Forum also identified **the seaweed sector as an important and emerging lever for a sustainable ocean economic recovery. The sector has the potential to simultaneously address both food security and primary sector carbon emissions, while creating local livelihoods and reducing the competition for land for other activities.** Ways and means discussed to achieve the seaweed sector’s potential included the expansion of seaweed cultivation, the restoration of degraded kelp forests and the establishment of new ones into national and multilateral development plans, nationally determined contributions and National Adaptation Plans. The discussion also highlighted the need for: (i) scaling up seaweed production through coordination of technical assistance; (ii) setting out adequate infrastructure; (iii) harmonization of legal frameworks; (iv) linking private sector investors with technologies and environmental requirements; (v) establishing partnerships to share knowledge; (vi) promoting South-South cooperation on seaweed sector development as part of a broader ecosystems-based fisheries management approach; and (vii) applying marine spatial planning.

Likewise, the Forum focused on the issues of transparency, NTMs and fisheries subsidies reforms as efficient ways to reduce technical barriers to trade (TBT), and to eliminate subsidies causing overfishing or inadvertently encouraging IUU fishing. The Forum called for the **development of implementation mechanisms for the WTO Agreement on Fisheries Subsidies (2022)** to:

- Introduce prohibitions for subsidies that contribute to IUU fishing, overfishing and fishing on the unregulated high seas within the national regulatory frameworks.
- Invest in data collection tools to support evidence-based fisheries management and support relevant subsidies-related notifications.
- Encourage the use of transparency tools to improve the understanding of the effect of other relevant NTMs.

The importance of social responsibility to safeguard the welfare of the labour force in all ocean economy sectors was highly debated. The Forum discussed in particular, approaches to promote decent work conditions and prevent human rights abuses in marine fisheries and aquaculture that are contingent on (i) active collaboration and cooperation among stakeholders and (ii) enforcement of better social practices in the fish value chain at national, regional and international levels. These can be done through:

- Implementing relevant international instruments and tools, including the currently developed **FAO Guidance on Social Responsibility in the Fisheries and Aquaculture Value Chain.**
- Targeting business actors to facilitate the implementation of better social practices.
- Supporting governments to improve national frameworks that advance decent working conditions throughout the fisheries and aquaculture value chain, with a particular focus on women’s role in the fisheries and aquaculture sector, especially in the small-scale fisheries sector.

Regarding sustainable and resilient maritime supply chains, the Forum underscored the need to **urgently factor climate change considerations into port development, operation and management**, tackle climate change by providing legal certainty, increasing partnerships and investments, and recognizing the special needs of vulnerable coastal developing countries and SIDS. Both the **climate fund and loss and damage fund** adopted at the twenty-seventh UNFCCC Conference of the Parties at Sharm El Sheikh, Egypt in 2022, **will be pivotal in providing much-needed finance for mitigation and adaptation and to compensate the countries that have contributed little to the climate crisis but are the most vulnerable to climate disasters.**

The Forum also stressed the need to identify the challenges and opportunities offered by the shipping industry's path to decarbonization, enhance knowledge and increase partnerships and investment, while recognizing the special needs of some States, taking into consideration UNCTAD efforts in cooperation with other institutions, to develop a **Global Port by Port Vulnerability Index** to assess and monitor trends and identify the potential for reforms and improvements. Other recommendations looked at exploring the potential of South-South collaboration, promoting policy measures and incentives to drive technological development to reduce emissions, while at the same time ensuring shipping activity remains buoyant.

The Forum recommended a **holistic and coherent approach to reduce marine litter and plastic pollution** by:

- Coordinating better global responses as acknowledged by countries' international commitments.
- Intensifying multilateral cooperation to accelerate the negotiation process under the recently adopted mandate for a United Nations legally binding instrument on ending plastic pollution. This should be supported at the national level, through the promotion of a bolder and more proactive usage of economic instruments to support governments' ambitions on plastic waste management, production, the scale-up of plastic substitutes and the transition to the circular economy.

At the multilateral level, actions to promote the further development of the World Customs Organization's Harmonized System were recommended. This could take place through the inclusion of special classifications relevant to material substitutes and alternatives to facilitate the adjustment of tariff schedules that will promote material substitutes and alternatives to plastics. Other recommendations were to: disincentivize trade in highly polluting, single-use plastics and hazardous plastic materials; regulate plastic waste trade; and facilitate trade of services necessary for waste avoidance, management and recycling. The Forum called for the promotion of further research, development and the adoption of material substitutes that are less polluting to the ocean – particularly exploring the adoption of natural materials, marine by-products and post-harvest agricultural waste, which could help to stimulate innovation, support a more circular economy and develop new industrial capacities in developing countries.

The findings and recommendations from the Forum were shared with all Member States at the UNOC 2022 held in Lisbon, Portugal from 27 June to 1 July 2022 by Mauritius, as chair of the Forum. UNOC 2022 addressed many of the deep-rooted problems of our ocean, laid bare by the COVID-19 pandemic and which require major structural transformations and common shared solutions that are anchored in the SDGs. Furthermore, Member States at the UNOC 2022 committed to strengthen cooperation at the international, regional, subregional, national and local levels. In particular, they emphasized the need to:

- **Improve the understanding of the impact of cumulative human activities** in integrated ocean management, planning and decision-making.
- Effectively **plan and implement area-based management tools**.
- **Restore and maintain fish stocks** at levels that produce at least maximum sustainable yield in the shortest time feasible.
- **Mobilize actions for sustainable fisheries and sustainable aquaculture** for sufficient, safe and nutritious food, recognizing the central role of healthy oceans.
- **Recognize the important role of Indigenous, traditional and local knowledge, innovation and practices**, as well as the role of social science in planning, decision-making and implementation.
- **Strengthen the science–policy interface** for implementing Goal 14 and its targets.
- **Prevent, reduce and control marine pollution of all kinds**, from both land- and sea-based sources.
- **Prevent, reduce and eliminate marine plastic litter**, including single-use plastics and microplastics, including through contributing to comprehensive life cycle approaches, encouraging resource efficiency and recycling, as well as environmentally sound waste management.
- **Develop and implement measures to mitigate and adapt to climate change** in relevant oceans-based value chains.
- **Establish effective partnerships and incentivize the sharing of good practices** for meaningful interaction, networking and capacity-building.
- **Explore, develop and promote innovative financing solutions** to drive the transformation to sustainable ocean-based economies, and the scaling up of nature-based solutions and ecosystem-based approaches.
- **Empower women and girls** because their full, equal and meaningful participation is key in progressing towards a sustainable ocean-based economy and to achieving SDG 14.
- **Promote scientific and systematic observation and data collection** efforts, especially in developing countries.





1

Introduction

1 Introduction

Ocean economy sectors have great potential for sustainable growth, to extract wealth, add value and create employment (UNCTAD, 2021a). At the same time, they can be an important part of the solution to humanity's challenges, ranging from food insecurity to social and economic development, environmental degradation, and mitigation of and adaptation to the impact of climate change.

Unfortunately, the second United Nations World Ocean Assessment (WOA II)¹ reveals that much of the ocean is seriously degraded, with increasing losses in the structure, function and benefits from marine systems. Unsustainable human activities, both on land and in the sea, continue to threaten the ocean's ability to regenerate and sustainably provide goods and services for people around the world. Chemicals, litter and plastics, especially microplastics, pollute the ocean at an alarming rate, with more than 11 million tons of plastic dumped in the ocean every year. Eighty per cent of global marine pollution comes from agriculture runoff, untreated sewage and the discharge of nutrients and pesticides (UNEMG, 2022).

The impact of multiple stressors on the ocean is projected to increase as the human population grows towards an expected 9.6 billion by 2050. The challenge is particularly overwhelming for developing countries in which ocean-based sectors have often expanded without proper governance that duly considers their adverse impact on environmental and social sustainability. Most of these countries are not equipped to handle the challenges before them and SIDS and least developed countries (LDCs) in particular find themselves at the forefront of the negative impacts of climate change and ocean pollution (UNCTAD, 2020).

The COVID-19 pandemic aggravated these challenges because it caused severe health, social and economic ramifications worldwide, including for the ocean economy. Port and market closures, travel restrictions and supply chain disruptions interrupted ocean-based industries, causing significant income and revenue losses to marine and coastal tourism, fisheries and aquaculture. As with many crises, it is the most vulnerable groups, such as coastal communities and informal workers, that were hardest hit (UNCTAD, 2022a). This situation has been exacerbated by the recent war in Ukraine which has had severe implications for food security, inflation, price hikes for basic commodities such as fertilizers and energy, as well as for trade flows, all of which have direct implications for the ocean economy.

For decades, the approaches adopted to address the ocean's challenges were fragmented and focused on disconnected sectoral actions. They favoured either economic performance using an extractive approach of maximizing the resources that can be harvested from the ocean, or an environmental protection and conservation approach that

¹ For more details, see www.un.org/regularprocess/woa2launch.

eliminates destruction but significantly limits exploitation. More than ever, the solution is likely to be found in between these approaches and consist of an integrated approach that seeks to achieve effective protection, sustainable production and equitable prosperity (Stuchtey et al., 2020).

Despite its heavy toll, the pandemic revealed solutions and ways to rebuild a more resilient, sustainable and equitable post-COVID-19 world. It highlighted the deep interconnections between human and planetary health, and the need for nations to work together to respond to global threats. In this context, building a sustainable ocean economy is one of the most important tasks at hand, which also offers great opportunities. It is critical for achieving and going beyond the goals of the 2030 Agenda for Sustainable Development, and for emerging from current and future crises with stronger economies, a healthier planet and more resilient communities (HLP SOE, 2022). This Review provides a deeper analysis of the most pressing ocean economy issues discussed at the 4th Oceans Forum.² The topics addressed are the following:

- The seaweed sector as a lever for a sustainable ocean economic recovery
- Transparency, NTMs and fisheries subsidies reform
- Social sustainability of fisheries and aquaculture value chains
- Marine litter and plastic pollution
- Sustainable and resilient maritime transport and logistics.

The Review also structures and compiles key recommendations made at the 4th Oceans Forum as a course of coordinated action by Member States, United Nations agencies, Oceans Forum partners, academia and civil society within the framework of paragraphs 76 and 127 (nn) of the **Bridgetown Covenant**,³ and the outcome of the 15th Session of the United Nations Conference on Trade and Development (UNCTAD 15). As Chair of the Forum, Mauritius submitted the action-oriented recommendations⁴ to the UNOC 2022.⁵

The Review concludes with a summary of the key priorities for ocean cooperation that were adopted in the UNOC 2022 Political Declaration,⁶ all with the ultimate objective of implementing the trade-related aspects of SDG 14⁷ by 2030 and beyond.

² For more information on the 4th Oceans Forum on trade-related aspects of Sustainable Development Goal 14, see: <https://unctad.org/meeting/4th-oceans-forum-trade-related-aspects-sustainable-development-goal-14>.

³ The **Bridgetown Covenant** reaffirms that “Efforts to preserve the planet need to take place both on land and sea ... This calls for recognizing the interrelated and multifaceted nature of the ocean economy, an area which requires greater understanding and clearer definition in line with the SDGs. It is important to ensure conservation and sustainable use of oceans, seas and marine resources, including addressing the discharge of plastic litter and other waste in oceans and significantly reducing marine pollution of all kinds and ensuring sustainable consumption and production patterns” (paragraph 76).

Furthermore, UNCTAD has the mandate to “[c]ontinue to support, through policy dialogue and cooperation mechanisms, international and regional transport networks, ensuring their sustainability and resilience, and promote the conservation and sustainable use of oceans and their resources” (Bridgetown Covenant, Section D, paragraph 127, sub paragraph nn).

Excerpt from the **Bridgetown Covenant: From inequality and vulnerability to prosperity for all**, 10 November 2021.

For the full text, see: https://unctad.org/system/files/official-document/td541add2_en.pdf.

⁴ See UNCTAD, 2022a. Also, for the full text, see the **4th Oceans Forum Chair's Summary** available at: <https://unctad.org/system/files/information-document/4th-Oceans-Forum-ChairsSummary-v7.pdf>.

⁵ The 2022 UN Ocean Conference, “Scaling up Ocean Action Based on Science and Innovation for the Implementation of Goal 14: Stocktaking, Partnerships and Solutions”. For more information, see www.un.org/en/conferences/ocean2022.

⁶ See <https://www.un.org/en/conferences/ocean2022/political-declaration>.

⁷ Specifically, SDG targets 14.1, 14.4, 14.6, 14.7 and 14b. See <https://sdgs.un.org/goals/goal14> for more information.



2

State of the ocean economy: challenges and opportunities

2 State of the ocean economy: challenges and opportunities

2.1 State of the ocean economy

The ocean provides diverse renewable and non-renewable resources that are the intermediate inputs to support a wide range of ocean-based economic activities to produce tradable goods and services. “Sustainable ocean economy,” also referred to as “blue economy”, encompasses economic sectors that sustainably utilize and contribute to the conservation of the ocean, seas and coastal resources for the benefit of humanity in a manner that sustains all ocean resources over time (UNCTAD, 2021b). These sectors include traditional marine fisheries, marine and coastal aquaculture, shipbuilding, marine and coastal tourism, and maritime transport. New economic sectors that use the ocean have developed over recent decades, notably based on goods and services related to high technology and innovation. They include for example, marine and coastal environmental services, renewable energy, marine biotechnologies and bioprospection of molecules and products for the pharmaceutical, cosmetic, feed and food industries (OECD, 2020; UNCTAD, 2021a, 2021b).

The mix and importance of ocean economic activities vary from one country to the other, depending on the geography, history, political, social, cultural and economic circumstances and the national vision and policies adopted by each country to reflect its own priorities and interests. However, across most continents and countries there are strong interconnections within the ocean economy sectors, as well as between these sectors and land-based economic activities, especially along the coasts. For example, fish and seafood harvested from the ocean are important for the food security and livelihoods of coastal and inland communities, as well as a source of export earnings as the most highly traded food commodity. Disruption to maritime shipping and port services has negative consequences for most sectors, including agriculture, textiles, energy, health, tourism and many more. A thriving marine and coastal tourism industry benefits a wide range of sectors such as transportation (by air, land and sea) and infrastructure, and the catering and food industry. This connectedness applies not only to what people remove from the sea but also to what they dump into the ocean. It is estimated that over 80 per cent of all global marine pollution originates from land-based activities, such as the disposal of domestic waste, agriculture and industry (UNEMG, 2022).

Against this background, UNCTAD launched a novel ocean trade database in 2022⁸ which draws on official data reported by all United Nations Member States. This database is built from **UNCTAD's classification for the development of sustainable ocean economies**,⁹ identifying primary, secondary and tertiary sectors (UNCTAD, 2021a, 2021b) that can be managed sustainably. It thus excludes offshore fossil fuel industries and seabed mining. While unsustainable practices remain prevalent in certain sectors, the measurement of trade flows enables an objective analysis of market trends, which can inform decisions on sustainable transitions. The database currently includes information on trade in ocean-based goods since 2012, and trade in ocean-based services since 2005.

The UNCTAD classification (UNCTAD, 2021a, 2021b) builds on the experience of existing national ocean definitions and criteria¹⁰ and is structured around three categories: goods, services and energy. It includes industries that take place in or on the ocean, goods and services produced by activities based on land but that depend on inputs provided by ocean ecosystems, and activities located on land that produce goods and services for ocean-based activities.

In 2020, the export value of the ocean economy was \$1,3 trillion, with exports of ocean-based goods estimated to be \$681 billion, and exports of ocean-based services \$628 billion¹¹ (Figure 1). Exports of ocean-based goods¹² showed strong resilience to the COVID-19 pandemic in 2020, only falling by 3 per cent when compared to 2019, and they appear to be recovering fast in countries that have reported data so far for 2021.

The pandemic severely affected exports of ocean-based services. Exports in these sectors fell by 44 per cent from 2019 to 2020 i.e., from \$1.1 trillion to \$628 billion from 2019 to 2020 – 14 times more than the effect that the COVID-19 pandemic had on exports of ocean-based goods. Exports of ocean-based services partially recovered in 2021, growing by 28 per cent to reach \$801 billion.

⁸ The dataset on ocean trade is available at https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx?IF_ActivePath=P%2C207996.

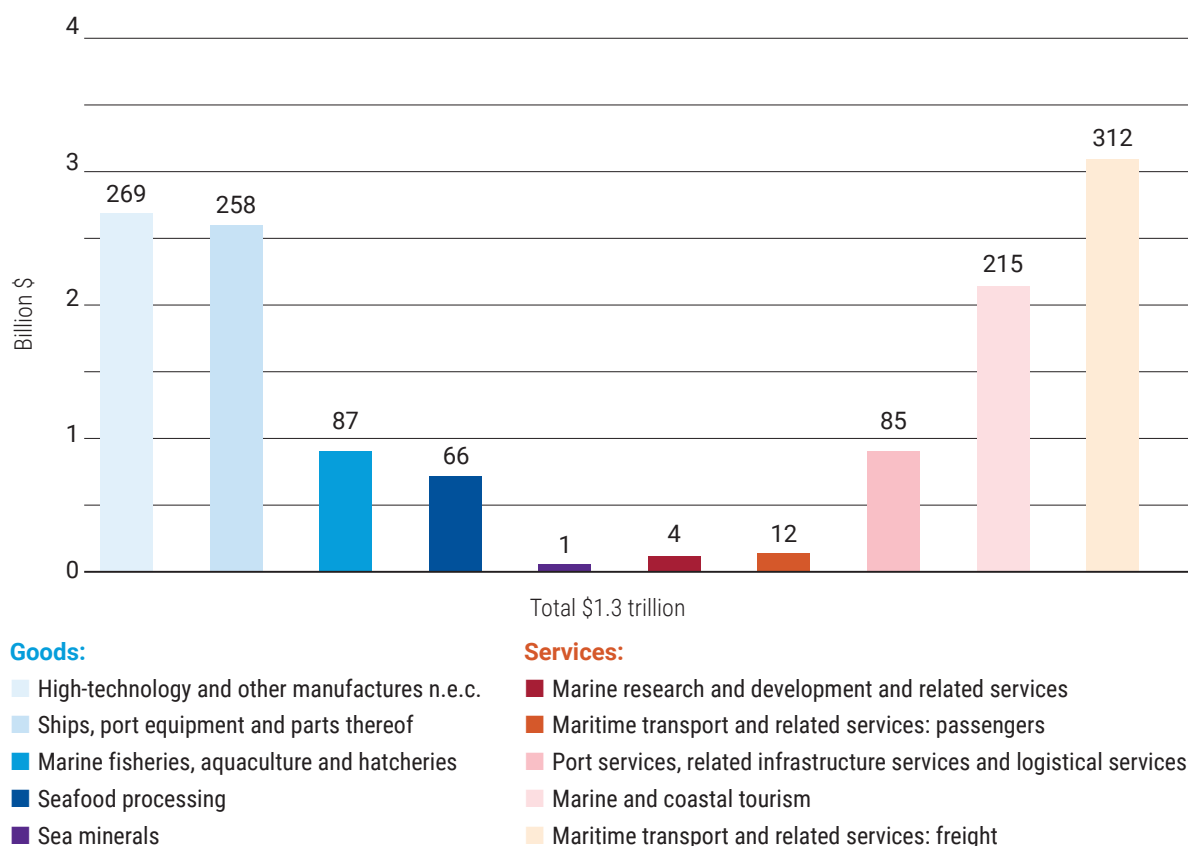
⁹ The full report is available at <https://unctad.org/webflyer/towards-harmonized-international-trade-classification-development-sustainable-ocean-based>.

¹⁰ For example, Australia, Canada, China, Ireland, Japan, New Zealand, the Republic of Korea, the United Kingdom, and the United States of America have developed different definitions and criteria of ocean-based economic activities considering the national perspectives and priorities. See https://unctad.org/system/files/official-document/ditcted2018d11_en.pdf.

¹¹ The estimate is below previous 2018 reporting due to a revision in the methodology for a subsector of ocean-based goods (High-technology and other manufactures), as well as a significant decline in tourism services exports (which was seriously impacted by the COVID-19 pandemic). This study considers these estimates to be conservative because the data are incomplete or unavailable for over 40 per cent of ocean industry clusters in the case of ocean-based goods. The analysis on ocean-based goods focuses on 2020 due to insufficient data reported for 2021.

¹² Ocean goods data are based on international merchandise trade concepts and definitions, aimed at measuring physical flows across borders rather than change of ownership between non-residents and residents.

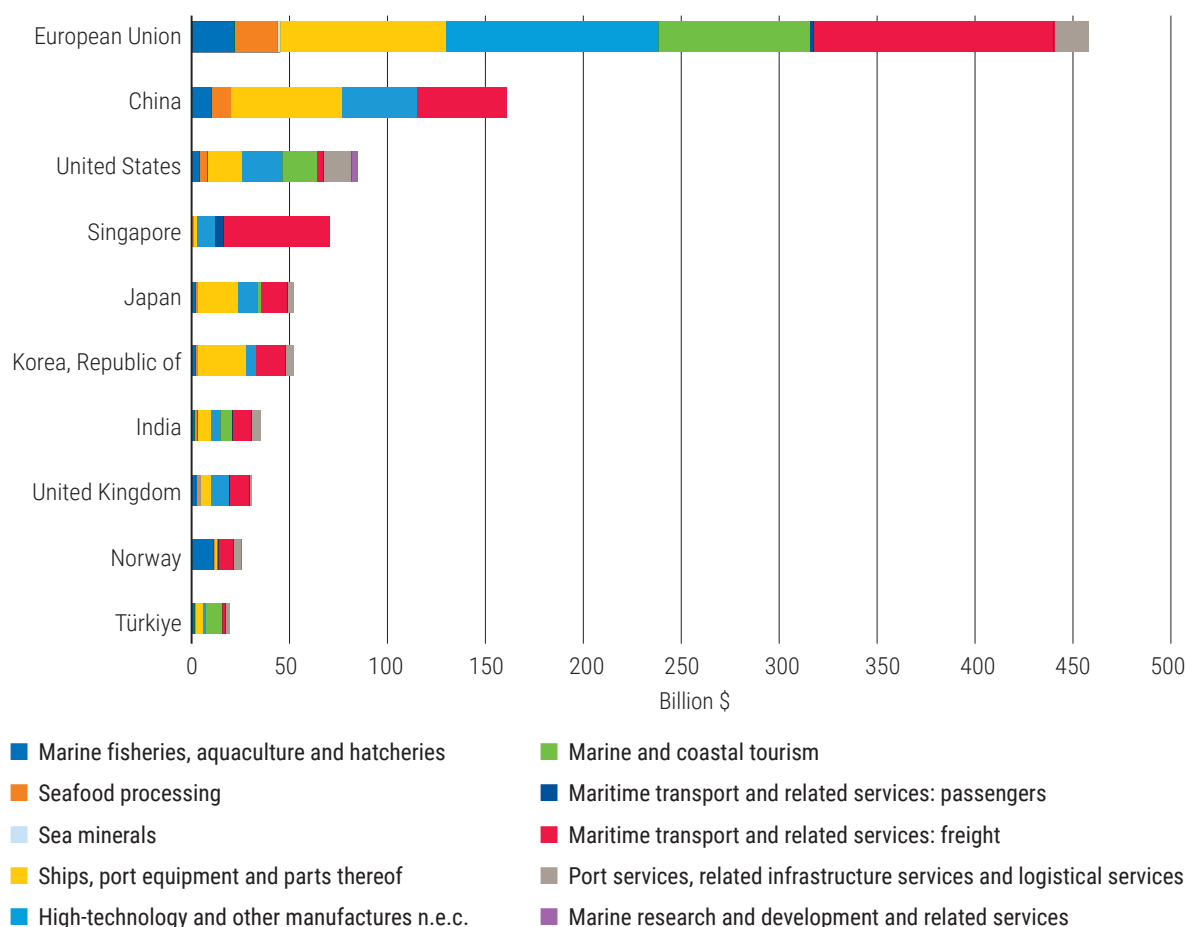
Figure 1. Export values in ocean economy sectors in 2020 (billion \$)



Source: UNCTAD estimates based on UNCTADstat (accessed in January 2023).

