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**2025 United Nations Conference to Support the  
Implementation of Sustainable Development Goal 14:  
Conserve and sustainably use the oceans, seas and  
marine resources for sustainable development**

Nice, France, 9–13 June 2025

Item 9 of the provisional agenda\*

**Ocean Action panels**

**Ocean Action panel 4: Preventing and significantly reducing  
marine pollution of all kinds, in particular from  
land-based activities**

**Concept paper prepared by the Secretariat**

*Summary*

The present concept paper was prepared pursuant to paragraph 24 of General Assembly resolution [78/128](#), in which the Assembly requested the Secretary-General of the 2025 United Nations Conference to Support the Implementation of Sustainable Development Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development to prepare concept papers on each of the themes of the Ocean Action panels, taking into account the relevant ocean-related processes of the Assembly and other possible contributions. The present paper relates to Ocean Action panel 4, on the theme “Preventing and significantly reducing marine pollution of all kinds, in particular from land-based activities”. In the paper, the status, trends, challenges and opportunities for the achievement of the relevant targets of Sustainable Development Goal 14 are set out, under the overarching theme of the Conference: “Accelerating action and mobilizing all actors to conserve and sustainably use the ocean”.

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\* [A/CONF.230/2025/1](#).



## I. Introduction

1. Marine pollution remains one of the greatest threats to ocean health, biodiversity and the livelihoods of coastal communities worldwide. The global ocean economy, which is worth \$3 trillion to \$6 trillion and employs over 150 million people,<sup>1</sup> is increasingly threatened by pollution from land and sea.

2. Land-based pollutants, including from domestic and industrial wastewater, manufacturing discharges, chemicals and pharmaceutical compounds, macro- and microplastics and nutrients, are transported by water from source to sea. Sea-based pollution from sources such as shipping, fisheries and aquaculture, sand and mineral extraction, tourism and other ocean industry activities also exacerbates the challenge. In addition, noise, light and sediment