In 2020, exports of maritime transport, high-tech manufactures and ships overtook exports of Marine and coastal tourism services due to the sharp drop in international tourism. When looking at the top ocean economy exporters, the European Union is by far the biggest exporter of ocean-based goods and services, with \$459 billion of exports in 2020. Some of its member states are leaders in exports of ocean-based fisheries, such as Denmark, the Netherlands and Spain, while others dominate manufactures, such as Germany and France. Southern European countries, such as Spain, Italy and Greece, typically lead in international tourist arrivals. China comes second with \$160 billion of exports in 2020, followed by the United States of America with \$84 billion (Figure 2).

Figure 2. Top 10 ocean economy exporters (2020)

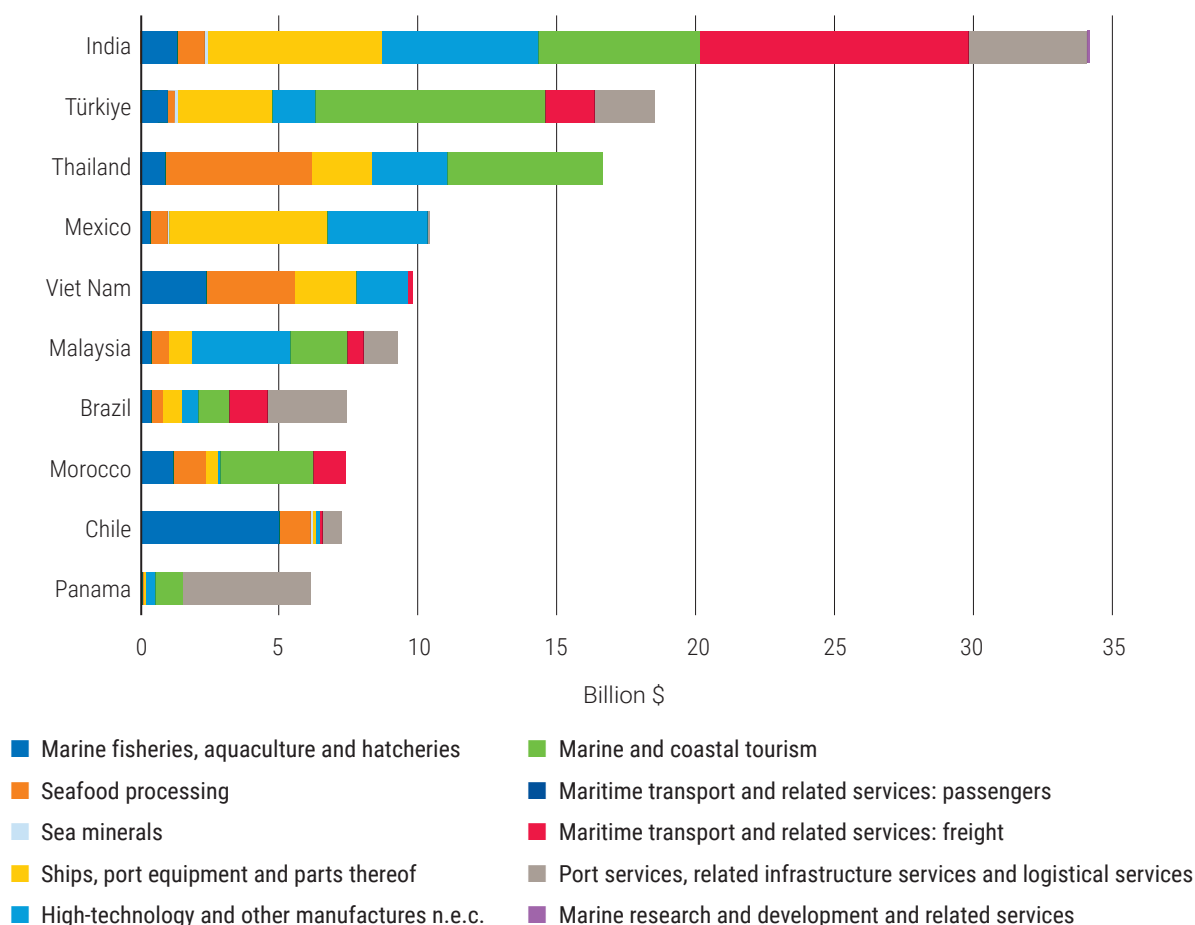


Source: UNCTAD ranking based on UNCTADstat (accessed in January 2023).

In terms of developing countries, India follows China as the second largest exporter of ocean-based goods and services in 2020, with \$34 billion, followed by Türkiye (\$19 billion) and Thailand (\$17 billion) (Figure 3). While most of the top ten developing countries as ocean economy exporters have a diversified export base, some specialize in one sector, such as Panama (Port services, related infrastructure and logistical services) and Chile (Marine fisheries, aquaculture and hatcheries).

Diversifying ocean exports can provide opportunities for rapid export growth and economic resilience. Viet Nam and Mexico, for instance, are leaders in exports of ocean-based goods but still have a very small maritime freight export sector. For both countries, Marine and coastal tourism exports are not analysed because data were not yet available for 2020. By contrast, Morocco and Brazil have a strong ocean-based services sector and would benefit from investing in their ocean goods export capacity.¹³

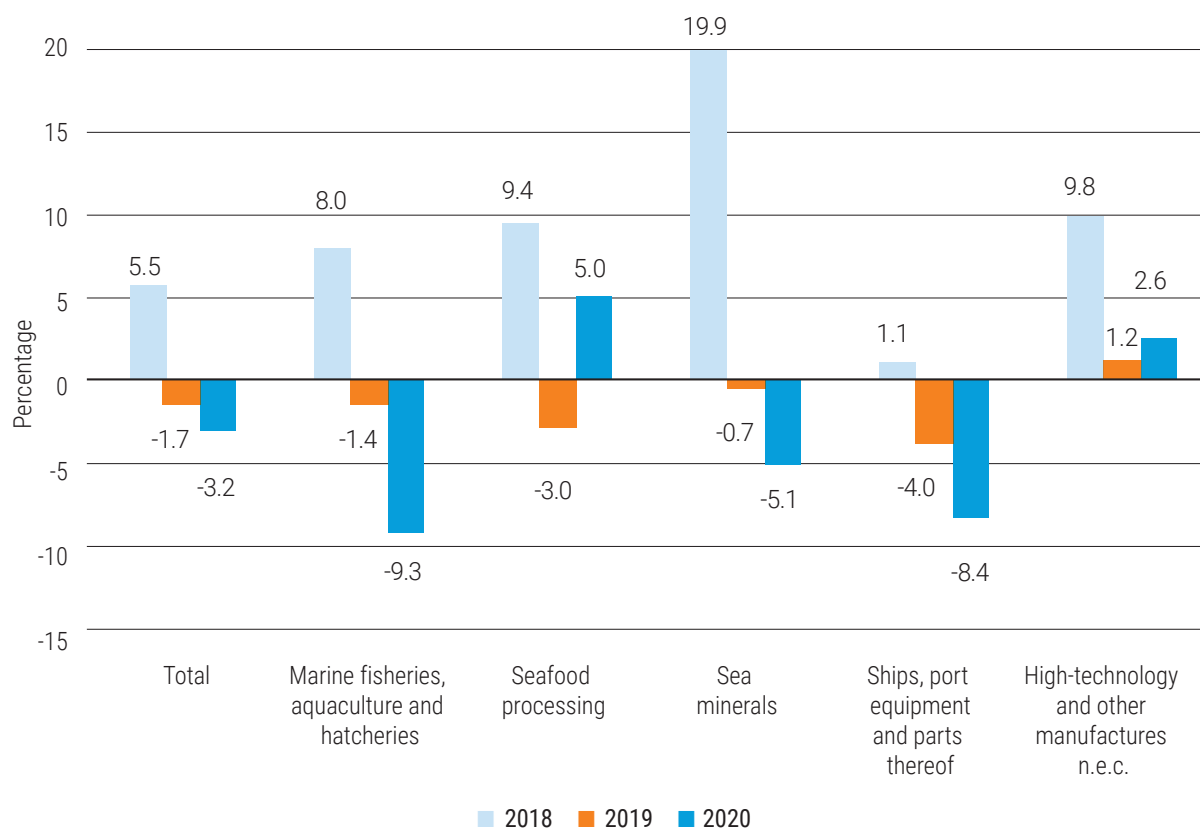
¹³ The value of world merchandise trade declined by 2.8 per cent in 2019 (UNCTAD, 2020).

Figure 3. Top 10 developing countries as ocean economy exporters, excluding China (2020)

Source: UNCTAD ranking based on UNCTADstat (accessed in January 2023).

Exports of Seafood processing and High-technology and other manufactures expanded in 2020 as household spending shifted predominantly to consumption of goods due to COVID-19-related lockdowns and public health measures that subsequently stifled demand and offer of services (Figure 4). Trade in processed seafood grew by 5 per cent, boosted by higher demand for processed, sterilized and ready-made dishes during lockdowns. The largest sector in terms of trade of ocean-based goods – High-technology and other manufactures n.e.c. – expanded by 2.6 per cent. Exports of Marine fisheries, aquaculture and hatcheries fell the most, by 9.3 per cent between 2019 and 2020, in part due to the decline in demand from restaurants and hospitality services, as well as significantly restricted fishing and post-harvest activities. Ocean trade in goods slightly fell in 2019 due to a decline in global economic activity.

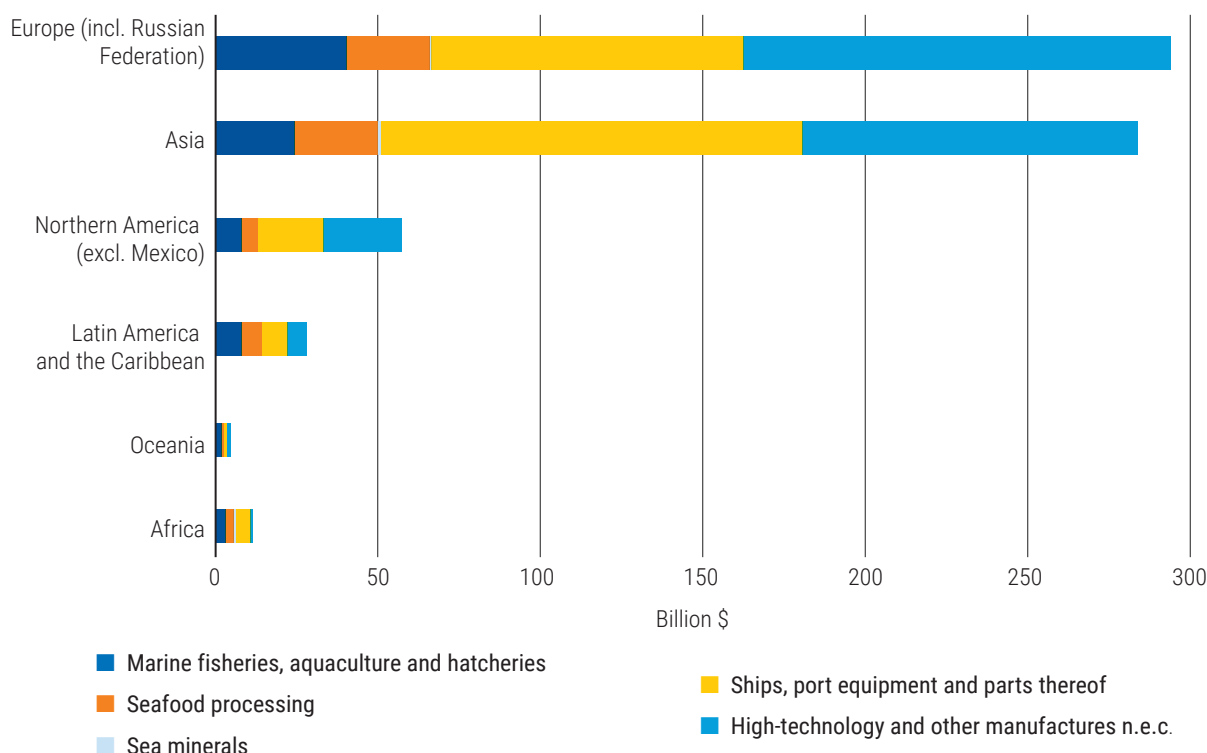
Figure 4. Growth rate of ocean-based goods (2018–2020)



Source: UNCTAD calculations based on UNCTADstat (accessed in January 2023).

In terms of geographical regions, the leading exporters of ocean-based goods are Europe, followed by Asia and Northern America (Figure 5). When looking the relative importance of sectors in exports, the data show that the share of exports values in the five ocean based goods categories from Latin America is relatively evenly distributed. However, in Asia, North America, and Europe, approximately three quarters of the exports of ocean goods are high-technology and other manufactures. This may be explained by the strong industrial base of these regions, among other reasons. Developing countries as well as African countries, could benefit from exporting more ocean-based manufactures, which would strengthen their productivity and help them create higher-wage jobs.¹⁴

¹⁴ Due to insufficient data reporting by African countries in 2020, regional ocean goods exports for Africa in 2020 represent the residual between the world estimate and the other (relatively well covered) continents.

Figure 5. Exports of ocean-based goods by region (2020)

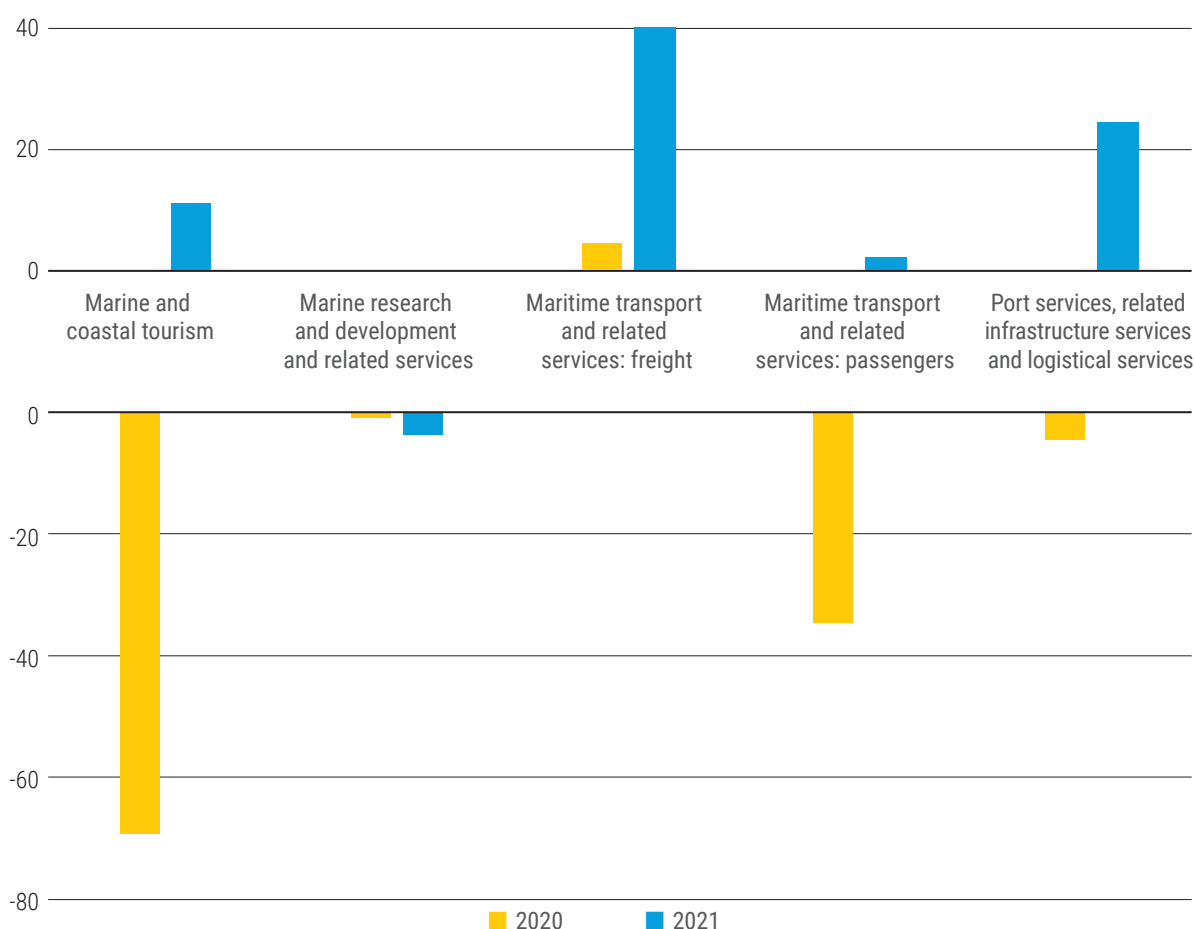
Source: UNCTAD calculations based on UNCTADstat (accessed in January 2023).

Worldwide, ocean services sectors were unevenly impacted by the COVID-19 pandemic. The Maritime transport sector benefited because people resorted to buying goods instead of services during lockdowns. In particular, Maritime transport and related services proved to be resilient, growing by 4 per cent in 2020 and 40 per cent in 2021, followed by Port services, related infrastructure services and logistical services which, after a recession of 4 per cent in 2020, grew by 25 per cent in 2021 (Figure 6).

Passenger transport was the type of maritime transport most impacted by the COVID-19 pandemic, falling by 35 per cent in 2020 before recovering by 2 per cent in 2021. The effect of COVID-19 on maritime passenger transport in 2020 was only half its effect on the marine and coastal tourism trade which fell by 80 per cent. Marine and coastal tourism, which was estimated at \$1.1 trillion in 2019, sharply decreased to \$215 billion in 2020, and registered a strong and fast fourfold upturn, reaching \$801 billion in 2021.¹⁵ The latest data from the United Nations World Tourism Organization suggest the sector recovered strongly in 2022, with a global growth rate of tourism exports between 60 and 70 per cent, yet still below 2019 levels (UNWTO, 2023a).

¹⁵ UNCTAD's ocean-based services so far covers data for Marine and coastal tourism, Maritime transport and related services (passengers, freight and Port services, related infrastructure services and logistical services), and Marine research and development, sectors for which data are available.

Figure 6. Growth rate of total world exports in ocean services sectors (2020–2021)

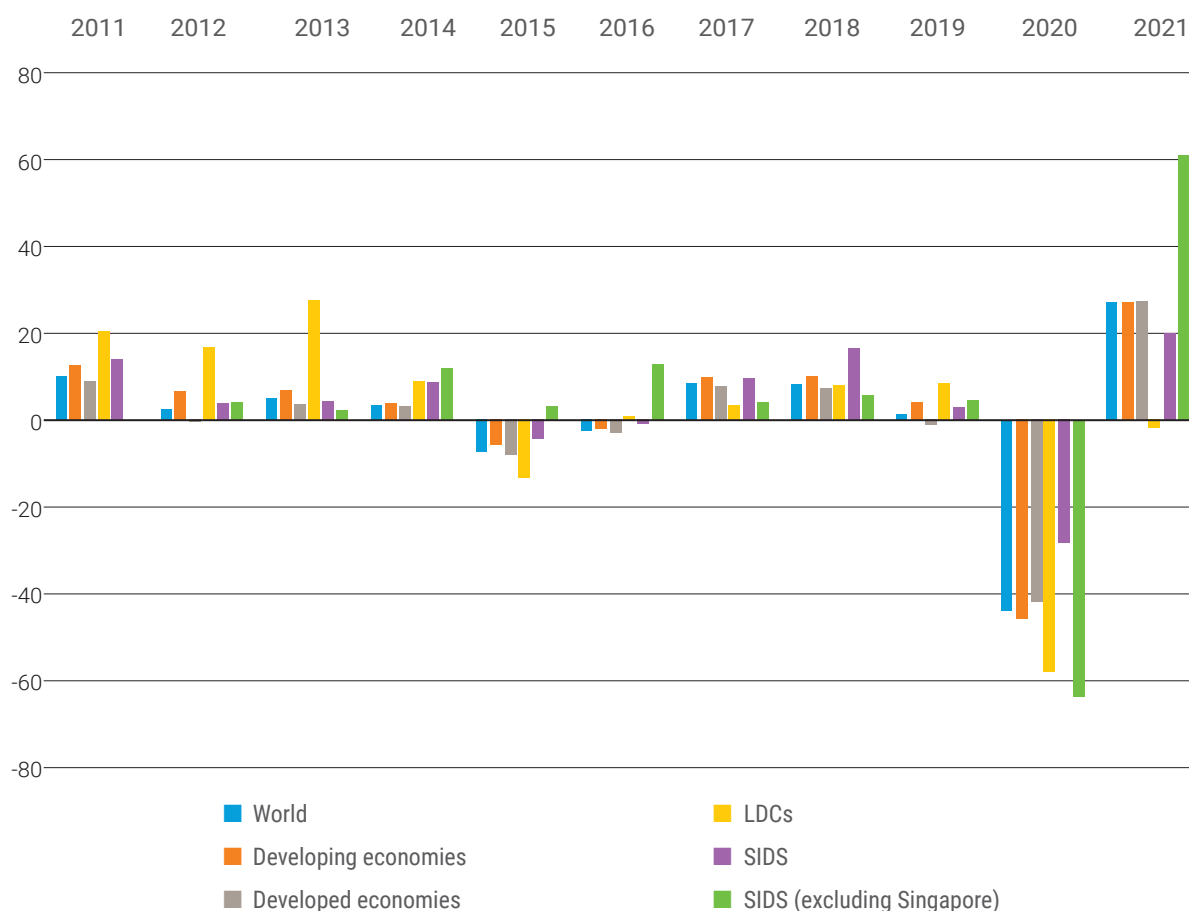


Source: UNCTAD analysis based on UNCTADstat (accessed in January 2023).

When looking at LDCs and SIDS (excluding Singapore), these countries were most hard hit by COVID-19 impacts, with their exports in ocean-based services falling by 58 and 64 per cent between 2019 and 2020, respectively.¹⁶ SIDS (excluding Singapore) experienced a strong recovery in 2021 with a 61 per cent growth rate, while the trade of LDCs fell by a further 1.5 per cent (Figure 7). The main reason for these declines in ocean-based services was the almost complete halt of trans-continental passenger connectivity, border measures, related travel restrictions and steep declines in demand for marine and cruise tourism during the COVID-19 pandemic period.

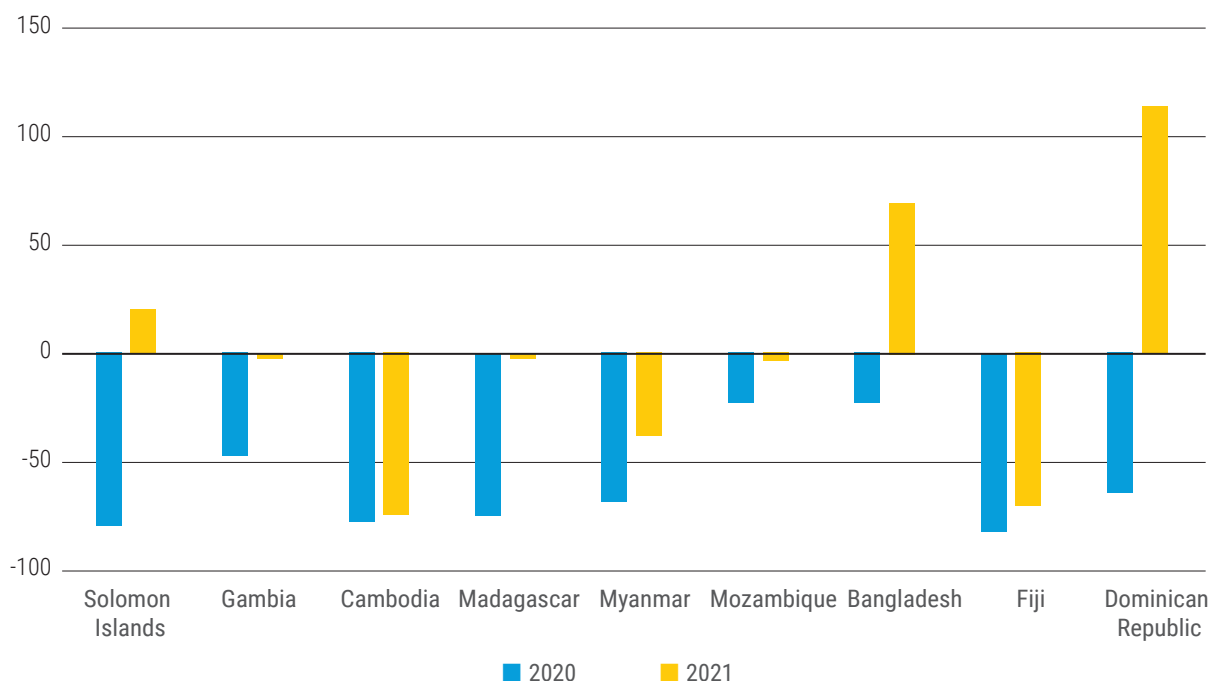
¹⁶ In this Review, analyses of LDCs and SIDS are treated with caution because many countries are not able to report and/or use data due to e.g., lack of capacity and know-how. The countries above were selected for analysis because they reported data for at least three ocean economy activities for each year 2019–2021. Accordingly, countries are encouraged to invest in data collection and reporting for better assistance from international organizations, including UNCTAD, which can help countries identify the performance of different ocean economy activities and provide technical assistance to measure and promote a sustainable ocean economy.

Figure 7. Growth rate of exports in ocean-based services by economic grouping (2011–2021)



Source: UNCTAD analysis based on UNCTADstat (accessed in January 2023).

Individual country experiences vary, as some countries could better take advantage of the uptake in world tourism and maritime transport than others (Figure 8). Some countries, such as Cambodia and Fiji, maintained strict border measures until late 2021 to prevent the spread of COVID-19, with stark consequences for their tourism industries. In the case of Fiji, for instance, exports of ocean services fell by 82 per cent in 2020 and 69 per cent in 2021, driven by the fall in international tourist arrivals (Karryon, 2022). Since borders re-opened for tourism in late 2021, the tourism sectors of Fiji and Cambodia have partly recovered, with total visitors in Fiji during January to June 2022 reaching 50 per cent of 2019 levels.

Figure 8. Growth rate of exports in ocean-based services, selected Small Island Developing States and least developed countries

Source: UNCTAD analysis based on UNCTADstat (accessed in January 2023).

Other countries chose to re-open borders for tourism in 2021, leading to earlier recoveries. For instance, the ocean services trade of the Dominican Republic fell by 64 per cent in 2020 but strongly recovered in 2021, growing by 113 per cent due to the uptick in international tourist arrivals. Despite this astonishing growth rate, the country's Marine and coastal tourism exports are still behind 2019 levels (\$5.6 billion in 2021 versus \$7.3 billion in 2019, up from \$2.5 billion in 2020). In Bangladesh, trade in ocean services surpassed 2019 levels thanks to an 89 per cent growth rate in 2021. While the country's Marine and coastal tourism exports contributed to the recovery, its Maritime transport (freight) and Port services sectors grew most rapidly as its ports faced fewer health restrictions (CPA News, 2022). In the case of a few countries, other crises added to the effects of COVID-19. For example, a military coup occurred in Myanmar in February 2021.

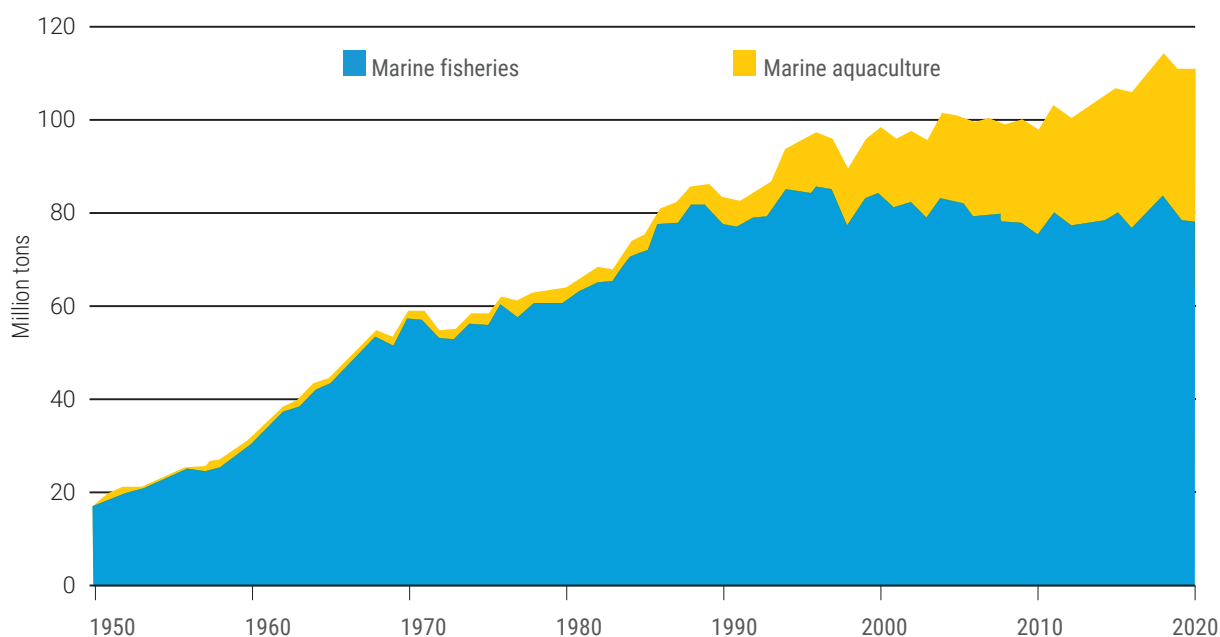
As the effects of COVID-19 recede, new crises emerged in 2022 to impact trade in ocean-related goods and services: growing protectionism, high inflation and energy prices, strength of the United States dollar, and the increased probability of a global economic recession in 2023. Notwithstanding, climate change, pollution and biodiversity loss are set to remain the biggest challenges of the next decades. Hence, restoring and maintaining the ocean's health can generate further ocean-based wealth, make the most of the ocean's resources in a sustainable manner and assist with building resilience in ocean-based sectors (Stuchtey et al., 2020).

2.1.1 State of marine fisheries and aquaculture

Fisheries and aquaculture make a significant contribution to food security and nutrition, employment, trade, culture and economic development in the world. Their global production reached an all-time record of 214 million tons in 2020, comprising 178 million tons of aquatic animals and 36 million tons of algae. Out of the 178 million tons of aquatic animals produced, 112 million tons were derived from marine waters and 67 million tons from inland waters. Figure 9 shows the origin of produce from marine waters. The figure shows that 70 per cent of marine produce is from capture fisheries and 30 per cent from aquaculture. The value of the fish harvest from marine fisheries and aquaculture is estimated to be \$406 billion, comprising \$141 billion for capture fisheries and \$265 billion for aquaculture (FAO, 2022a). One of the most notable developments since 2000 has been the rapid expansion of aquaculture, which today produces almost equal amounts of fed species (mainly crustaceans and finfish) and non-fed, extractive species (herbivorous finfish, bivalves and algae) (Naylor et al., 2021). This is a result of intensification and improved nutrition, feeds, technology, genetics and breeding programmes, production management and biosecurity. The sector's positive impact on livelihoods and employment is expected to grow through enhanced productivity and modernization, intensification, and increased economic and geographic access to farmed aquatic products. By 2030, aquatic food production is forecast to increase by a further 15 per cent (OECD and FAO, 2021) and it is widely acknowledged that this growth will come mainly from aquaculture.

The sector supplied 20.3 kg per capita per year of highly nutritious aquatic animals, and directly employed around 58.5 million people – 65 per cent in fisheries and 35 per cent in aquaculture. Upstream and downstream activities in capture fisheries, aquaculture, processing, retail, transport, support and logistical services provide an additional 200 million jobs and many economic benefits such as value addition and foreign exchange earnings from exports to many countries and coastal communities (FAO, 2022a). Furthermore, 90 per cent of sea fishers and farmers are small-scale operators. Women occupied 21 per cent of the sector's direct jobs but represented over 50 per cent of workers in secondary activities such as fish processing and distribution.



Figure 9. Marine fisheries and aquaculture production (1950–2020) in million tons

Source: FAO, 2022a.

The role of trade is becoming ever more important for fisheries and aquaculture. Whether artisanal or industrial, small- or large-scale, formal or informal, fisheries and aquaculture operate in an increasingly globalized environment. Fish can be harvested in one country, processed in a second and consumed in a third, reflecting the sector's degree of openness and integration into international trade. Fish and seafood are among the most traded food commodities in the world, expanding over continents and regions and supplied in a variety of products and using diverse processes for increasing shelf life and improving convenience and value. In 2020, 225 states and territories reported some trading activity of fisheries and aquaculture products. A significant share of total fisheries and aquaculture production, estimated at 35 to 38 per cent in live weight equivalent is exported, generating \$151 billion in 2020. This represents a 7 per cent decline from the record high of \$165 billion achieved in 2018 (FAO, 2022a). Over 50 per cent of this trade originates in developing countries whose net trade income (export-import), valued at \$46 billion in 2020, is greater than their net trade income of most other agricultural commodities combined (FAO, 2022a). In Pacific SIDS, fishing can provide between 30 and 80 per cent of exports – an advantage of their large exclusive economic zones (EEZs) and the economic values they are able to capture from high-value fish species such as tuna. Likewise, the share of fish trade flows for some West African countries can represent between 5 and 12 per cent of gross domestic product (UNCTAD, 2020). Fees from fishing licences are an important source of government revenue and foreign exchange earnings for several developing countries which have agreements with countries that operate distant water fishing fleets.

From 1976 to 2020, the value of trade in aquatic products increased at an average annual rate of 6.9 per cent in nominal terms and 3.9 per cent in real terms (adjusted for inflation). The period also witnessed a faster growth rate in the trade value of aquatic products relative to the quantity traded, which reflects the increasing proportion of trade in high-value species and products undergoing processing or other forms of value addition (FAO, 2022a).

2.1.1.1 *Major constraints for marine fisheries and aquaculture*

Over the past decades marine fisheries have suffered from overfishing caused by overcapacity and IUU fishing. Pollution and habitat degradation, which are driven largely by ineffective management policy and lack of enforcement, have also impacted marine fisheries. In many developing countries, in particular SIDS and LDCs, constraining factors include a lack of institutional and human capacity in both the public and private sectors, complexities of inshore fisheries management, post-harvest losses, poorly developed safety regulations for fishing vessels, and underdeveloped national fishing industries for the harvesting and processing of offshore resources.

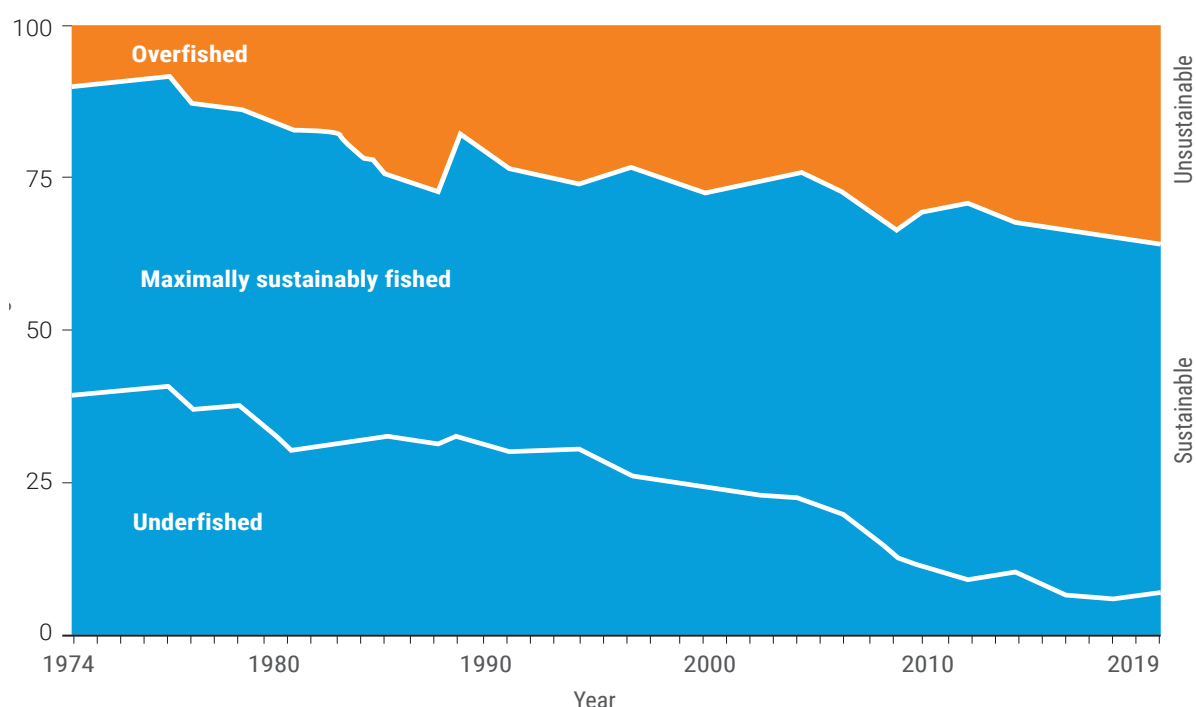
Based on FAO's analysis of assessed commercial fish stocks (FAO, 2022a), the share of **fish stocks harvested within biologically sustainable levels** decreased from over 90 per cent in 1974 to 65.8 per cent in 2017, worsening by 1.2 per cent more to 64.6 per cent in 2019. This means that within the last half century, 35.4 per cent of fish stocks have been fished at a biologically unsustainable level (Figure 10).

Among FAO's 16 major fishing areas surveyed in 2019, the Southeast Pacific (Area 87) had the highest percentage of stocks fished at unsustainable levels (66.7 per cent), followed by the Mediterranean and Black Sea (Area 37, 63.4 per cent) and the Southwest Atlantic (Area 41, 40 per cent). In contrast, the Northeast Pacific (Area 67), Eastern Central Pacific (Area 77), Western Central Pacific (Area 71) and Southwest Pacific (Area 81) had the lowest proportion of stocks fished at biologically unsustainable levels (13 to 23 per cent). Other areas varied between 27 per cent and 45 per cent (FAO, 2022a).

Nevertheless, the worsening trend in the percentage of stocks fished within biologically sustainable levels should not detract from the fact that biologically sustainable stocks account for 82.5 per cent of the 2019 landings of assessed stocks monitored by FAO, a noticeable increase from 78.7 per cent in 2017. On average, 66.7 per cent of the stocks of the ten species most landed in 2019 – anchoveta, Alaska pollock, skipjack tuna, Atlantic herring, yellowfin tuna, blue whiting, European pilchard, Pacific chub mackerel, Atlantic cod and large head hairtail – were fished within biologically sustainable levels in 2019, slightly higher than the global average of 64.4 per cent in 2017 (FAO, 2022a).

According to FAO (2022a), rebuilding overfished stocks to the biomass that enables them to deliver maximum sustainable yield could increase fisheries production by 16.5 million tons and enhance the contribution of marine fisheries to the economy, livelihoods, food security and the nutrition of coastal communities. Scientifically assessed and intensively managed stocks have, on average, seen abundance increasing or remaining steady at proposed target levels. In contrast, regions with less developed fisheries management have much greater harvest rates and lower abundance. This highlights the urgent need to replicate and re-adapt successful policies and regulations in fisheries that are not managed sustainably and to create innovative mechanisms that promote sustainable use and conservation around the world.

Figure 10. State of fish stocks (2019)



Source: FAO, 2022a.

Fish stocks are further affected by IUU fishing, which accounts for roughly 11 to 26 million tons of fish catch, or \$10 billion to \$22 billion in unlawful or undocumented revenue. The World Bank estimates that poor fisheries management results in foregone revenues of more than \$83 billion annually (World Bank and UNDESA, 2017).

Another significant driver of overcapacity and overfishing are **harmful fisheries subsidies**, which not only deplete fish stocks but also undermine economic opportunities for small-scale artisanal fishers and threaten the livelihoods and food security of coastal communities. Consequently, multilateral negotiations to establish disciplines that promote ocean sustainability through the prohibition of certain forms of harmful fisheries subsidies were undertaken at the WTO since 2001. After more than two decades, at its twelfth Ministerial Conference in 2022,¹⁷ WTO members reached a landmark and novel multilateral Agreement on Fisheries Subsidies that partially complies with target 6 of SDG 14. Fisheries subsidies are discussed in further detail in Section 3.2.2.

Adding to the challenges documented above are persistently high volumes of post-harvest losses – up to 35 per cent in many developing countries – which remove large quantities of fish from the market (FAO, 2022a). Minimizing post-harvest losses is one way to increase revenues and food security without the need to increase the level of fishing effort, and to achieve SDG target 12.3, i.e., “by 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses.”

Aquaculture has undeniably established its crucial role in global food security and nutrition and reduced the supply–demand gap for aquatic food. However, the expected growth of the sector must not come at the cost of deteriorating aquatic ecosystem health, pollution, animal

¹⁷ More information on the WTO's Twelfth Ministerial Conference in 2022 is available at www.wto.org/english/thewto_e/minist_e/mc12_e/mc12_e.htm.

welfare, biodiversity loss or social inequalities. Fed aquaculture contributes to the pollution of aquatic ecosystems because of increased energy and feed inputs, loss of biodiversity caused by escapees, and global warming linked to intensification and greenhouse gas (GHG) emissions. The future expansion of aquaculture requires new, sustainable, innovative and equitable aquaculture development strategies.

The FAO Committee on Fisheries (COFI) unanimously endorsed the **COFI Declaration for Sustainable Fisheries and Aquaculture** in 2021 to address the current challenges to fisheries and aquaculture (FAO, 2021). The Declaration recognized the contributions of fisheries and aquaculture to combat poverty and hunger since the endorsement of the 1995 Code of Conduct for Responsible Fisheries,¹⁸ and the need to improve the management of the sector. Indeed, research indicates that only fisheries that are well governed and managed can make a long-term contribution to a sustainable ocean economy, meaning that governance reform is a key component of a transition towards sustainable fisheries. As reported above, examples of successfully restoring healthy fish stocks and securing livelihoods through proper management or expanding sustainable aquaculture operations continue to emerge.

Considering this knowledge, the 2021 COFI Declaration identifies Blue Transformation as FAO's twenty-first century vision for the sector, where successes from around the globe are shared and scaled to transform aquatic food systems from a perceived problem to a recognized solution for food and nutrition security and environmental and social well-being and economic development. The objectives of FAO's Blue Transformation are: (i) sustainable aquaculture expansion and intensification; (ii) effective fisheries management; and (iii) upgraded value chains. Their achievement requires holistic and adaptive approaches that consider the complex interaction between global and local components in food systems and support multi-stakeholder interventions using existing and emerging knowledge, tools and practices.

Actions to achieve the objectives of FAO's Blue Transformation include building global capacity to regularly collect, analyse and evaluate data that support decision-making and consider trade-offs, particularly in regions with limited data and poor capacity. This objective also strengthens social outcomes, applying actions and initiatives that promote equitable livelihoods, and co-management systems, securing the access of small-scale producers to resources, markets and services (FAO, 2022b). Likewise, through upgraded seafood value chains, public and private actors can reduce food loss and waste within the framework of a circular economy, enhance transparency, improve access to lucrative markets and adopt emerging digital tools. Aquatic food value chain actors increasingly adopt these practices, which have seen a significant expansion and uptake since the outbreak of COVID-19.

2.1.2 Other ocean economy sectors

2.1.2.1 Marine and coastal tourism

During the past decade, travel and tourism have become one of the most important sectors in the world economy, accounting for 10 per cent of global gross domestic product and creating more than 320 million jobs worldwide, servicing some 1.5 billion travellers in 2019 (UNWTO, 2023b). In fact, many experts consider that the travel and tourism sector has grown to almost too-big-to-fail proportions for many economies of small and big, developed and developing countries. In addition to employment and foreign exchange, it provides wide

¹⁸ For the full text, see www.fao.org/3/v9878e/V9878E.pdf.

opportunities for cultural and social interaction, leisure and recreational activities. Its labour market offers vast opportunities for employment, skills development and entrepreneurship, especially for women and youth, rural and coastal communities and micro, small and medium enterprises. In addition, it offers opportunities to people who work in retailing crafts and artisanal goods, and tour guide services to discover community, heritage, cultural and environmental experiences, as well as accommodation.

Marine and coastal tourism refers to coastal or beach-based tourism and associated recreational activities such as swimming, sunbathing, surfing and other activities taking place on the coast and for which the proximity of the sea is advantageous (e.g., cultural events, marine wildlife watching of sharks or dolphins). Marine tourism refers predominantly to water-based activities, such as sailing, yachting, cruising, snorkelling and sport fishing. Marine and coastal tourism represents a major part of the tourism market, attracting over 1 billion tourists in 2019 and forecast to reach 1.5 billion in 2030 (Tonazzini et al., 2019).

Sustainable marine and coastal tourism can therefore be an important source of foreign exchange, closely tied to the social, economic and environmental well-being of many countries. It can support a sustainable ocean economy, promote conservation and sustainable use of marine environments and species, generate income for local communities, in particular for developing countries, SIDS and coastal LDCs. Policies, programmes and interventions aimed at coastal communities in these countries, SIDS and other island economies should benefit from the inclusion of tourism as a sector to help accelerate sustainable consumption and production patterns in the development of a sustainable ocean economy (World Bank and UNESDA, 2017).



2.1.2.2 *Maritime transport*

Maritime transport is estimated to handle over 80 per cent of global merchandise trade by volume and more than 70 per cent by value. Having stalled in 2019 and declined in 2020 amid the COVID-19 pandemic, international maritime trade flows bounced back in 2021 despite the global logistics logjam that had resulted in soaring freight rates, unprecedented port congestion and less reliable shipping schedules. Shipping depends on nearly 2 million seafarers worldwide, who make it possible for the world to receive the goods and products needed for everyday life (UNCTAD, 2020; United Nations, 2022). Globally, shipping provides the principal mode of transport for the supply of raw materials, consumer goods, essential foodstuffs and energy. It is thus a prime facilitator of global trade and a contributor to economic growth and employment, both at sea and ashore.

At the beginning of 2022, the commercial value of the world's commercial shipping fleet stood at \$1.4 trillion. Only a small proportion of this fleet is ready to run on alternative, zero-emission fuels and the transition to such fuels, in order to achieve the decarbonization of maritime transport, is a major challenge for the industry. Switching to alternative fuels will have implications for the cost of international trade. The energy density of most alternative fuels is lower than that of currently used marine fuels and in order to reduce emissions, ships are likely to reduce their speed, at least during the transition period.

In order to make alternative fuels commercially viable, proposals are being discussed that could include a levy on carbon-based fuels. Funds generated from such a levy could then be invested in new technologies that speed up the energy transition, and to support the most vulnerable economies during the transition. Green shipping corridors (i.e., maritime routes that showcase low and zero-emission life cycle fuels and technologies and involve collaboration among various stakeholders in the supply chain, including ports, ships and shipowners, energy providers, etc.) are currently being developed to help with early adoption and create a critical mass, in terms of demand and supply of low and zero carbon fuels (United Nations, 2022). Whereas seaports are critical transport infrastructure assets that provide gateways to global markets and access to the ocean economy and its activities, they are also at significant risk of climate change impacts, in particular sea level rise. These risks can have far-reaching consequences for international trade and the development prospects of the most vulnerable nations, but particularly for SIDS, which depend on their coastal transport infrastructure as a lifeline for external trade, food and energy security and tourism. By way of example, in the Caribbean, more than 90 per cent of the goods traded at the international level are transported by sea.¹⁹ Based on the latest climate projections (IPCC, 2021) there is an increasing urgency to accelerate action on adaptation and resilience-building for seaports, in particular in SIDS and other coastal developing countries, and to provide the required support in terms of capacity building and finance.

Environmental impacts associated with maritime transport include marine and atmospheric pollution, GHG emissions, marine litter, underwater noise, and the introduction and spread of invasive species. Relevant regulatory measures addressing externalities caused by shipping operations are adopted under the auspices of the International Maritime Organization (IMO). These regulations can require the shipping industry and ports to improve infrastructure, environmental technologies, ship designs and fuels to mitigate, for instance, ship-sourced water and air emissions, waste, and implement ballast water treatment as well as reduce reliance on fossil fuels and promote zero and low carbon fuels and technologies. Most of these investments are not only beneficial for the environment, but they may also lead to longer-term cost savings, for example due to increased energy efficiency and fuels shifting. Benefiting from the economic opportunities arising from the ocean, including trade, tourism and fisheries requires investment in transport infrastructure and services and policy measures in support of maritime transport.²⁰

¹⁹ For more information, see <https://SIDSport-ClimateAdapt.unctad.org>.

²⁰ Ibid.

2.1.2.3 Ocean science, marine biotechnology and bioprospecting

Ocean science for monitoring, control and surveillance plays an important role in a sustainable ocean economy. It is necessary for science-based fisheries management and for combating illegal activities, including IUU fishing, trans-shipment of contraband and human trafficking. It also encompasses activities related to human and environmental safety, including search and rescue, weather forecasting, disaster response, and early detection of and response to harmful threats such as oil spills and other pollution, tsunamis, algal blooms and invasive alien species.

The exceptional biological diversity of the ocean represents an important source of novel genes, molecules and natural products, with applications in medicine, the food and feed industry, cosmetics and energy and across a wide array of bio-based industries (UNCTAD, 2018). Marine biological prospecting includes the discovery from the ocean environment of novel genes and biological compounds that can lead to commercial development of enzymes, pharmaceuticals, nutraceuticals, cosmetics, biofuels and other products. It is generally considered to have limited environmental impacts and is generating a growing commercial interest in marine genetic resources (MGRs). For example, the rate of patent applications related to marine genetic material is rapidly increasing, with over 5,000 genes derived from marine organisms patented by 2010 (World Bank and UNDESA, 2017). Capacity building and technology transfer relating to marine bioprospecting are likely to increase with the ongoing implementation of the Nagoya Protocol to the CBD²¹ under which researchers expecting to commercialize natural products are required to share monetary and non-monetary benefits equitably and fairly with the provider country. The non-monetary benefits generally consist of partnerships between researchers in developing and industrialized countries, capacity building and the transfer of appropriate technologies (for example, setting up laboratory facilities at the universities of developing countries).

More recently, after almost two decades of negotiations, the United Nations Member States reached a consensus over an **agreement on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction** (also known as the BBNJ agreement).²² The breakthrough agreement is envisaged to regulate human activities in the high seas which encompass 60 per cent of the world ocean's space, of which a meagre 1 per cent is protected. Additionally, it is expected to fill important regulatory gaps in the law of the sea, particularly in relation to (i) MGRs (including benefit-sharing provisions); (ii) area-based management tools (including marine protected areas [MPAs]); (iii) environmental impact tools; and (iv) capacity building and technology transfer. The BBNJ agreement presents the following key implications:

- Access and use of MGRs, including fair and equitable benefit-sharing (monetary and non-monetary) aspects and protection of associated traditional knowledge of Indigenous Peoples and local communities. Determination of the legal status of MGRs and their associated knowledge in relation to the fair, proportionate and harmonized implementation of the agreement can provide unlimited potential for research and development in the biotechnological, pharmaceutical, foods and cosmetic fields, to name a few.
- Area-based management tools for activities in specifically defined areas of the high seas (sustainable use of parallel activities) as well as criteria for creating MPAs (specific areas for long-term biodiversity conservation objectives). Both tools are seen as key

²¹ Full text of the Nagoya Protocol and related information are available at <https://www.cbd.int/abs/>.

²² An advanced and unedited copy of the BBNJ agreement is available at https://www.un.org/bbnj/sites/www.un.org/bbnj/files/draft_agreement_advanced_unedited_for_posting_v1.pdf.

instruments to achieve the 30 per cent planetary conservation target by 2030 (30x30) under the recently adopted Kunming-Montreal Global Biodiversity Framework (2022).

- Environmental impact assessments (EIAs). Subject to collaborative, impartial and precautionary EIAs, the BBNJ agreement will enable identification and evaluation of potential impacts of planned activities affecting the high seas and inform decision-making in terms of management and mitigation of risks and impacts on the marine environment.
- Capacity-building to (i) fulfil obligations under the agreement; (ii) develop scientific knowledge; and (iii) transfer marine technology should go hand in hand with clearly defined benefit-sharing measures between Parties to not only effectively implement the objectives of the agreement but also draw lessons from previous initiatives and support existing capacity building efforts.

2.2 Impact and implications of COVID-19 on the ocean economy

In addition to the significant health impact and millions of deaths caused by successive waves of COVID-19 since its outbreak in March 2020, the pandemic caused one of the largest economic contractions in modern times, estimated at 3.5 per cent in 2020. International trade – goods and services – declined by 9 per cent in 2020 and the equivalent of 255 million full-time jobs were lost (UNCTAD, 2022b). In this section, the impacts of the COVID-19 pandemic will be analyzed through the lens of specific ocean economy sectors.

2.2.1 Marine fisheries, aquaculture and hatcheries

As countries implemented COVID-19 lockdowns of markets, the world witnessed the closure of ports, borders and restaurants, and experienced an inevitable decline in the demand for fresh fish.²³ The lockdowns significantly restricted fishing and post-harvest activities to the extent that at the start of the pandemic, several countries and companies considered fishing to not be an essential activity. Most countries experienced sharp declines in fish production, estimated at between 40 and 80 per cent during the first wave of the pandemic in 2020. Small-scale fishers and their communities were hit hardest and fleets fishing for export were most impacted because of market closures. Whenever and wherever fishing was authorized, demand still fell significantly, causing a significant price decrease because of reduced spending of households on groceries and the closure of export, tourism and related sectors. Retail sales, initially marked by extreme volatility, bounced back as demand increased, including by direct delivery and through online fish selling platforms (UNCTAD, 2022b). Overall, global fish production decreased by less than 5 per cent in 2020, with marine fisheries decreasing by 1.9 per cent (FAO, 2022a). Furthermore, demand for processed products such as canned tuna and frozen fish and seafood increased, while fresh fish sales fell due to COVID-19 market closures and consumers' behavioural changes around lower fresh food consumption.

The marine aquaculture sector struggled to maintain planned production cycles because supplies of inputs such as seeds and feed, market demand and access to credit, were disrupted. On the other hand, production costs increased significantly so that the sector could maintain (unsold) live fish stocks and mitigate mortalities.

²³ For additional information on the impact of COVID-19 on global fisheries and aquaculture, see www.fao.org/asiapacific/news/detail-events/en/c/1372374.

2.2.2 Marine and coastal tourism

Travel restrictions applied worldwide to prevent the spread of the virus across borders brought tourism to a halt. As mentioned above, tourist arrivals decreased by about 74 per cent in 2020, causing losses estimated at between \$910 billion and \$1.2 trillion and the closure of many micro, small and medium enterprises (UNWTO, 2023b). Unlike goods which can be stored, traded or consumed at a later stage, a halt to tourism means lost revenues and income that cannot be recouped later.

Furthermore, the strong linkages of the tourism sector with conservation and biodiversity efforts have been severely compromised, in part due to reduced management presence resulting in losses of critical natural habitats and wildlife resources. The livelihoods of coastal communities, previously reliant on the revenue from ecotourism and conservation tourism were severely affected too. Indeed, tourism is a key source of income for MPAs as many governments and coastal communities use revenue from marine tourism to fund marine research and conservation efforts and undertake monitoring and protection activities in MPAs. As these revenues dried up because of the COVID-19-related restrictions, increased fishing pressure was reported in MPAs and conserved areas in many parts of the world (Hockings, 2020).

Recent analysis shows that international tourism was on track to reach 65 per cent of pre-pandemic levels by the end of 2022 as the sector continued to bounce back from the pandemic. The recovery has been boosted by strong pent-up demand, improved confidence levels and the lifting of restrictions in an increasing number of destinations.²⁴

2.2.3 Maritime transportation

During the early stage of the COVID-19 pandemic in 2020, maritime transport services in many countries experienced temporary suspensions, and disruptions in the functioning of ports, shipping, mobility of seafarers and supply chains. UNCTAD estimates that global maritime trade contracted by 3.8 per cent during 2020 (United Nations, 2022). Many ports suffered a cut in vessel calls due to the rescheduling or cancellation of itineraries. Improved connectivity in some ports reflected a change in container shipping deployment patterns and an upsizing of vessels. These have offset the negative impact of “blank sailings”, that is, the decision by shipping companies to cancel scheduled services in the light of the pandemic. In 2020, SIDS continued to suffer the lowest connectivity levels – of the 25 least connected countries, 18 were SIDS (United Nations, 2020).

An UNCTAD simulation model suggests that global import price levels would increase, on average, by 11.9 per cent as a result of sustained freight rate increases. Hardest hit would be SIDS, given their reliance on maritime transport. Import prices for SIDS would face a cumulative increase of 26.7 per cent, with a time lag of about one year. Global consumer prices are projected to be 1.6 per cent higher in 2023 than they would have been without the freight rate surge. In SIDS, the cumulative increase in consumer prices is expected to be 8.1 per cent and in the LDCs, 2.4 per cent (United Nations, 2020).

The shipping crew change crisis, which was also a humanitarian crisis, has been one of the major concerns raised by the pandemic. The world’s 1.9 million seafarers, many of whom are from developing countries, play a vital role in ensuring the flow of critical goods along supply chains and keeping world shipping and trade moving. However, due to the pandemic-induced public health and travel-related restrictions, many seafarers have been unable to leave their ships, remaining stranded at sea far beyond the expiration dates of

²⁴ See www.unwto.org/news/tourism-recovery-accelerates-to-reach-65-of-pre-pandemic-levels.

their contracts and the default 11-month maximum period of continuous service on board, as required by the Maritime Labour Convention, 2006, as amended, under the International Labour Organization (ILO).

Meanwhile, other seafarers have been unable to join ships to replace stranded crews, leading to a significant loss of income and resulting in hardship for seafarers and their families (United Nations, 2022). By exposing the vulnerabilities of existing supply chains, the COVID-19 disruption has sharpened the need to build maritime transport resilience. Shipping and ports are essential for global trade and supply chain continuity both during and outside crises. The COVID-19 pandemic and the heightened disruptions to global maritime logistics observed over recent years have underscored the critical importance of risk management and emergency response preparedness and the need to build ever more agile and resilient maritime transportation systems (United Nations, 2020).



2.2.4 Ocean governance

Over the past decade, the need for better governance of human activities in the ocean space has seen an upscaling of action-oriented initiatives, consultations, negotiations and political processes on collectively enforcing ocean governance, science, climate change mitigation and biodiversity restoration for sustainable development. Much of this dynamic was severely disrupted following the outbreak of COVID-19 as most events were delayed, cancelled, or postponed, casting uncertainty over these processes.

At the national level, especially in developing countries, loss of national revenues shifted most national resources towards addressing the health and socioeconomic impact of the pandemic, leaving limited resources for research and for enforcing rules and regulations across ocean sectors. In many countries, coast guards were mobilized to assist with domestic crises rather than police the seas, which heightened the risk of and/or increased the number of illegal activities taking place in the seas.

As a result of COVID-19, surveys for collecting data necessary for fish stock assessment, environmental and pollution monitoring, and oceanography were cancelled in most countries in 2020. Some commercial ships were unable to contribute to key ocean and weather observations. Ocean buoys and other systems providing information vital to marine science, climate and weather forecasts and warnings failed in the absence of proper maintenance (Heslop et al., 2020). Regional Fisheries Management Organizations (RFMOs) also reported reduced monitoring capabilities because inspectors were not able to physically observe operations on vessels.

Likewise, travel restrictions severely limited physical meetings to exchange scientific information and to enable scientists, managers and stakeholders to meet and discuss issues and options for marine resource management and other ocean science studies. Most of these meetings were postponed or moved to virtual formats. Cancelled, postponed, or reduced meeting agendas of RFMOs and international organizations dealing with ocean science negatively impacted the research and the quality of decisions for managing ocean resources. In remote rural (coastal) areas with low if not non-existent connectivity, scientific data was poorly or not consistently compiled during the pandemic period.

2.3 Measures adopted to address the impact of COVID-19 on the global ocean economy

To contain the spread of the virus and the disease from the beginning of the pandemic, and following each wave, countries often declared a state of emergency, confined citizens to their homes and closed borders and most productive activities, except for the essential ones. To compensate for loss of revenues, countries adopted varying degrees of economic and social measures, including but not limited to, funds to compensate for loss of wages and revenues and financial packages and fiscal incentives to resume production and processing, stimulate demand and support export. The type of measures and the extent of their application varied across countries and scales, depending on the resources available and the priorities set.

In most developing countries, support was insufficient because of limited public funds. Moreover, the fiscal and monetary responses to tackle the negative impacts of the pandemic have had aggravating consequences for indebtedness, debt servicing capacity and debt sustainability more broadly. For example, LDCs' total external debt service reached \$31 billion in 2020, but for 2021 and 2022, this is expected to increase to \$50 billion and \$43 billion respectively. This is an increase of more than \$20 billion compared to the pre-pandemic average (UNCTAD, 2022c).



2.3.1 Building back better in the post-COVID-19 ocean economy

Experience of past global crises teaches us that after recovery, each crisis leaves behind it permanent structural changes. COVID-19 is no exception. As a result of the measures and resources deployed to mitigate its impacts and to adapt to the structural changes, opportunities for improvements have emerged. These opportunities are likely to reshape the global economy, unleash technological innovation, redefine consumers' needs and behaviours and the role of society and businesses. Most changes have been incremental and have involved adapting to and improving existing practices, but a few have been transformational or disruptive.

As the world emerges from the crisis, successful innovations are likely to become mainstream opportunities, both as a means of addressing immediate needs and as a way of reorienting development to meet future challenges. These innovations represent good opportunities for the future of the ocean economy and have the potential to influence the way in which ocean goods and services are traded and ocean science is undertaken. They also have the potential to influence the manner in which the mobility of people, automation and the likely adoption of bluer, greener and cleaner economic, social and environmental protection policies, become central to economic recovery and the use of stimulus funding.

The crisis has accelerated the digitalization of ocean economy sectors, expanded electronic monitoring and enforcement of ocean governance, advanced the use of renewable and clean energies and contributed to the development of local markets (FAO, 2022a). The pandemic has also demonstrated the value of preparedness for protecting and building resilience against health and other natural or human-induced disasters, ensuring measures are evenly distributed across demographic groups, regions and economic sectors. This requires strengthening the capacity of all countries, in particular developing countries, for early warning, risk mitigation and management of health risks and other natural and human-induced shocks.

The pandemic has evidently presented an enormous challenge while simultaneously creating unique opportunities for achieving the 2030 Sustainable Development Agenda as a roadmap that encompasses most aspects of human and planetary well-being. It has impacted every one of these aspects and emphasized the fact that the challenges we face

cannot be dealt with in isolation. Like a double helix, the SDGs and the COVID-19 pandemic responses are intertwined and cannot be tackled separately (UNCTAD, 2022b).

Measures and adaptations imposed by the pandemic must also now cope with other layers of complexity, such as those imposed by conflicts. Discords are taking place in all corners of the world and in several cases have direct implications for the sectors of the global ocean economy. For instance, the ongoing war in Ukraine has affected the maritime transport sector and food and fertilizer supply chains through its impact on energy and raw materials.

2.4 Implications of the war in Ukraine for the ocean economy sectors

Besides the disruption of logistics and global trade flows, the war in Ukraine has also brought fishing by Ukrainian vessels operating in the Black Sea and the Sea of Azov to an almost complete halt due to the closure of all landing sites and ports located on the Ukrainian coast. Marine fisheries of neighbouring countries have also been seriously impacted. Various fisheries research surveys and monitoring, control and surveillance activities have been disrupted within the area, jeopardizing the sustainability of fisheries resources (FAO, 2022a).

The Russian Federation is likely to be the most impacted by the war as it is a major fishing nation (in 2020, it was the fifth largest producer of seafood products from capture fisheries in the world), and its fisheries sector is highly export oriented. In 2021, exports of fisheries and aquaculture products from the Russian Federation reached \$6.1 billion, up from \$4.9 billion in 2020 (FAO, 2022a). These exports have been severely disrupted as several countries have issued trade economic restrictive measures covering fisheries and aquaculture products, ranging from tariffs to import bans on goods from the Russian Federation, in addition to bans on Russian Federation-flagged vessels accessing ports.

Rather unsurprising is the additional burden on the maritime industry, which was already constrained by supply chain disruption, port congestion and a crew crisis caused by the COVID-19 pandemic – challenges that are especially complex in the Black Sea region (the world's second largest grain exporting region in 2021) (UNCTAD, 2022d).^{25,26} The redrawing of some supply chains and the search for alternative trade routes for Ukrainian goods has rapidly increased demands on land and maritime transport infrastructure and services (UNCTAD, 2022e). Many commodities are being sourced from markets located further away from importing countries which, together with economic restrictive measures imposed on the Russian Federation, have increased global vessel demand and the cost of shipping (increased ton-miles) around the world (United Nations, 2022). Shipping costs have been on the rise since 2020 and the war in Ukraine has exacerbated this trend. For instance, the cost of shipping bulk commodities spiked between February and May 2022; the price paid for the transport of dry bulk goods, such as grains, increased by nearly 60 per cent (UNCTAD, 2022f). These trends respond to higher energy costs as trade restrictions and logistical challenges have increased the cost of oil and gas, and have led to higher marine bunker prices, increasing shipping costs for all sectors. At its peak in June 2022, the global average price for very low sulphur fuel oil (VLSFO) was nearly 64 per cent higher than the price at the beginning of that year (UNCTAD, 2022d). Nearly a year into the war in Ukraine, VLSFO prices have reduced to near pre-war levels.

²⁵ See www.agcs.allianz.com/news-and-insights/expert-risk-articles/shipping-safety-22-ukraine-war.html.

²⁶ See <https://kennedyslaw.com/thought-leadership/article/russia-ukraine-crisis-impact-of-global-sanctions-on-shipping>.

The war has also aggravated an already severe shortage of crew officers in the past decade. It is estimated that 14 per cent of the shipping industry's total workforce come from the Russian Federation (10 per cent) and from Ukraine (4 per cent). Seafarers from these countries struggle to disembark and return home at the end of their contracts and are at greater risk of overstaying their contracted periods at sea and/or re-join ships freely, which was already a challenge brought on by the COVID-19 pandemic. In addition, they are also now subject to more stringent visa restrictions and travel limitations due to the war in Ukraine and the economic restrictive measures imposed on the Russian Federation. This poses a threat to global maritime trade as regular crew changes are required across the world to maintain normal trade levels and protect the health, safety and well-being of seafarers. According to the 2021 Seafarer Workforce Report²⁷ the world currently has 1.9 million seafarers serving the global merchant fleet, operating over 74,000 vessels – and an estimated additional 89,510 officers will be required by 2026.²⁸ In 2021 alone, demand for qualified seafarers outpaced supply.

The maritime sector is also challenged by another issue – the risk of cyberattacks targeting global container supply chains. Although many ports and terminals have boosted their cyber defences in recent years, given the zero-buffer capacity in container shipping, a cyberattack could have a devastating effect (UNCTAD, 2022g). It is important to recall that global trade depends on a complex system of ports and ships that connect the world. If global trade is to flow more smoothly, initiatives such as the one put forward by the United Nations to facilitate exports of food need to persist so that international shipping and collaboration among transport stakeholders continue to provide services. Alternative means of transport must also be pursued, investment in transport and trade facilitation should be fostered, and support must be provided for the most vulnerable economies (UNCTAD, 2022d).

Regarding marine and coastal tourism, the conflict has exacerbated already high transportation costs, increased uncertainty and disruption of world travel. The war in Ukraine represents a downside risk for international tourism in general, and marine tourism in particular. As source markets, the Russian Federation and Ukraine represent a combined 3 per cent of global spending on international tourism as of 2020. A prolonged conflict could translate into a loss of \$14 billion in tourism receipts globally in 2022 (UNWTO, 2023a). The importance of both markets is not only significant for neighbouring countries, but also for European sun and sea destinations. The conflict is also affecting the United States and Asian market outflows, especially with respect to travel to Europe because these markets are historically more risk averse. In terms of inflows, the main change observed is that during the war, the Russian Federation market significantly increased its share in long-haul destinations such as Maldives, Seychelles and Sri Lanka.²⁹

From an environmental perspective, the war in Ukraine's collateral damage from incidents of pollution and degradation of ecosystems, including risks to neighbouring countries (e.g., the Nord Stream 1 gas leak in the Baltic Sea) has caused widespread environmental harm and loss to marine life and related ecosystems. A preliminary review by the United Nations Environment Programme (UNEP) concludes that such damage to the environment could last for generations.³⁰

²⁷ Prepared by Baltic and International Maritime Council and International Chamber of Shipping. See <https://www.ics-shipping.org/publication/seafarer-workforce-report-2021-edition/>.

²⁸ See www.agcs.allianz.com/news-and-insights/expert-risk-articles/shipping-safety-22-ukraine-war.html and <https://www.offshore-energy.biz/industry-groups-warn-of-serious-shortage-of-seafarers-by-2026/>.

²⁹ See www.unwto.org/impact-russian-offensive-in-ukraine-on-tourism for more information.

³⁰ To access the report, see <https://www.unep.org/resources/report/environmental-impact-conflict-ukraine-preliminary-review>.

2.5 Leveraging public and private finance for investment in a sustainable ocean economy

A sustainable ocean economy requires adequate financing to achieve sustained ocean health, infrastructure and governance. However, current ocean economy financing is limited, and the gap is large. Recent studies on the state of ocean finance and available finance instruments identify key barriers to financing a sustainable ocean economy and suggest how to mitigate them to incentivize the kind of public and private investments needed for science and management in support of a sustainable ocean economy (Sumaila et al., 2021; Vivas Eugui et al., 2021).

The costs of the current inaction towards investment in the conservation and sustainable use of ocean resources are overwhelmingly high and increasing by the day. For example, in the absence of proactive mitigation measures, the cost of climate impacts on the ocean could add up to \$428 billion per year by 2050, due to losses in fisheries, tourism, ocean carbon absorption and damages arising from sea level rise and storms (Gaines et al., 2019). Yet, ODA to ocean economy represented a very small segment of merely \$2.9 billion in 2019 (OECD and FAO, 2021), far below the level required to address the challenges faced under SDG 14 alone. Furthermore, investment in sustainable ocean economy remains insignificant in comparison to the issues faced and the real possibilities to exploit its regenerative potential and resources (Sumaila et al., 2021). It is reported that SDG 14 receives the lowest impact investment of all SDGs (Libes and Eldridge, 2019) and that blended finances directed to SDG 14 were the least across all SDGs (Basile and Dutra, 2019). Globally, the total investment for establishing and maintaining MPAs in 2018 was estimated at \$2.3 billion, compared to at least \$7.7 billion needed to achieve the 10 per cent target of highly or fully protected areas (Sumaila et al., 2021).



The High-Level Panel for a Sustainable Ocean Economy (Stuchtey et al., 2020) estimated the current investment in sustainable ocean industries, biodiversity and conservation to be grossly inadequate, suggesting a need to at least quadruple the investment to restore and sustainably maintain ocean health. Indeed, restoring and maintaining the ocean's health was estimated to generate further ocean-based wealth and make the most of the ocean's resources in a sustainable manner. It is estimated that an investment of \$2.8 trillion today in four sustainable solutions – conservation and restoration of mangroves, decarbonization of international shipping, sustainable ocean-based food production and offshore wind production – would yield net benefits of \$15.5 trillion by 2050.

The High-Level Panel proposed key actions for countries to establish sustainable ocean development as a national priority to attract investment from sovereign wealth funds and development finance institutions. Through their own and other public or philanthropic funding sources, private investment capital can be de-risked, catalysing private investment in novel ocean industries and business models such as sustainable fisheries reforms, or MPAs financed by tourism fees. This blending of public and private capital can be especially catalytic in increasing investments in developing nations. Governments can also help to stimulate the pipeline of sustainable ventures and projects by providing grants or other forms of support to early-stage innovation, e.g., support from Norway for next-generation offshore aquaculture, and the European Union's support for offshore wind generation. Seychelles on the other hand, has innovated a debt swap and blue bonds for ocean conservation and climate adaptation. In the offshore energy sector, governments could support renewable energy by providing low-cost infrastructure, setting feed-in tariffs, and providing subsidies for sustainable activities. They could also reduce risk – by ensuring regulatory certainty, providing insurance and offtake/demand guarantees – particularly for capital-intensive offshore investments such as wind energy and large-scale mariculture (Stuchtey et al., 2020).

2.6 Renewed efforts at the United Nations Ocean Conference 2022 for achieving Sustainable Development Goal 14 targets

SDG 14 (Life below water) seeks to conserve and sustainably use the ocean, seas and marine resources for sustainable development. It has seven targets and three means of implementation dedicated to humanity's interactions with the ocean.³¹ Goal 14 confirms the importance of ocean issues within the global agenda and places ocean health at the heart of sustainable development.

In 2017, the first high level United Nations Conference to support the implementation of SDG 14 aimed at being a “game changer that will reverse the decline in the health of our ocean for people, planet and prosperity.” Despite the many commitments registered at the Conference by governments, United Nations and other intergovernmental organizations, international and regional financial institutions, civil society organizations, academic and research institutions, the private sector, and philanthropic organizations, indicators that measure environmental degradation (14.1.1 and 14.3.1) have shown worsening trends, suggesting continuing rates of pollution. The only area showing significant progress is the protection of marine environments (14.5.1), which demonstrates strong political will to enact national legislation and increase MPAs to 3.3 million km² (UNDESA, 2021).

Across various SDG 14 indicators, networks of scientific cooperation have achieved a global reach and have resulted in innovative efforts in capacity development and technology transfer.

³¹ For more information about UNOC 2022, “Scaling up Ocean Action Based on Science and Innovation for the Implementation of Goal 14: Stocktaking, Partnerships and Solutions”, see <https://www.un.org/en/conferences/ocean2022>.

An increasing number of de-acidification action plans have been developed by both local and national governments. Many innovative approaches, including blue carbon³² and habitat restoration, are being mainstreamed and new technologies are being pioneered to develop artificial reefs, or to transplant and grow coral. New technologies are also being used to make ocean sectors more sustainable, for example by measurably reducing pollution and emissions in shipping and by reducing the environmental impacts of marine aquaculture. The volume of catch certified as sustainable has increased globally, including for small-scale and artisanal fisheries, and efforts are being made to strengthen regional fishery bodies, and strengthen collaboration between them and regional seas programmes. Innovative financing mechanisms have been developed, and many new and traditional funders are supporting marine conservation and sustainable use. Unfortunately, although progress is being made, it is likely not made at a scale that is large enough to make a real difference to the ocean and its biodiversity (UNDESA, 2021).

It has now become evident that many of the goals set out in the 2030 Agenda are not on track to be achieved within their timeframes, including those goals relevant to a sustainable ocean economy. While there has been progress in some key areas, many others have lagged. Further, the COVID-19 pandemic has reversed previously favourable trends and delayed the achievement of targets and indicators. More than ever before, the underlying threats from climate change, biodiversity loss and pollution need decisive action to be averted, but the advent of the pandemic in conjunction with often stagnant progress in many areas of international development and cooperation have compounded the problem (UNDESA, 2021).

Recently, the 2nd UNOC in 2022 to support the implementation of SDG 14 reviewed achievements and challenges with the aim of “scaling up ocean action based on science and innovation for the implementation of SDG 14: stocktaking, partnerships and solutions”. An unprecedented number of commitments were registered by a wide range of stakeholders from governments, United Nations and other intergovernmental organizations, international and regional financial institutions, civil society organizations, academic and research institutions, and the private sector – both individually and in partnerships. The registry of voluntary commitments for UNOC 2022 remains open, and shows more than 2,112 commitments,³³ i.e., an array of ocean action/initiatives that covers all the targets of SDG 14 reported by governments and all relevant actors (from constituencies and local governments to intergovernmental organizations and multilateral bodies).³⁴ Government support was also evident at the UNOC 2022, where more than 150 Member States made voluntary commitments to conserve or protect at least 30 per cent of the global ocean within MPAs and other effective area-based conservation measures, by 2030.³⁵ These commitments must be implemented at pace and monitored. Key commitments newly deposited include:

- Mainstream a sustainable ocean economy in sectors of interest to SIDS and LDCs
- Protect at least 30 per cent of national maritime zones by 2030
- Achieve carbon neutrality by 2040
- Reduce plastic pollution

³² Blue carbon usually refers to the carbon stored in marine and coastal ecosystems, such as mangroves, tidal and salt marshes, and seagrasses. See: <https://oceanservice.noaa.gov/facts/bluecarbon.html>.

³³ As of 21 January 2023. For the most recent updates, see <https://sdgs.un.org/partnerships/action-networks/ocean-commitments>.

³⁴ See <https://sdgs.un.org/partnerships/action-networks/ocean-commitments>.

³⁵ See <http://www.un.org/africarenewal/magazine/july-2022/un-ocean-conference-ends-call-greater-ambition-and-global-commitment-address-dire>.

- Make aquaculture less input-intensive and carbon neutral
- Increase the use of ocean-based renewable energy
- Allocate adequate resources to research on ocean acidification, climate resilience and monitoring, control and surveillance.

Crucially, the year 2022 and the first quarter of 2023 ushered in an ocean “super year” – a watershed moment for highlighting the strong linkages and growing global awareness of the importance of the ocean in addressing the triple planetary crises of biodiversity loss, climate change and plastic pollution while laying the groundwork for a global sustainable ocean economy.

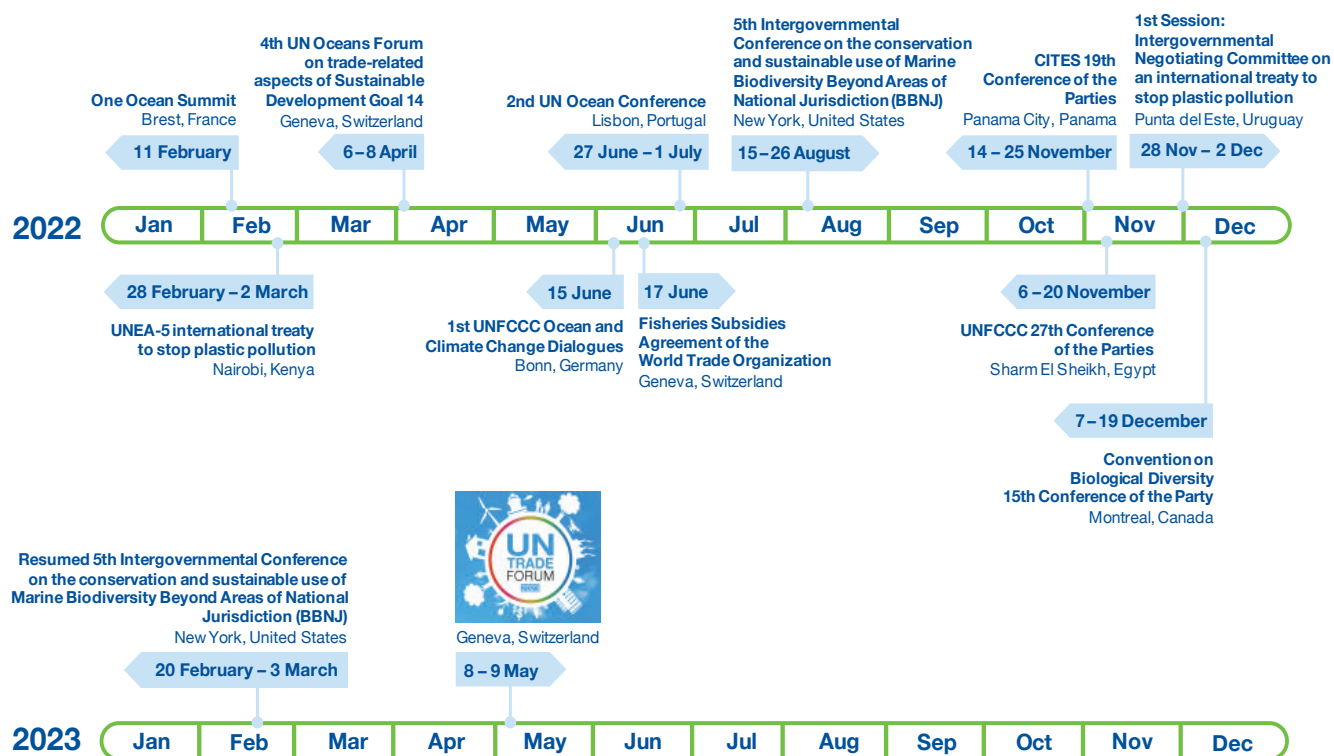
Key outcomes of the ocean super year (Figure 11) contributing to the implementation of SDG 14 and related targets include:

- a UNEP mandate for an international treaty to end plastic pollution
- a WTO agreement against harmful fisheries subsidies
- a UNFCCC agreement for a loss and damage fund for countries most vulnerable and impacted by the effects of climate change
- a CBD post-2020 global biodiversity framework to conserve 30 per cent of land and the ocean by 2030 (30x30)
- a BBNJ agreement under UNCLOS.

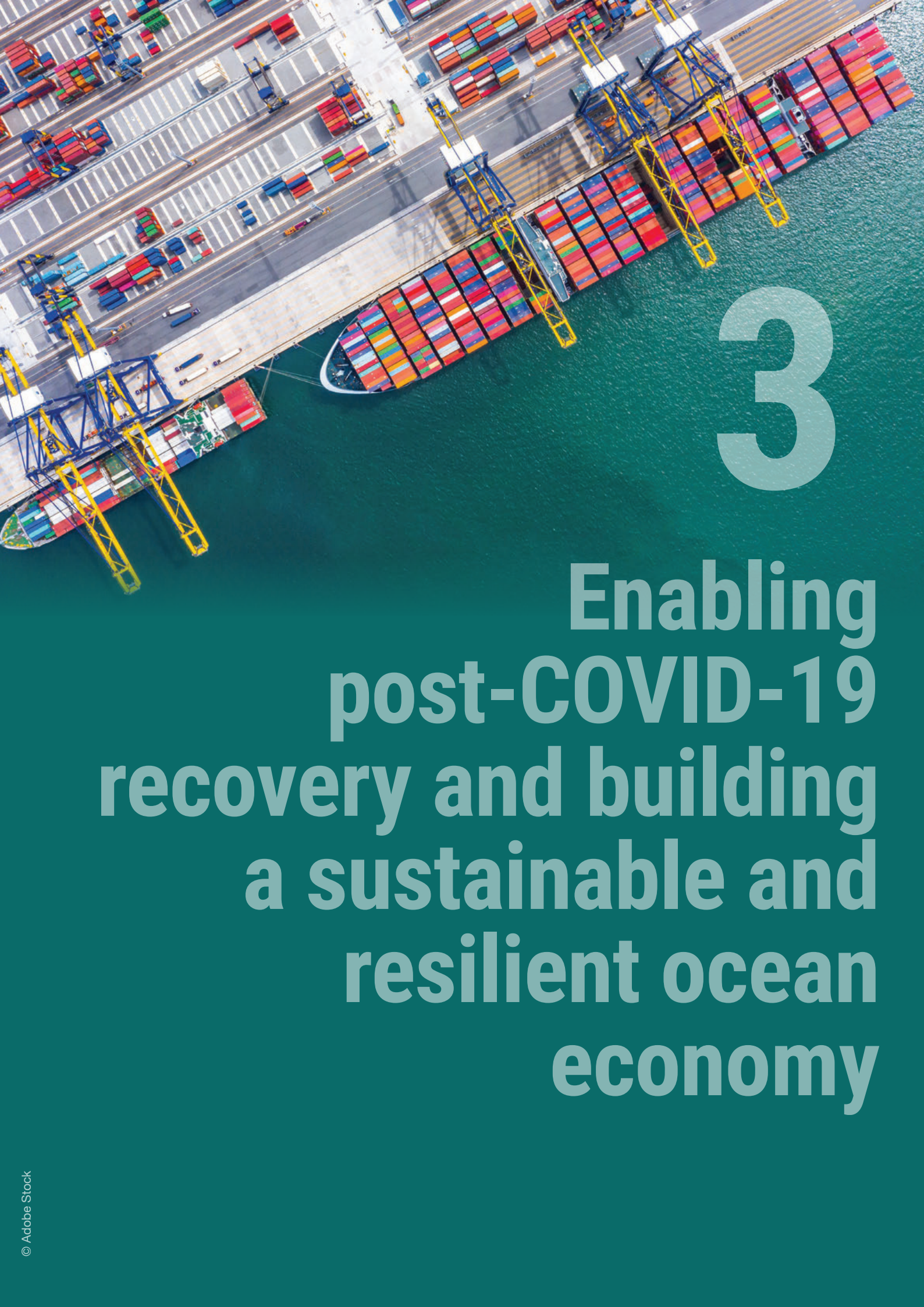
Further analysis of the significance, impact and implications of these new mandates, commitments and legally binding agreements is urgently needed to build on the momentum and accelerate the upscaling of proven solutions for a sustainable ocean economy.



Figure 11. A timeline of the ocean “super year”



Source: UNCTAD secretariat based on United Nations System websites and reports.

An aerial photograph of a busy port. Several large container ships are docked at the pier, their decks covered with colorful shipping containers in shades of red, blue, yellow, and green. Yellow and blue gantry cranes are positioned along the pier, some with their booms extended over the ships. The water is a deep teal color. The overall scene depicts a major hub of international trade and logistics.

3

**Enabling
post-COVID-19
recovery and building
a sustainable and
resilient ocean
economy**

3 Enabling post-COVID-19 recovery and building a sustainable and resilient ocean economy

As the world recovers from the COVID-19 pandemic, countries face the triple challenge of socioeconomic recovery, environmental protection, and resilience to human-made and natural shocks. Recovery remains fragile and uneven as many countries have higher public debt and fewer financial resources available or are hard hit by climate and other external shocks. In this context, both the climate fund and loss and damage fund adopted at the UNFCCC Conference of the Parties (COP27) at Sharm El Sheikh, Egypt, in 2022, will be pivotal in providing the much-needed finance for mitigation and adaptation when linked to SDG 14 implementation and to compensate the countries that have contributed little to the climate crisis but are the most vulnerable to climate disasters.

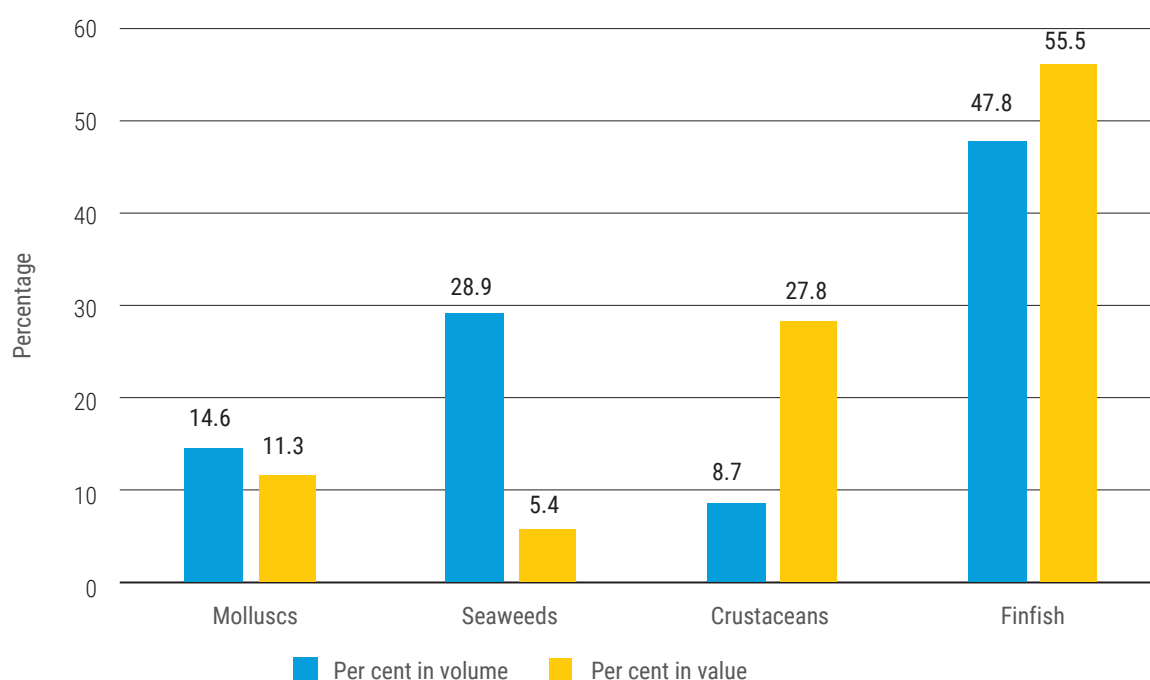
Transitioning towards a sustainable ocean economy requires stronger socioeconomic recovery and greater resilience against external shocks and climate change. Adopting best practices and coherent sustainable ocean economic policies will ensure that the preservation of marine and coastal ecosystems, on which ocean economies depend, offers further opportunities for value added activities, such as sustainable fishing and aquaculture, seaweed culture, ecotourism, marine biotechnology and offshore renewable energy. Furthermore, healthy fish stocks and marine ecosystem management can provide a solid base for resilience vis-à-vis external risks.

This section examines the potential of emerging ocean economy sectors such as the seaweed sector as an area of growth and innovation, and presents an abridged analysis of the role of (i) non-tariff measures; (ii) the fisheries subsidies agreement of the WTO; (iii) social sustainability; and (iv) trade-related aspects of marine litter and plastic pollution to support and rebuild the ocean economy in a post-COVID-19 world.

3.1 The seaweed sector as a lever for a sustainable ocean economic recovery

As discussed in Section 2, aquaculture has undeniably established its crucial role in global poverty alleviation, food security and nutrition. Within this sector, the culture of algae (macroalgae or seaweeds and microalgae) is the second largest sector of world aquaculture production, representing 28.9 per cent in volume and 5.4 per cent in value in 2019 (Figure 12), with most (99 per cent) aquatic algae produced in marine areas. Farming of seaweed is practiced in a relatively small number of countries in East and Southeast Asia, which produce 99.5 per cent of aquatic plants. Nevertheless, all other regions are experimenting with algae culture and report increased production volumes and potential. Interest in seaweed for improved nutrition, industrial use, carbon sequestration and ecosystem services grew globally over the past decades, beyond the main producing countries of China, Japan, the Republic of Korea and parts of South America (Buschmann et al., 2017). Correspondingly, the culture of seaweed species provides significant employment opportunities for coastal communities, in particular for women and youth.

Figure 12. Relative importance of aquatic species in aquaculture production (2019)



Source: FAO, 2022a.

FAO statistics indicate that the production of aquatic plants and algae has more than tripled from 10 million tons of wet biomass in 2000 to over 35 million tons in 2020 (Table 1). Between 31 to 38 per cent of global seaweed production is consumed directly as food (Naylor et al., 2021). Two brown and four red algae species have an annual production above 1 million tons. Together, they represented 92 per cent of aquatic plants production in 2020. The most important species are the brown algae, Japanese kelp (*Laminaria japonica*) and the red algae (*Eucheuma* spp. and *Gracilaria* spp.), providing 36, 23 and 15 per cent respectively of global algae production.

Human consumption of seaweeds dates back centuries, with about 700 edible seaweed species documented. Coastal communities in several countries and regions have cultural

traditions of eating seaweeds. They are frequently consumed in East Asia, for example as soup ingredients, salads, sushi wraps and snacks. They have gained increasing global popularity following their introduction into other countries and regions. Being rich in dietary fibre, micronutrients and bioactive compounds, seaweeds are used in healthy, low-calorie, low-carbohydrate or plant-based diets (Shannon and Abu-Ghannam, 2019).

Table 1. Production volume and value of the main farmed algae types

Farmed seaweeds	2000		2010		2020	
	Tons	\$1 000	Tons	\$1 000	Tons	\$1 000
Brown seaweeds	8 556 930	3 119 865	11 149 248	4 979 815	16 841 615	7 894 912
Green seaweeds	33 891	58 456	26 924	24 322	23 605	30 329
Others (mainly microalgae)	32 503	35 385	102 489	77 823	89 095	132 668
Red seaweeds	1 972 236	1 385 339	8 895 657	3 778 570	18 123 262	8 482 722
Total seaweeds	10 595 560	4 546 436	20 174 317	8 860 531	35 077 578	16 540 631

Source: FAO, 2022a.

Research indicates that seaweeds could substitute, or at least complement some terrestrial crops and animal production in protein, fat (omega-3 fatty acids) and energy intake, alleviating pressure on freshwater and land resource use and the impacts on biodiversity (Wells et al., 2017; Oliver et al., 2020). Algae grown on sugar derived from sugarcane in a fermentation tank turn the sugar into omega-3 oil which is used as a replacement for fish oil in fish feed.³⁶

The brown seaweed *Saccharina japonica* (*wakame*) and the red algae *Eucheuma* spp. are the most productive aquaculture species worldwide (Buschmann et al., 2017). Most of this seaweed biomass is used as polysaccharide additives and functional food ingredients, and by the non-food sector as hydrocolloid products in nutraceuticals, pharmaceuticals and cosmetics, and to a lesser extent as fertilizers, feed ingredients, biofuels, bioplastics and for other industrial outputs (Naylor et al., 2021).

Algae are widely recognized for their ecosystem services beyond the provision of food, feed and livelihoods. Seaweeds use photosynthesis by absorbing dissolved nutrients for growth, with little impact on the environment. Bioremediation is one of the main ecosystem services of seaweeds that are effective in reducing nitrogen levels, controlling phytoplankton blooms and limiting the frequency of toxic algal blooms. In addition, large-scale aquaculture of seaweed positively regulates and improves environmental conditions in coastal ecosystems (Cai et al., 2021). However, the effectiveness of the impact of ecosystem services provided by seaweed farming still requires attention and research across cultured systems, species, seasons and scales.

Seaweed aquaculture has a promising future as a sustainable source of nutritious food that can give a major boost to global, regional and local economies and food security. Further work is needed to improve awareness and acceptance by the public, elaborate laws, regulations and codes of practice to promote the establishment of new and more sustainable seaweed farms, and expand existing ones.

³⁶ See <https://www.seafoodsource.com/news/aquaculture/aquaculture-feed-production-gets-a-new-look>.

The culture of algae can, however, be associated with negative environmental impacts on the nearshore or offshore aquatic environment, caused by, for example, fertilizers and chemicals used to control grazers, competition for space between cultivated seaweeds and seagrass meadows, and the outbreak of harmful algal blooms. Of major concern are the sargassum blooms which have harmed coastal biodiversity, fisheries and the tourism industry and created a nuisance in the Caribbean for some years. When scattered across open water, sargassum serves as an important breeding ground for turtle hatchlings and a refuge for hundreds of fish species, but problems occur when sargassum washes up on the beach and starts to rot, attracting insects and emitting hydrogen sulfide that drives tourists away and causes skin and respiratory problems.³⁷

As with the aquaculture of fed species, the culture of seaweeds needs to be carefully managed to ensure that scaling, site selection and the health of the wider marine environment are sustainable. This means recognizing and promoting the advantages of seaweed species, including their nutritional attributes, the provision of ecosystem services such as water quality improvement, habitat enhancement, carbon/nitrogen/phosphorus “sequestration” and coastal de-acidification.

3.2 Transparency, non-tariff measures and fisheries subsidies reform

3.2.1 Tariffs and non-tariff measures

International trade in goods is subject to two types of measures: tariffs and NTMs. Tariffs are customs duties levied by governments on imported goods, which must be paid before entry into the market. NTMs are policy measures – other than ordinary customs tariffs – that can potentially have an economic effect on international trade in goods, changing quantities traded, or prices, or both. While most-favoured nation tariffs in ocean-based products have been reduced over the years, the incidence and prevalence of NTMs has risen, particularly in developed countries (UNCTAD, 2021b).

Goods from the ocean are widely traded, and trade liberalization has expanded opportunities for many producing countries to compete in international markets. Tariffs across the five ocean economy sectors identified by UNCTAD were found to be highest in low-income countries, averaging 10.2 per cent, and lowest in high income countries, averaging 5.4 per cent. In middle-income countries, average tariffs were 7.9 per cent.³⁸ The average of applied most-favoured nation rates is highest for low-income countries’ imports of processed seafood (18 per cent). This is usually the result of countries’ desire to protect domestic processing industries, or to pursue an import substitution policy. The tariffs in the other sectors are relatively low (UNCTAD, 2021b).

While reduced tariffs have been a facilitating factor in trade-driven development, much of the focus has shifted to examining the role of NTMs in determining trade flows. NTM regulations must be enacted in line with WTO principles of transparency, based on relevant international standards or other scientific justification and they must be non-discriminatory and not more trade-restrictive than necessary (UNCTAD, 2020).

³⁷ See www.bbc.com/future/article/20201119-atlantic-ocean-the-largest-seaweed-bloom-in-history.

³⁸ See <https://www.standardsmap.org/en/identify?products=Fisheries> and <https://www.standardsmap.org/en/identify?products=Aquaculture>.

A recent analysis of NTMs applied to all traded products across 88 countries for which NTMs data are available, revealed a high incidence of NTMs across the various sectors of the ocean-based economy. Nearly 97 per cent of the imported products face at least one import NTM and on average 6.7 different import measures apply to each product. For exports, NTMs apply to nearly 57 per cent of exported products and on average, each exported product needs to comply with about two different requirements before leaving the home country for destination markets. The prevalence of NTMs is highest for Marine fisheries, followed by Seafood processing, with 14.5 and 12.7 NTMs applied per traded product, respectively (UNCTAD, 2021b).

Compliance with sanitary, environmental and manufacturing standards is highly relevant to the trade in goods from the ocean, fish and seafood. The WTO agreements on sanitary and phytosanitary measures (SPS) and TBT play an essential role in structuring trade regulation and dictate policy space countries have when setting the standards that ocean-based products must comply with (UNCTAD, 2021a, 2021b). In addition, NTMs can be associated with environmental and social measures, often enacted by private standard-setting bodies and certification organizations, mainly non-governmental organizations. SPS measures constitute over 50 per cent of applied NTMs for the Marine fisheries and Seafood processing sectors, for which TBT measures represent a relatively smaller share: 14 and 26 per cent, respectively. The prevalence of other NTMs, such as quality and price control, or finance measures, is less than 10 per cent in most cases (UNCTAD, 2021b).

Marine fish and processed seafood products are subjected to pre-shipment inspections in many countries at the time of import. The requirements and practises of border inspections are not always harmonized, fit for purpose, or aligned with the SPS/TBT principles. Developing countries have regularly pointed to the challenge presented by NTMs that vary from one jurisdiction to another. The multitude of approaches imposes significant costs on exporting countries, creates unnecessary duplication and represents a severe handicap for many developing countries with limited resources and capacity for management and infrastructure (UNCTAD, 2020). As fish and seafood products are often perishable, NTMs can add an additional burden on exporters due to time constraints in delivering fresh products to markets.

Further complicating the multiplicity of public NTMs, fish exporters face a wide range of private standards and certification schemes. The sustainability standards of the International Trade Centre's Standards Map³⁹ directly applies to both fisheries and aquaculture, with 72 standards for fisheries and 62 for aquaculture activities. These standards have emerged in areas where there is a perception that public institutions are failing to achieve desired outcomes and include food safety and quality, sustainability and responsible fisheries management, with a wider focus on social and environmental sustainability. Consequently, importing food firms, especially large retailers, may use their strong bargaining power against other entities in the value chain to impose certification via private standards or schemes and therefore become inadvertent de facto regulations that disincentivize conservation and sustainable use of biodiversity. With the proliferation of complex standards, the risk of penalising smaller producers and coastal developing countries has never been more profound. In any event, it must be noted that compliance with standards does not automatically guarantee compliance with the law as standards could operate within jurisdictions that may or may not have existing (effective) sustainability regulatory frameworks in place. Hence, their authority covers a whole spectrum of potency depending on e.g., whether the business/entity is an exporter or importer and the prevailing consumer preferences in the target market.

³⁹ See <https://www.standardsmap.org/en/identify?products=Fisheries> and <https://www.standardsmap.org/en/identify?products=Aquaculture>.

In some cases, countries may also use standards as benchmarks for long-term policy objectives. As an example, the emerging concept of **Blue BioTrade** – focused on marine-based products and services – presents an exciting new tool to promote sustainability and equity.⁴⁰ It reflects the same seven criteria that define its foundation, namely **UNCTAD's BioTrade Principles and Criteria**: (i) conservation of biodiversity; (ii) sustainable use of biodiversity; (iii) equitable benefit sharing; (iv) socioeconomic sustainability; (v) legal compliance; (vi) respect for stakeholders' rights; and (vii) clearly defined tenure and access to resources,⁴¹ as well as **UNCTAD's Ocean Economy Pillars**⁴² which are based on the trade-related targets of SDG 14 and UNCTAD's mandate on ocean and seas.

The increasing vertical integration and complexity of fish and seafood value chains has also stimulated the growth of private standards as business-to-business tools used in the context of procurement contracts. Complex value chains – where raw materials are sourced globally, processed in one country and distributed in yet another – require reliable traceability and chain of custody systems that are built into the frameworks included in most private standards schemes (UNCTAD, 2020).

3.2.2 Fisheries subsidies agreement of the World Trade Organization

Under the WTO Agreement on Subsidies and Countervailing Measures (WTO SCM Agreement)⁴³ a subsidy is defined as a financial contribution provided by a government to actors in the private sector. The transfer can be direct, potentially direct (grants, tax exemptions, loans at below market rates and so forth) or indirect, such as services to the private sector (infrastructure, research and so forth). From a fisheries perspective, the impact of subsidies on ocean sustainability depends on how they are used. While certain subsidies support research and transition towards sustainable livelihoods from fishing, capacity enhancing subsidies coupled with the growing efficiency and size of fleets, can contribute to overfishing, overcapacity and/or IUU fishing.

Fisheries subsidies are difficult to estimate and monitor, in part because of a lack of transparency due to low levels of annual notification under Article 25 of the WTO SCM Agreement, as well as due to underreporting and/or data-poor fisheries in developing countries. The Organisation for Economic Co-operation and Development (OECD) provides estimates of direct and indirect fisheries support for 39 countries and economies between 2010 and 2020. Although the figures are underestimates because of underreporting and non-inclusion of certain forms of subsidies, they enable a certain level of comparison between countries and economies.

According to the OECD data, fisheries support for the 40 countries and economies covered averaged \$12 billion per year between 2012 and 2014, before declining by around 20 per cent to average \$9.4 billion per year between 2015 and 2018.⁴⁴ Between 2018 and 2020, however, global fisheries support increased, returning to its peak of 2012 to 2014

⁴⁰ As an example, UNCTAD has collaborated with CITES, the Organisation of Eastern Caribbean States (OECS) and the European Union on a pilot project to implement the Blue BioTrade concept in the marine environment (e.g., CITES Appendix II-listed queen conch). For more information on this project, see <https://unctad.org/project/blue-biotrade-promoting-sustainable-livelihoods-and-conservation-marine-biodiversity>.

⁴¹ See <https://unctad.org/topic/trade-and-environment/biotrade/principles-and-criteria>.

⁴² See <https://unctad.org/system/files/information-document/ditc-ted-21062021-Ocean-economy-pillars.pdf>.

⁴³ For the full text of the WTO SCM Agreement, see https://www.wto.org/english/docs_e/legal_e/24-scm_01_e.htm.

⁴⁴ For more information, see <https://www.oecd.org/greengrowth/fisheries/fse.htm>.

and reaching \$11.7 billion in 2020 (Figure 13).⁴⁵ This upward trend is worrisome, particularly if additional support increases the fishing capacity of industrial fleets, putting more pressure on fish stocks.

The main area targeted for support by OECD countries between 2018 and 2020 was management, monitoring, control and surveillance, which contributed to productive and sustainable fisheries (OECD, 2023). Twelve per cent of the fisheries support provided by these countries had a high risk of encouraging unsustainable fishing, mostly in the form of support to fuel and vessels, compared to 53 per cent in the emerging economies represented. Overall, more than 40 per cent of the fisheries support from countries was granted to policies that represent a moderate or high risk of encouraging unsustainable fishing, such as support to infrastructure and income, and fuel and vessels, respectively. It is important to note, however, that most developing countries do not have the financial capacity to provide large subsidies.

High-income economies⁴⁶ provided \$770 million in income support in 2020, while low- and middle-income economies (represented in the database) provided \$825 million. Of these, however, Brazil accounted for \$649 million of income support, followed by Mexico (\$65 million), China (\$54 million) and India (\$53 million).

Overall, most developing countries provided a low level of subsidies in 2020, including support for their fisherfolk. In that year, global income support for fisheries totalled \$1.6 billion, up from \$542 million (Figure 13). The increase may be explained by the economic costs caused by the COVID-19 pandemic, to which many countries responded by providing additional subsidies to compensate their fisheries sectors for a lack of income, and social protection due to the reduction or lack of economic activity during the peak of the pandemic. In 2021 and 2022, fisheries support is likely to remain high as governments continued to protect the sector from the effects of COVID-19 and the spike in energy and food prices following the start of the war in Ukraine.

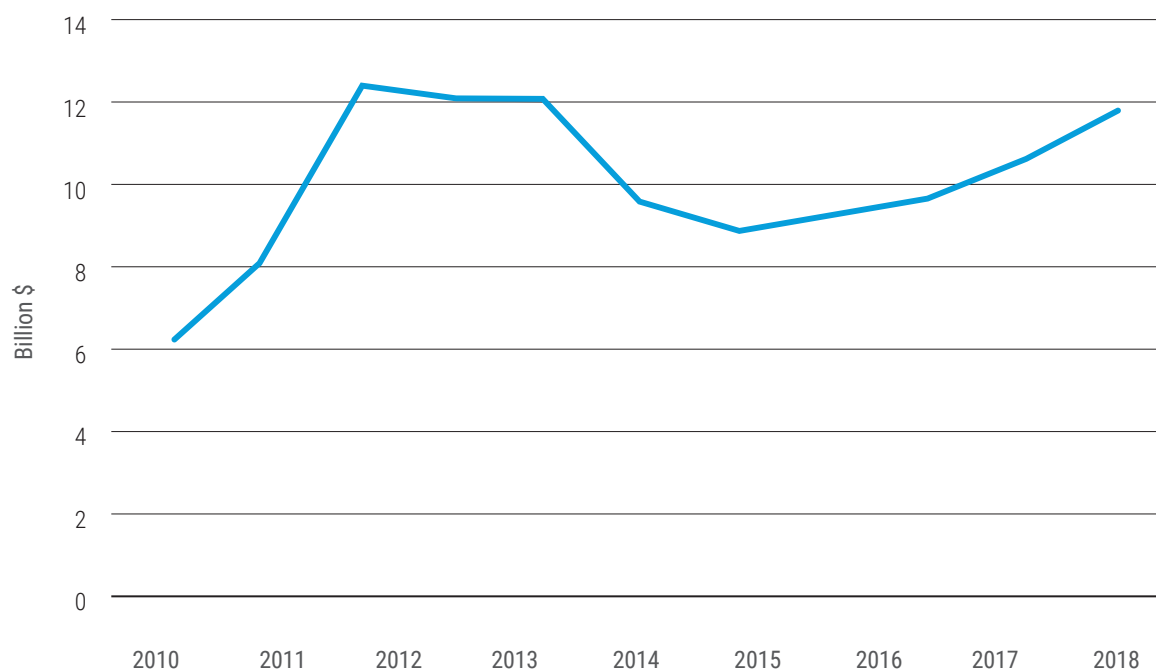
While not specific to the fisheries sector, and as a result of the war in Ukraine and peaks in the price of fossil fuels, public support for fossil fuels by 51 countries almost doubled in 2021 to \$697.2 billion from \$362.4 billion in 2020 (OECD and IEA, 2023). This would probably have an additional upward impact on the subsidies provided for the fisheries sector for the period 2021 to 2022. While GHG emissions by the fisheries sector are not yet clearly regulated globally (IMO regulations apply mainly to shipping), sectoral emissions are increasingly facing monitoring by civil society actors.⁴⁷ In this regard, it is important that the fisheries sector realizes the importance of contributing to global climate goals by measuring and assessing emissions and their impacts, and by developing and implementing suitable technological options that speed up a transition to renewable energy.

⁴⁵ The OECD (2023) finds that fisheries subsidies totaled \$10.4 billion on average in 2018–2020. UNCTAD's analysis focuses on 2020 alone and considers the latest data available to estimate the level of subsidies provided for countries that did not report data in 2020.

⁴⁶ According to the World Bank classification.

⁴⁷ See for example Oceana (2022). A pathway to decarbonize the EU fisheries sector by 2050. Available at <https://europe.oceana.org/reports/a-pathway-to-decarbonise-the-eu-fisheries-sector-by-2050>.

Figure 13. Fisheries support estimate for selected Organisation for Economic Co-operation and Development members and other selected countries (2010–2020)

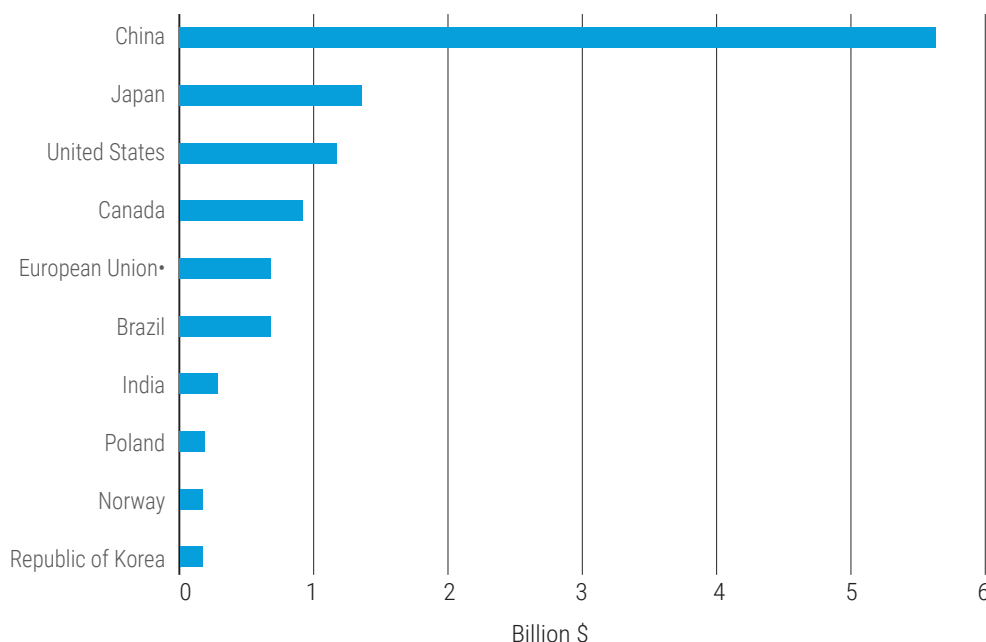


Source: UNCTAD based on OECD Fisheries Support Estimates data (2023).

The countries that granted the largest amount of fisheries support in value in 2020 were China (\$5.6 billion), Japan (\$1.4 billion), the United States (\$1.2 billion), Canada (\$0.9 billion) and European Union member states (about \$0.7 billion) (Figure 14).⁴⁸

⁴⁸ These numbers are cumulative values and do not reflect the objectives of the public support, or whether the allocation contributes to overfishing.



Figure 14. Top 10 countries providing most fisheries support (2020)

Source: UNCTAD calculations based on OECD Fisheries Support Estimates (2023).

Note: *Data for the European Union are limited to countries that reported to the OECD. The aggregate draws on the latest available data for France and Germany (2018).

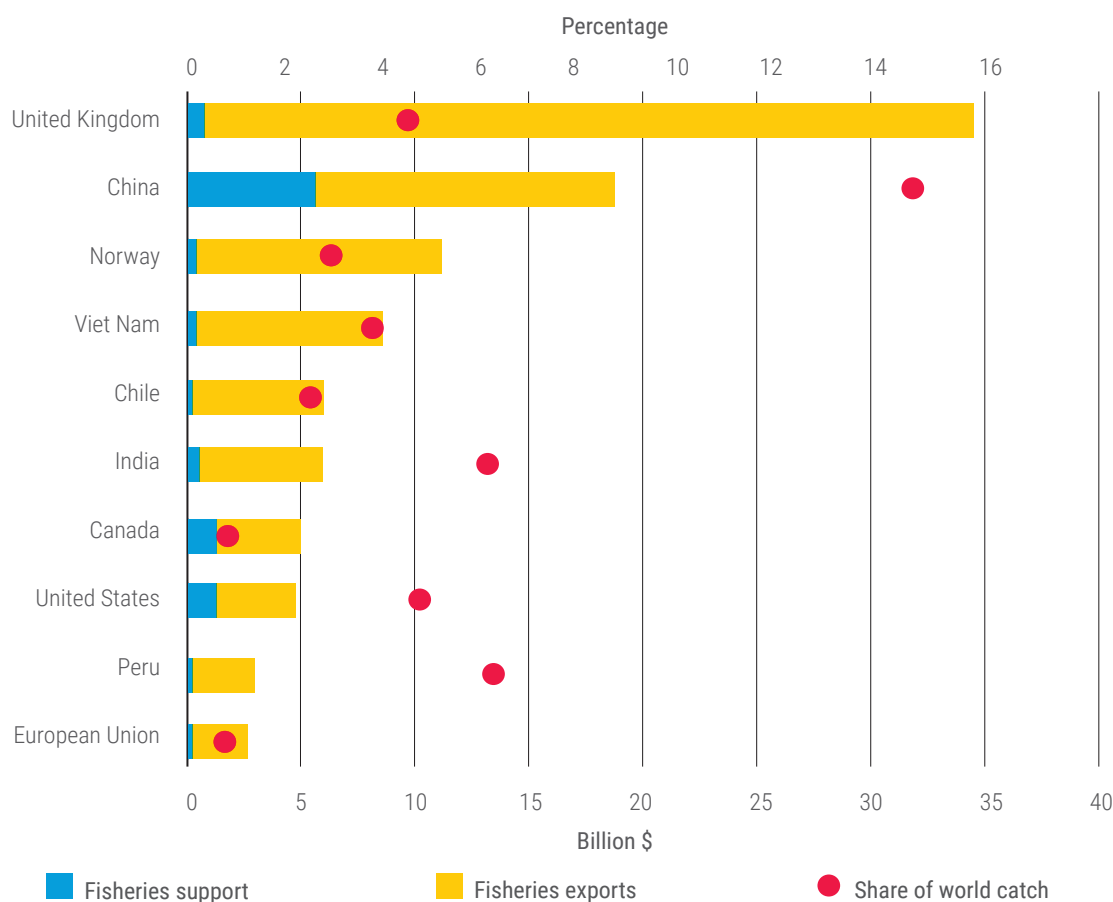
As indicated in Figure 15, in 2020 China granted the largest amount of public fisheries support and at the same time was the country that captured the largest share of the world's catch (14.5 per cent).

In 2020, the European Union led in exports of fish products and by-products (\$33.1 billion) but captured a lower share of the world's catch (4.3 per cent) and provided less than \$1 billion in public fisheries support (Figure 15).

Some countries like Canada provide a relatively large amount of subsidies but represent a small share of world catch (Figure 15).

The sustainability of fish stocks can be affected by the objective and modalities of the public fisheries support by the subsidizing country, the amount of public fisheries support and the share of world catch (Figure 15).

Figure 15 also allows for a comparison of fisheries support, exports and percentage of the world's wild catch. In China, fisheries support represents 30 per cent of fisheries exports, compared to 26 per cent in the United States, and 2 per cent in the European Union. By contrast, certain large fish exporters such as Viet Nam, India and Chile resort much less to public fisheries support.

Figure 15. Incidence of fisheries support for largest exporters (2020)

Source: UNCTAD, based on OECD Fisheries Support Estimates (2023) and FAO Fisheries and Aquaculture statistics (2023).

Export subsidies are prohibited by the WTO SCM Agreement because they give domestic producers an unfair advantage compared to producers from other countries. However, a large ratio of fisheries support to exports does not amount to proof of the prevalence of export subsidies because for some countries, such fisheries support is intended for the producers supplying the domestic market (which could be, for example, the case in Japan and potentially in China).

Even when fisheries subsidies are not targeted at the export sector, they are often a source of inequality and unfair competition within countries because industrial fishing vessels receive more than 80 per cent of subsidies at the expense of small-scale fisherfolks (Schuhbauer et al., 2020). This is both socially and economically inequitable. A recent study suggests that small-scale fishing fleets are nearly twice as productive as large-scale vessels in the North Atlantic, and 16 per cent more productive in the Mediterranean and Black Sea (Villasante et al., 2022). The productivity gap is explained by the inefficiencies caused by subsidies.

Phasing out subsidies which contribute to IUU, overcapacity and overfishing is Target 6 of SDG 14.⁴⁹ After more than 20 years of negotiations, WTO members finally reached an

⁴⁹ SDG 14 target 6: "By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation."

agreement – albeit not on a comprehensive basis – at the twelfth WTO Ministerial Conference on 17 June 2022.⁵⁰ The WTO Agreement on Fisheries Subsidies⁵¹ is a standalone landmark treaty (inserted into Annex 1A⁵² of the Marrakesh Agreement Establishing the WTO) that seeks to address the depletion of marine resources caused by overfishing, overcapacity and IUU fishing. It seeks to curb harmful subsidies globally and establish vital safeguards where fisheries regulations or management measures do not exist and/or are ineffective.

Envisaged to deliver on the SDG 14.6 target, the Agreement focuses on the sustainability of global wild marine capture stocks and related activities,⁵³ and not on the trade distorting effects of subsidies (as is the case of the WTO SCM Agreement). It embodies compromises and flexibilities on regulating and/or outright prohibition of subsidies that contribute to IUU fishing (Article 3) and is enforceable under the remedies found in existing WTO dispute settlement mechanisms, subject to certain caveats.⁵⁴

The Agreement also includes rules prohibiting subsidies for fishing of overfished stocks, except those that are implementing management measures to rebuild the stock to a biologically sustainable level (Article 4) and fishing in unregulated high seas beyond the jurisdiction of coastal or non-coastal states and of relevant RFMOs (Article 5). Table 2 summarizes the three key basic prohibitions under the Agreement.



⁵⁰ See https://www.wto.org/english/thewto_e/minist_e/mc12_e/mc12_e.htm.

⁵¹ For the full text, see <https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:WT/MIN22/33.pdf&Open=True>.

⁵² Annex 1A on the WTO's Multilateral Agreements on Trade in Goods. For the full text, see https://www.wto.org/english/docs_e/legal_e/05-anx1a.pdf.

⁵³ Other fisheries activities such as aquaculture, inland fisheries, or payments under bilateral access agreements between governments are outside the ambit of the WTO Fisheries Subsidies Agreement.

⁵⁴ It does not apply to the so-called “non-violation complaints” or to disputes related to “existence of any other situation” and maritime jurisdictional matters (Article 11.2 and 3). Also, see subparagraphs 1(b) and 1(c) of Article XXIII of the General Agreement on Tariffs and Trade 1994 (https://www.wto.org/english/docs_e/legal_e/gatt47.pdf) and Article 26 of the Dispute Settlement Understanding www.wto.org/english/tratop_e/dispu_e/dsu_e.htm#26.

Table 2. Key prohibitions under the World Trade Organization Agreement on Fisheries Subsidies

 Prohibition on subsidies contributing to IUU fishing (Article 3)	 Prohibition on subsidies contributing to fishing or related activities of overfished stock (Article 4)	 Prohibition on subsidies for fishing in the unregulated high seas (Article 5)
- Affirmative determination by Member coastal state, flag state or RFMOs - Timely notification and sharing of information - Reasonable and proportionate sanctions and duration - Laws, regulations and/or administrative procedures in place - Very limited special and differential treatment (two year peace clause within EEZ; binding but non-actionable)	- Recognized as overfished by Coastal Member or RFMOs within areas of competence - Allowed if measures to rebuild the stock to biologically sustainable levels are in place - Very limited special and differential treatment (two year peace clause within EEZ; binding but non-actionable)	- Unregulated high seas fishing (e.g., species and areas) Special care and due restraint when providing subsidies: - to vessels not flying the subsidizing member's flag; - to fishing or related activities when the status of the stock is unknown Applicable to all WTO Members

Source: UNCTAD secretariat based on the text of WTO Agreement on Fisheries Subsidies.

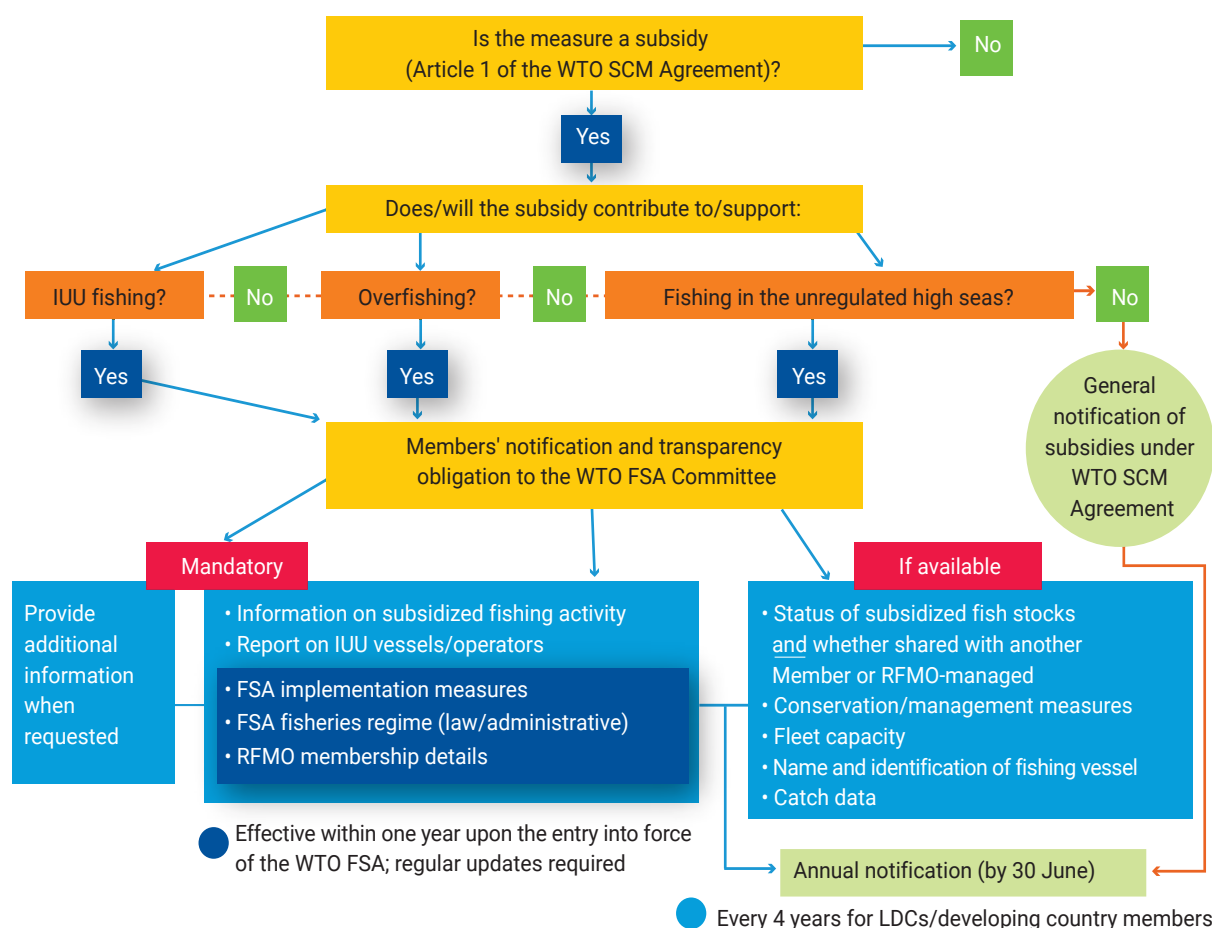
Special and differential treatment is incorporated in the Agreement in a commensurate manner in relation to prohibitions listed, and it mainly takes the form of implementation periods for both developing countries and LDCs, i.e., a two-year peace clause and the exercise of “due restraint” in relation to raising matters involving LDCs.⁵⁵

Article 8 of the Agreement expands existing transparency and notification requirements under Article 25 of the WTO SCM Agreement,⁵⁶ and obliges Members to indicate the type or kind of fishing activity for which the subsidy is provided and to the extent possible information on: (i) status of the fish stocks in the fishery; (ii) conservation and management measures in place; (iii) fleet capacity; (iv) identification number of the fishing vessels; and (v) catch data by species or group of species in the fishery. As a summary, Figure 16 provides guidance on how WTO Member States can comply with their mandatory and voluntary (when information is available) Article 8 transparency obligations applicable to conditions for which subsidies are provided. Besides these, the Agreement also has significant provisions on implementation, including annual review by the Committee on Fisheries Subsidies Agreement in the subsequent Article 9.⁵⁷

⁵⁵ It is important to note that another type of “due restraint” has been mentioned under Article 5, which refers to the limitations as to what activities Members can subsidize within the fisheries sector (see Table 2).

⁵⁶ For the full text, see www.wto.org/english/docs_e/legal_e/24-scm.pdf.

⁵⁷ A WTO Committee on Fisheries Subsidies to oversee implementation of the agreement is envisaged to be established under Article 9.

Figure 16. The World Trade Organization Fisheries and Subsidies Agreement notification and transparency decision tree

Source: UNCTAD secretariat based on the text of the WTO Agreement on Fisheries Subsidies.

While all these requirements make sense for the purposes of transparency and monitoring, countries will need support to integrate fisheries-related elements into their subsidies policies, develop capacities for collecting and consolidating such data, and comply with their notification obligations. Most countries' systems have yet to be developed, if they exist at all. These challenges have been compounded by the fact that SDG 14 is the least funded of all the SDGs. To address these imminent barriers and implement Article 7 of the Agreement, the WTO Fisheries Subsidies Funding Mechanism has been set up to assist LDCs and developing countries to not only comply with their new obligations under the Agreement but also to benefit from the overarching aims of the Agreement through targeted capacity building and technical assistance.⁵⁸

A crucial area that did not gain sufficient consensus for an additional prohibition was subsidies that contribute to overcapacity and overfishing. This is an issue about which several Members had significant concerns relating to the need to sustain their own small-scale and subsistence fisheries sectors and to protect rights over stocks within their own EEZ. This implies that efforts will still be needed from the WTO to fully acquiesce to SDG target 14.6. To overcome this challenge, the Agreement includes a novel sunset clause

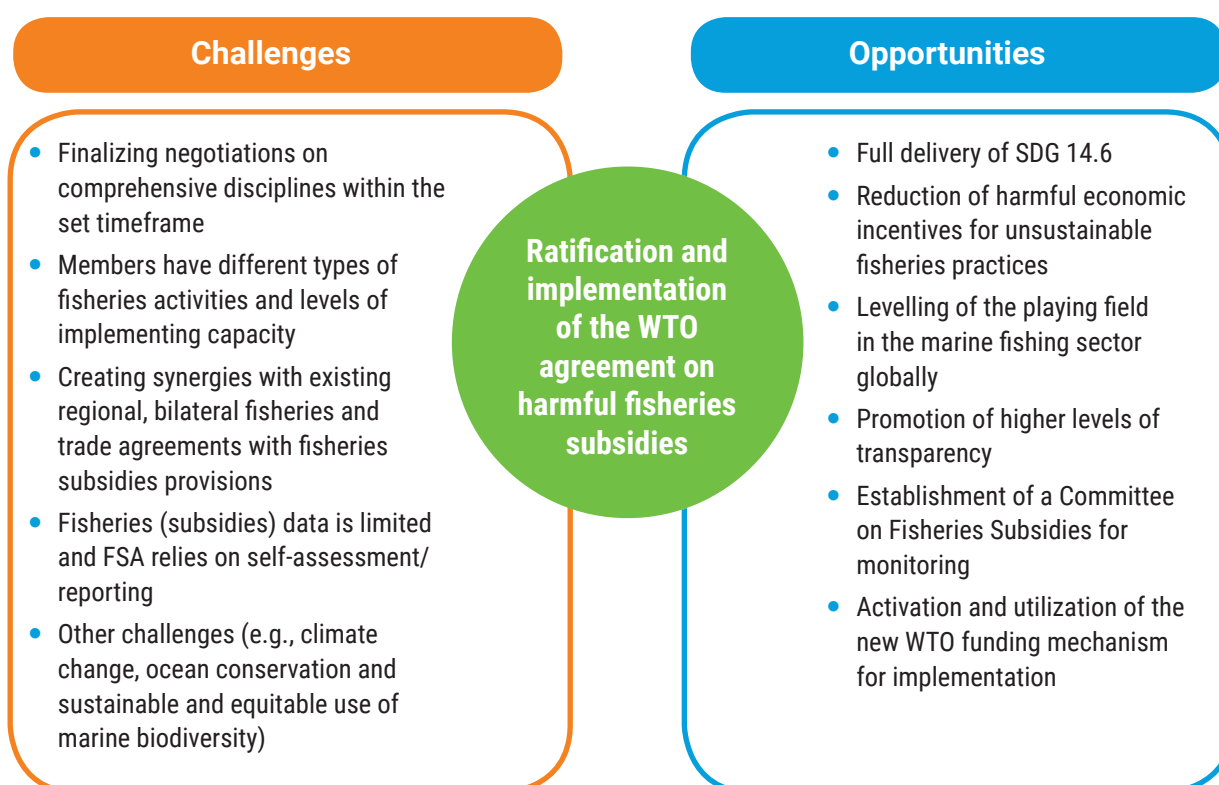
⁵⁸ The WTO Fisheries Subsidies Funding Mechanism was unveiled on the margins of the Twelfth WTO Ministerial Conference in Geneva, Switzerland on 14 June 2022. For more information, see www.wto.org/english/news_e/news22_e/fish_14jun22_e.htm.

(Article 12), which essentially encourages Members to negotiate, review and build consensus on new provisions within a limited timeframe. Article 12 of the Agreement stipulates that if a comprehensive Agreement is not reached within four years of the entry into force of the Agreement, it will then be considered immediately terminated. This type of sunset clause (“automatic expiry date” clause) is particularly rare in international law or multilateral treaties.

Although an Agreement was reached in July 2022, three major steps are required to set the seal on a new international treaty on global fisheries and curb the fishing industry’s use of harmful subsidies. To enter into force, two thirds of the WTO Membership (109 Members) must: (i) deposit their instruments of acceptance;^{59,60} (ii) develop the Agreement’s implementation phase, particularly in developing countries; and (iii) adopt comprehensive disciplines within four years of the entry into force of the Agreement or face the risk of it being terminated upon the decision of the General Council (Article 12).

Table 3 identifies and summarizes several challenges and opportunities for consideration of implementing Member States in the run up to the finalization of the Agreement and its implementation phase thereafter.

Table 3. Challenges and opportunities in the ratification and implementation of the World Trade Organization Fisheries Subsidies Agreement



Source: UNCTAD secretariat based on United Nations System websites and reports.

⁵⁹ There is no single, uniform approach for drawing up an instrument of acceptance/accession for a particular protocol; each member may have its own practice for accepting international agreements and amendments. However, some elements are required to ensure the legal validity of such instrument. For details and an example of a model instrument of acceptance, see www.wto.org/english/docs_e/legal_e/depositary_guide_e.htm.

⁶⁰ As of 19 April, four WTO Members have formally submitted their acceptance of the Fisheries Subsidies Agreement: Switzerland, Singapore, Seychelles and the United States of America.

3.3 Social sustainability in selected ocean economy sectors

Fishing is one of the most hazardous occupations, causing over 30,000 deaths yearly (FAO, 2022a). The protection of human and labour rights is still a major challenge in the fisheries and aquaculture sector. This challenge is exacerbated by unsustainable practices that trigger different social problems at various stages of the value chain: e.g., modern day slavery and bondage, forced labour, and other abuses of vulnerable people, mainly migrants, women and children (FAO, 2022a). These practices also engender the absence of social protection, social security, healthcare, or formal working relationships (i.e., employment contracts). Regrettably, inadequate working conditions are structural problems that persist throughout the fisheries and aquaculture value chain. Environmental concerns, such as climate change, plastic pollution and biodiversity loss are likely to compound these social issues, as coastal communities are often the most exposed and vulnerable to these risks.

In addition, the COVID-19 pandemic has magnified existing human and labour rights challenges in the already precarious employment conditions that prevail in the sector. Adverse economic impacts caused by disruptions to trade have reduced incomes and endangered the livelihoods of many fisheries and aquaculture workers, especially the most marginalized and vulnerable groups in coastal developing countries.

Promoting decent work in the **fisheries and aquaculture sector** is key to supporting effective fisheries management and responsible social practices. As a result of the increased awareness of these social issues, the industry, trade associations, labour unions and policymakers have undertaken initiatives to address the existing weaknesses, seek remedies and improve performance through increased monitoring, transparency and information dissemination.

Despite well-intentioned initiatives and various international instruments (conventions and guidelines, etc.) that advance human and labour rights vis-à-vis ensuring equitable employment practices for the fisheries workers, implementation and enforcement challenges relating to labour legislation, infringement of small-scale fishers' rights, child labour and barriers to access social protection and other related abuses persist. Inasmuch as the complexity and diversity of the seafood supply chain, coupled with divergent fishery management systems have inadvertently created implementation and enforcement challenges for stakeholders in the fisheries and aquaculture sector, the call to reduce the risk of human rights abuses and protect and promote the rights of fishers has never been more urgent.

Since 2017, FAO has been mandated to address these challenges and support the sector by developing practical guidance on social responsibility and advance the recognition and protection of human and labour rights throughout the fisheries and aquaculture value chains. In this respect, FAO has conducted several multistakeholder consultations worldwide, in which representatives from governments, the industry, non-governmental organizations, trade unions, regional fisheries bodies, United Nations agencies (ILO, IMO and UNCTAD), the OECD and academia, among others, participated. Their active engagement in these consultations helped to develop a draft guidance,⁶¹ which aims to facilitate compliance and support the industry by compiling existing relevant international instruments and tools to ensure decent work and good social practices along the fish value chain. Considering different national realities and capacities, the FAO Guidance will be voluntary and will include practical and complementary guidelines envisaged to cover the different stages of the fisheries and aquaculture value chain, including, pre-harvest, harvest and post-harvest

⁶¹ FAO. Report of the Seventeenth Session the Sub-Committee on Fish Trade. Vigo, Spain, 25–29 November 2019. See <http://www.fao.org/3/ca8665t/CA8665T.pdf>.

activities. It will also include cross-cutting aspects, such as gender equity and equality, child labour and fair integration of migrant workers.

In addition, during the 34th Session of the COFI in 2021, Members endorsed the FAO Declaration for Sustainable Fisheries and Aquaculture⁶² which emphasizes the attainment of safe, healthy and fair working conditions for all in the sector. The Declaration supports efforts to prevent and halt forced labour; facilitate access to social protection programmes for fishers and aquaculture producers and their communities; support measures to improve safety at sea; and work towards enhancing the standards of living for all in the sector. It also aims to promote and strengthen policies to support and recognize the contribution of small-scale fisheries and aquaculture, the fight against IUU fishing, and the empowerment of women in their critical role to achieve the targets of SDG 14.

In parallel, the world's 1.9 million seafarers, many of whom are from developing countries, have played a vital role in the **maritime and tourism sectors, facilitating** the continuous flow of critical goods along supply chains.⁶³ The vast majority of these seafarers (in vessels such as cargo ships, cruise ships and superyachts) are subjected to long working hours, drawn-out temporary contracts with limited job security, and inadequate employment protection. Personal contact between seafarers and ship owners is practically non-existent as employment relationships are generally managed through shipping agencies. This labour structure engendered, abetted and encouraged cases of seafarer abandonment and unpaid wages by agencies, as well as serious issues regarding the working environment (harassment and discrimination) which are not usually part of the areas assessed by inspectors of the port State and the IMO (The Mission to Seafarers, 2022).

Regrettably, the COVID-19 pandemic has exacerbated and taken these challenges to a new level. For example, many seafarers had their contracts extended against their will when crew changes could not take place (The Mission to Seafarers, 2022), leaving seafarers unable to leave ships, remaining stranded at sea far beyond the expiration dates of their contracts and hence breaching the 11-month maximum period of continuous service on board, as required by the Maritime Labour Convention, 2006. In the early months of the pandemic, concerns regarding access to vaccines and relevant information about them, the willingness of seafarers to be vaccinated, and access to COVID-19 tests and personal protective equipment were reported.⁶⁴

The ILO, IMO, UNCTAD and the World Health Organization, worked closely to develop collaborative efforts to address these challenges. In a joint statement⁶⁵ dated 28 February 2022, the agencies propose 10 action points to facilitate maritime crew changes and safe movement across borders, to adopt and implement the latest legal instruments on labour regulations, immediate access to medical care and measures to protect seafarers against COVID-19.

Data are essential for effective, evidence-based advocacy and policy changes. At present, data on social sustainability in ocean economy sectors are limited and fragmented. A starting point to address these gaps is UNCTAD's ocean-based good and services classification

⁶² In the context of the twenty-fifth anniversary of the FAO Code of Conduct for Responsible Fisheries held in Rome, Italy on 1 February 2021. For the full text, see <https://www.fao.org/3/cb3767en/cb3767en.pdf>.

⁶³ ILO, IMO, UNCTAD and WHO. 2022. Joint statement urging continued collaboration to address the crew change crisis, safeguard seafarer health and safety, and avoid supply chain disruptions during the ongoing COVID-19 pandemic. For the full text, see https://unctad.org/system/files/non-official-document/un-joint-statement-on-crewing-crisis_en.pdf.

⁶⁴ Ibid.

⁶⁵ Ibid.

for monitoring trade flows,⁶⁶ as this classification could be used to facilitate clustering of ocean-based employment and contribute to improving policy coherence. UNCTAD is also improving data and statistics for the design of more gender-responsive trade policies. These data are especially relevant for ocean-based industries because women represent the majority of people engaged in secondary activities related to, for example, marine fisheries, aquaculture or marine and coastal tourism. Women face a range of challenges relating to access to resources and services and full participation.



⁶⁶ For more information, see <https://unctad.org/topic/trade-and-environment/oceans-economy>.

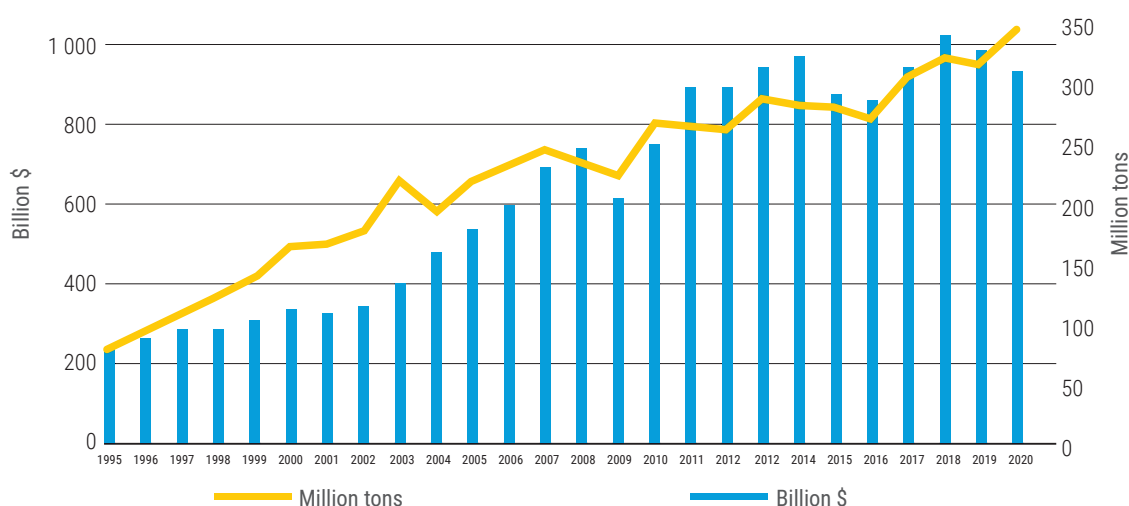
3.4 Addressing trade-related aspects of marine litter and plastic pollution

Marine litter is any persistent, manufactured or processed solid material discarded, disposed of, or abandoned in the marine and coastal environment. Marine litter may include wood, metals, glass, rubber, clothing, paper, industrial chemicals, pharmaceuticals, persistent organic pollutants, plastic litter and microplastics, which are fragments of plastic smaller than 5 mm.⁶⁷

The high and rapidly increasing levels of marine litter, including plastic litter and microplastics, represent a serious environmental problem on a global scale, negatively affecting marine life and biodiversity, ecosystems, livelihoods, fisheries, aquaculture, maritime transport, recreation, tourism and other sectors of the ocean economy. Current estimates indicate that about 11 million tons of plastic enter the ocean each year. The annual global production of plastics was about 400 million tons in 2020, and its production is expected to double by 2040 and increase by 2.5 times by 2050 if the current consumption rate continues (ISO, 2022).

The world has become addicted to plastics. According to UNCTAD's plastic trade database, the total value of global plastics exports exceeded US\$ 1 trillion in 2018 or 5 per cent of total merchandise trade (Barrowclough et al., 2020). This is 40 per cent higher than previous estimates and involves all nations in the world. This export value was reduced only slightly during the pandemic in 2020 to about \$929 billion due to lower cross border trade flows during that period (Figure 17). The volume of total plastics exports was 344 million tons in 2020. This is three times the volume exported in 1995.

Figure 17. World trade exports of plastics in value and volume (2004–2020)



Source: UNCTAD Plastic Trade database (2022).

Approximately 76 per cent of all plastics produced between 1950 and 2017 has become plastic waste. Less than 10 per cent of this waste was recycled. Of this, more than 8 million tons of plastics – about 3 per cent of global annual plastics waste – enter the ocean annually through multiple outlets, including rivers (Ritchie and Roser, 2022). As a result, the problem of marine litter and microplastics is not only a current problem but is expected to persist and worsen for many future generations unless urgent global action is taken.

⁶⁷ See the initiative website at <https://www.unep.org/explore-topics/oceans-seas/what-we-do/working-regional-seas/marine-litter>.

An estimated 1 to 5 per cent decline in annual marine ecosystem services due to plastic pollution could equate to an annual loss of \$500 billion to \$2,500 billion in global ecosystem benefits (Beaumont et al., 2019). These environmental threats are further amplified by the interconnection of marine litter and microplastics with biodiversity degradation and climate change (UNEMG, 2022).

It is estimated that the bulk of marine litter comes from land-based sources, with a smaller proportion (less than 6 per cent) arising from sea-based sources, although this varies significantly between regions. Of particular concern are manufacturing sectors and fast-moving consumer goods, which are packaging-intensive and act as significant land-based sources of marine pollution. For sea-based sources, abandoned, lost or otherwise discarded fishing gear (ALDFG) are especially relevant because they seriously threaten marine habitat and biodiversity. For example, marine species are threatened when they become entangled or trapped (in the case of plastic polymer nets) in the ALDFG, or when its small particles are ingested by marine species along with persistent organic pollutants and toxic compounds. This has severe impacts on fish stocks throughout the food chain and ultimately poses a serious risk for marine wildlife and human health.

Marine litter can also cause damage to coral reefs and change the structure of the seabed, affecting the plants and animals that live there and reducing their ability to adapt to climate change, among other negative effects. Aside from economic consequences, such as the loss of income from tourism and reduction of food production capacities, there are also high costs relating to the removal of litter from beaches and harbours and damage to ships and fishing gear.

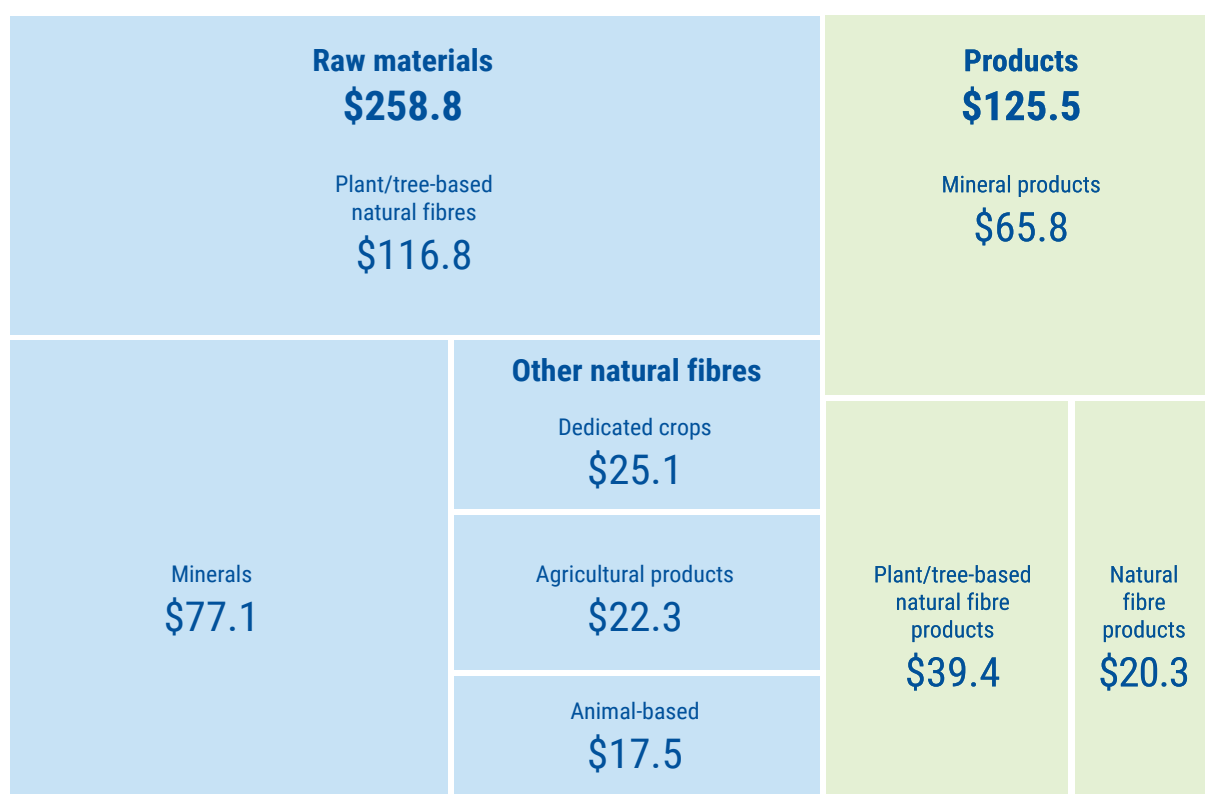
Although several SDGs indirectly relate to marine litter and microplastics (such as SDG 12 – “Ensure sustainable consumption and production patterns”), marine litter is directly referred to in Target 14.1 of SDG 14. UNEP is the custodian and is the United Nations agency responsible for the global monitoring of indicator 14.1.1. (b) “plastic debris density”.

A recent report from the United Nations Environment Management Group (UNEMG) maps all United Nations agencies, programmes, initiatives and other sources of expertise relating to marine litter, including plastic litter and microplastics (UNEMG, 2022). Over 40 United Nations entities are supporting Member States to address the problem of marine litter and microplastics. Some United Nations bodies have explicit mandates in this area and/or conduct major activities that directly benefit the marine environment. Others have more indirect responsibilities for addressing marine litter that derive from their work on the green economy, climate change, international trade or humanitarian issues.

The United Nations Regional Economic Commissions under the United Nations Secretariat, and the Regional Seas Programmes guided by UNEP, serve as bridges between processes at the global, regional, subregional and national levels in implementing the 2030 Agenda for Sustainable Development, including consideration of marine litter pollution. While regional commissions deal with economic development, trade facilitation, food security and sustainable development in the regions, the Regional Seas Programmes address the marine environment in various sea basins. Regional fisheries bodies have introduced measures to minimize and retrieve ALDFG, and several of the existing regional fisheries bodies are administered or supported by FAO. RFMOs have mandates to adopt legally binding conservation and management measures based on the best scientific evidence. Furthermore, large marine ecosystem activities aim at combating marine litter as part of regional strategic action programmes, such as the ones by the European Union to address marine litter through applicable regulations and legally binding directives. These regional instruments support national efforts and link them to multilateral requirements while ensuring the integration of the regional dimension in global development policy discussions.

The mandate of UNCTAD under the Bridgetown Covenant⁶⁸ has recently been expanded to address the discharge of plastic litter and other waste into the ocean (para. 76) by significantly reducing marine pollution of all kinds and ensuring sustainable consumption and production patterns, promoting a circular economy that offers opportunities to reuse and recycle materials and reduce pressure on strained ecosystems and the climate. It has conducted studies that explore options to promote plastic substitutes (non-polymer natural materials that have similar properties to plastics) and the issues, challenges and considerations that policymakers are likely to face, particularly from a trade and sustainable development perspective, including a preliminary assessment of market and trade-related trends in selected examples of plastic substitutes (UNCTAD, 2021c). UNCTAD estimates the export value of plastic substitutes of mineral, plant or animal origin, both in the form of raw materials and value added products, have been estimated at \$388 billion in 2020 (Figure 18). This represents one third of the total trade value if compared with global plastic and plastic products trade.

Figure 18. Trade in plastic substitutes: what is the added value (billion \$)?



Source: Prepared by UNCTAD secretariat based on UN COMTRADE.

Note: In addition, approximately \$4 billion of potential substitutes for abandoned, lost or otherwise discarded gear were traded in 2020.

UNCTAD has also explored the role of trade and possible options for coherent and concerted governance action within the United Nations and the multilateral trading system on the potential of plastics substitutes to reduce plastic pollution and enable local sustainable manufacturing development in selected developing countries (UNCTAD, 2021d).

⁶⁸ The Bridgetown Covenant: From inequality and vulnerability to prosperity for all, adopted at the 15th Session of UNCTAD in Barbados and Geneva, 3–7 October 2021. For the full text, see https://unctad.org/system/files/official-document/td541add2_en.pdf.

On 2 March 2022, the United Nations Environmental Assembly (UNEA- 5.2) approved a resolution to establish an Intergovernmental Negotiating Committee with the mandate to develop an internationally legally binding treaty designed to bring an end to the scourge of plastic pollution (including in the marine environment) by 2024.⁶⁹ The UNEA-5.2 resolution on curbing plastic pollution is considered “the most important global environmental deal since the Paris Agreement in 2015”.⁷⁰ Like other multilateral deals, the success of this agreement ultimately depends on its final terms, with delegates set to resolve the finer details of the instrument which may include both binding and voluntary approaches, based on a comprehensive approach that addresses the full lifecycle of plastic including production, design and disposal. The UNEA-5.2 resolution is envisaged to yield maximum global impact to address the triple planetary crises of climate change, biodiversity loss, and pollution and waste.

Upholding its mandate to address marine pollution while balancing the need to promote sustainable production and consumption in developing countries, UNCTAD formally submitted its written submissions for a legally binding United Nations treaty on ending plastic pollution.⁷¹ UNCTAD’s key proposals include: (i) inclusion of two new terms – “plastics substitutes” and “plastic alternatives”; (ii) life cycle analysis for plastics substitutes; (iii) improvement of data collection on plastics production and disposal at the national and international level; (iv) multilaterally agreed and disaggregated HS codes for all plastic forms; and (v) adoption of mandatory reporting mechanisms.

To implement the proposed measures, UNCTAD calls for (among other things): addressing tariffs and NTMs for environmentally sustainable and effective plastics substitutes; phasing out fuel subsidies for the polymer production sector; and including plastic pollution mitigation measures (as they relate to GHG emissions) in their nationally determined contributions under the Paris Agreement.



⁶⁹ To read the full text, see https://wedocs.unep.org/bitstream/handle/20.500.11822/38522/k2200647_-_unep-ea-5-l-23-rev-1_-_advance.pdf?sequence=1&isAllowed=y.

⁷⁰ Inger Andersen, UNEP Executive Director, speaking at the Fifth Open-Ended Committee of Permanent Representatives to UNEP on 21 February 2022. Read the full statement here: <https://www.unep.org/news-and-stories/speech/global-environmental-governance-uncertain-world>.

⁷¹ For the full text, see https://apps1.unep.org/resolutions/uploads/230104_united_nations_conference_on_trade_and_development_unctad.pdf.



The background of the entire page is a photograph of several large port cranes. The scene is captured during sunset or sunrise, with a warm, golden-orange glow that fills the sky and reflects off the water. The cranes are silhouetted against this bright light, creating a dramatic and industrial atmosphere. The perspective is from a low angle, looking up at the cranes, which emphasizes their height and scale.

4

Achieving a sustainable ocean economy in 2030 and beyond

4 Achieving a sustainable ocean economy in 2030 and beyond

Achieving the SDG 14 targets requires improved alignment of policies across multiple sectors, the integration of sustainable human uses with environmental conservation and social equity, and the use of more holistic and integrated approaches. These approaches should aim to ensure policy coherence, identify and manage trade-offs between sector-specific objectives, and take advantage of synergies where science, policies, investment, capacity and innovations can deliver benefits to multiple sectors. It also requires bold initiatives and actions to prioritize and scale-up access to affordable financing, which has often been limited. This situation has become even more difficult as many countries have shifted priorities to address the impacts of COVID-19 and the war in Ukraine. In addition, many developing countries have taken on unsustainable levels of external debt that further act as a barrier for transitioning to a sustainable ocean economy.

Fortunately, several examples of successful actions and initiatives exist, contributing to a common understanding of what constitutes a “sustainable activity” across ocean-based sectors, offering insights into replicating and upscaling best practices and accelerating successful actions. The foundation for a sustainable ocean economy requires strong building blocks that create the conditions for wider change across various ocean sectors, enabling the implementation and acceleration of sector-specific reforms, innovations and research. The following are the key points made and recommendations arising from the 4th United Nations Oceans Forum on how to move forward and support a sustainable ocean economy within the framework of the 2030 Agenda for Sustainable Development and beyond.

4.1 Main conclusions and recommendations of panellists and participants at the 4th United Nations Oceans Forum

From 6 to 8 April 2022, panellists and participants of the 4th United Nations Oceans Forum discussed high impact and emerging issues and exchanged ideas on potential pathways to meet the targets of the 2030 Agenda for Sustainable Development. Most notably, they deliberated on the ongoing and planned activities to implement SDG 14 and its trade-related aspects to promote a global sustainable and inclusive ocean economy. The Chair's Summary⁷² captures the detailed deliberations and presents the main recommendations from the Forum for stakeholders' consideration and implementation.

⁷² For the full text, see <https://unctad.org/system/files/information-document/4th-Oceans-Forum-ChairsSummary-v7.pdf>.

4.1.1 Towards a Blue Deal for post-COVID-19 recovery and resilience

Panellists and participants recommended that the following actions be included in a Blue Deal⁷³ for post-COVID-19 recovery and resilience:

- a. **Urgently bridge the gap in ocean finance.** Special efforts are needed to call for a Blue Deal that will help increase the amount of ODA aimed at supporting the growth of the ocean economy. It is also necessary to develop services that enable online supply and initiatives that bridge the digital divide and enhance cooperation between the production and distribution of essential products.
- b. **Make ocean management policies more efficient.** Sustainable use of the ocean is essential to accelerate the implementation of SDG 14 and its trade-related targets. Ocean science is key to achieving a truly sustainable blue economy.
- c. **Support a post-COVID-19 recovery in the ocean economy.** It is necessary, among other things, to fill governance gaps with a view to boosting conservation, sustainable use, responsible trade and investment.
- d. **Implement efforts to create the incentives and tools** to monitor and guarantee an adequate economic use of the ocean, its protection and sustainable use.
- e. **Coordinate stakeholders and their actions** to protect and promote sustainable management of the ocean at global level as humanity's public good.
- f. **Rethink and contextualize the current development model** into a scenario in which national marine resources are notoriously degraded, with a view to addressing this.
- g. **Develop early warning and prevention systems, emergency support and recovery,** which are prerequisites for responses to future external shocks, such as pandemics, economic or political crises, or climate change impacts.
- h. **Accelerate the adoption of digitalization, contactless e-payment systems and automation technologies across the ocean-based private sector and public administration.** These reduce production costs and allow for the mitigation of restrictions on travel and mobility.
- i. **Develop closer and shorter value chains and promote economic diversification, connectivity, and the right mix of energy security measures** as essential elements for resilience.
- j. **Accelerate the ratification and subsequent implementation of the BBNJ agreement under UNCLOS.**
- k. **Generate consensus on FAO Guidance on Social Responsibility in the Fisheries and Aquaculture Value Chain.**
- l. **Act now to reverse the degradation of the ocean and fulfil SDG 14** obligations to preserve life below water as an important step to addressing climate change.

⁷³ For more information, see www.southcentre.int/wp-content/uploads/2021/10/RP137_The-Ocean-Economy_EN_red.pdf.

4.1.2 The seaweed sector as a lever for a sustainable ocean economic recovery

Panellists and participants of the 4th United Nations Oceans Forum also recommended the following actions to develop the seaweed sector, which has the potential to address food shortages, reduce the carbon footprint of the primary sector and leave space on land for other activities:

- a. **Incorporate the expansion of seaweed cultivation, restoration of degraded kelp forests and establishment of new kelp forests into national and multilateral development plans, nationally determined contributions and National Action Plans.**
- b. **Scale-up seaweed production** through several measures, including: the coordination of technical assistance; setting out policy infrastructure; harmonization of legal frameworks; linking private sector investors with technologies and environmental requirements; establishing partnerships to share knowledge; promoting South-South cooperation on seaweed sector development as part of broader ecosystem-based fisheries management; and applying marine spatial planning.
- c. **Integrate multiple product biorefinery** such as food, bulk chemicals, bioplastic production from microalgae biomass and other high-value products to improve the overall economic feasibility of the production. Algae biorefineries will allow for the co-sourcing of different products, the minimization of waste and the maximization of productivity.
- d. **Develop space allocation** through marine spatial planning to support the necessary expansion of seaweed farming.
- e. **Focus on fast, high-quality and results-driven interaction between businesses and research and development**, both in developed and developing countries so that funding bodies can have access to the best information and support the seaweed sector's growth.
- f. **Promote sustainable biomass production of seaweed** (from harvest, but mainly farming) **as well as literacy** of the youngest to assist its market evolution and consistency.

4.1.3 Transparency, non-tariff measures and fisheries subsidies reform

Panellists and participants further recommended the following actions to increase transparency in the fisheries sector, reduce NTMs and eliminate subsidies causing overfishing or encouraging IUU fishing:

- a. **Ratify and implement the recently adopted WTO Agreement on Fisheries Subsidies supportive of SDG 14**, with due attention given to addressing the burden of obligations between Members and clarifying the implementation process.
- b. **Prohibit the subsidization of vessels fishing outside a country's EEZ and invest in data collection and analysis** tools to support evidence-based fisheries management, implementation and enforcement.
- c. **Implement comprehensive and transparent regulations and policies to fight IUU fishing.**

- d. **Encourage the use of transparency tools to improve understanding of NTMs, management of resources and subsidies.**
- e. **Establish adequate technical assistance and capacity development programmes by FAO and UNCTAD to support WTO Members' implementation of the new Agreement on Fisheries Subsidies.** Such efforts will contribute to fish subsidies reform (especially to curb IUU fishing, overcapacity or overfishing), governance, transparency, data collection and processing, and enforcement, as well as address existing standards so that they do not operate as barriers to trade.

4.1.4 Social sustainability of the fisheries and aquaculture value chain

Actions to safeguard the welfare of the labour force in all ocean economy sectors is important. At the Forum, issues regarding social sustainability focused on the fisheries and aquaculture value chain. This allowed deep discussions and the identification of pathways to break the persisting challenges of the sector. To promote decent work conditions in the fisheries and aquaculture value chain, panellists and participants recommended the following actions:

- a. **Promote decent work in the fisheries and aquaculture sector through active collaboration and cooperation among stakeholders and the enforcement of better social practices in the fish value chain at a national, regional and international level.** This can be done through the implementation of relevant international instruments and tools such as the ILO conventions and recommendations (i.e., Work in Fishing Convention – C.188) and the IMO standards, among others.
- b. **Continue developing the FAO Guidance on Social Responsibility in the Fisheries and Aquaculture Value Chain,** targeting business actors to facilitate the implementation of better social practices, and supporting governments to improve national frameworks in order to enhance decent working conditions.
- c. **Recognize and highlight women's role in the fisheries and aquaculture sector, particularly in the small-scale fisheries sector.** It is important to respect the rights of women and they must be supported to create their own cooperatives for better organization amongst themselves. Their participation in decision-making processes should be encouraged and facilitated.

4.1.5 Sustainable and resilient maritime supply chains

Panellists and participants further recommended the following actions to promote more sustainable and resilient maritime supply chains:

- a. **Urgently factor climate change considerations into port development, operation and management.** Tackle climate change by providing legal certainty, increasing partnerships and investments, and in particular, recognizing the special needs of some countries in the global climate change challenge.
- b. **Identify the challenges and opportunities offered by the shipping industry's path to decarbonization, enhance knowledge and increase partnerships and investment, while recognizing the special needs of some countries.** Countries should pursue a collaborative approach to transport infrastructure finance and climate change projects. UNCTAD, in cooperation with other relevant, knowledge-based capacity building institutions, is exploring options to develop a Global Port by Port Vulnerability Index to assess and monitor trends and identify the potential for reforms and improvements.

- c. **Explore the potential of South-South collaboration** when exploring sectoral strategies for decarbonization.
- d. **Integrate SIDS into the climate change decision-making process** and grant them special consideration in the context of shipping, transport infrastructure finance, port efficiency, and capacity building, among others, in view of their particular characteristics and the challenges they face, including remoteness, sea level rise, capacity deficit, etc.
- e. **Embrace digitalization and automation of shipping and port operations for transparency and data sharing** to build resilience and ensure efficient maritime supply chain operations. Also, promote inclusive innovation through collaborative projects and knowledge platforms to disseminate information on the trade-related aspects of SDG 14.
- f. **Supplement industry regulations through policy measures and incentives to drive technology development and emission reductions**, while at the same time ensuring shipping activity remains buoyant.

4.1.6 Holistic and coherent action against marine litter and plastic pollution

To reduce marine litter and plastic pollution, panellists and participants recommended the following actions:

- a. **Coordinate global responses** because the problem of plastic pollution requires a collective and coordinated response. This has been acknowledged by countries' commitments at the UNEA-5.2, the Commonwealth Blue Charter,⁷⁴ by the Ministerial Statement of the Informal dialogue on Plastics at WTO,⁷⁵ and through the implementation of the Basel Convention Plastic Waste Amendments.⁷⁶ By recognizing that the problem of plastic pollution affects us all, all nations and stakeholders must be encouraged to take meaningful and complementary actions.
- b. **Intensify multilateral cooperation to accelerate the adoption of a United Nations treaty on ending plastic pollution by 2024**, backed by recommendations from the science-policy panel established at UNEA-5.2.
- c. At the national level, **promote a bolder and more proactive use of economic instruments to support governments' ambitions on plastic waste management and the transition to the circular economy**, including by promoting material substitutes to plastics via differentiated tax strategies, regulations, industrial policy, targeted ODA and green public procurement.
- d. At the multilateral level, **promote the further development of the World Customs Organization's Harmonized System** through the inclusion of special classifications relevant to material substitutes and alternatives to facilitate the adjustment of tariff schedules with the following objectives: 1) promote material substitutes and alternatives to plastics; 2) disincentivize trade in highly polluting, single-use plastics and hazardous plastic materials, control the trade in plastic waste, facilitate the trade of services necessary for waste avoidance, management and recycling; and 3) support the development of export markets for material substitutes and alternatives, including high-quality recycled plastics.

⁷⁴ For the full text, see <https://thecommonwealth.org/bluecharter>.

⁷⁵ The Ministerial Statement of the Informal Dialogue on Plastic Pollution and Environmentally Sustainable Plastics Trade (IDP). For the full text, see <https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/MIN22/12.pdf&Open=True>.

⁷⁶ See www.basel.int/Implementation/Plasticwaste/Amendments/Overview/tabid/8426/Default.aspx.

- e. **Promote further research, development and adoption of material substitutes** that are less polluting to the ocean – particularly, explore the adoption of natural materials, marine by-products and post-harvest agricultural waste, which could help spur innovation, support a more circular economy, and develop new industrial capacities and employment opportunities in developing countries.
- f. **Support evidence-based policy action** by undertaking continuous monitoring and statistical work for measuring the feedstock flows of plastics and non-plastic, as well as end-use products.

4.1.7 Leveraging public and private finance

All the Forum's recommendations will require adequate and timely financing to sustain ocean health, infrastructure and governance to promote a sustainable ocean economy. The costs of current and historical inaction towards investment in the conservation and sustainable use of ocean resources are overwhelmingly high and, alarmingly, increasing by the day. The key finance-oriented suggestions to expand this effort in this regard include:

- a. **Urge governments to establish sustainable ocean development as a national priority** to attract investments from sovereign wealth funds and development finance institutions.
- b. **Promote an enabling environment for attracting sustainable ocean finance and develop attractive incentives** for public and private investment and/or partnerships in the ocean economy.
- c. **Map public and private sources for ocean-oriented finance targeting emerging ocean-based sectors and activities.**
- d. **Promote public–private partnerships to create and better mobilize a full suite of financial tools and approaches, insurance, fiscal and market incentives**, while making the benefits they generate accessible to all, especially to women, youth and marginalized communities.
- e. **Identify ways to de-risk private investment capital, by promoting public and philanthropic funding sources**, ensuring policy and regulatory certainty and promoting reforms and innovative use of policy and finance instruments to catalyse private investment in novel industries and business models.
- f. **Develop government grants or other forms of support (e.g., leveraging concessional finance) to promote ocean economy innovations.**

4.2 Priorities for cooperation set by the 2022 United Nations Ocean Conference

The UNOC 2022, organized in Lisbon, Portugal from 27 June to 1 July 2022 under the overarching theme, “Scaling up Ocean Action Based on Science and Innovation for the Implementation of Goal 14,” adopted a holistic approach that encompassed stocktaking, partnerships and solutions for a new chapter of global ocean action. The Conference addressed many of the deep-rooted problems of our societies laid bare by the COVID-19 pandemic and which will require major structural transformations and common shared solutions that are anchored in the SDGs. In the area of trade, development and food security, the Conference was informed by the recommendations of the 4th United Nations Oceans Forum.

The 2022 UNOC political declaration⁷⁷ recognized that:

“[t]he ocean is an important source of the planet’s biodiversity and plays a vital role in the climate system and water cycle. The ocean provides a range of ecosystem services, supplies us with oxygen to breathe, contributes to **food security, nutrition and decent jobs and livelihoods, acts as a sink and reservoir of greenhouse gases and protects biodiversity, provides a means for maritime transportation, including for global trade** and plays an essential role in sustainable development, a sustainable ocean-based economy and poverty eradication”.

The heads of State and government and high-level representatives at the UNOC 2022, committed to strengthen cooperation at the international, regional, subregional, national and local levels by:

- Informing **integrated ocean management**, planning and decision-making, through improving our understanding of the impact of cumulative human activities.
- Effectively planning and implementing **area-based management tools**.
- **Restoring and maintaining fish stocks** at levels that produce at least maximum sustainable yield in the shortest time feasible.
- **Mobilizing actions for sustainable fisheries and sustainable aquaculture** for sufficient, safe and nutritious food, recognizing the central role of a healthy ocean.
- Recognizing the important role of **indigenous, traditional and local knowledge, innovation and practices**, as well as the role of social science in planning, decision-making and implementation.
- Strengthening the **science–policy interface** for implementing Goal 14 and its targets.
- **Preventing, reducing and eliminating marine plastic litter**, including single-use plastics and microplastics, including through contributing to comprehensive life cycle approaches, encouraging resource efficiency and recycling, as well as environmentally sound waste management.
- **Preventing, reducing and controlling marine pollution** of all kinds, from both land- and sea-based sources.
- Developing and implementing **measures to mitigate and adapt to climate change**.
- Establishing effective **partnerships** and incentivizing the sharing of **good practices** for meaningful interaction, networking and capacity-building.
- Exploring, developing and promoting **innovative financing solutions** to drive the transformation to sustainable ocean-based economies, and the scaling up of nature-based solutions and ecosystem-based approaches.
- **Empowering women and girls** because their full, equal and meaningful participation is key in progressing towards an inclusive and sustainable ocean-based economy and to achieving Goal 14.
- Promoting **scientific and systematic observation and data collection efforts**, especially in developing countries.

⁷⁷ For the full text, see www.un.org/en/conferences/ocean2022/political-declaration.



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Printed at United Nations, Geneva
2308229 (E) – May 2023 – 451

UNCTAD/DITC/TED/2023/1

United Nations publication
Sales No. E.23.II.D.10

ISBN 978-92-1-101474-7



9 789211 014747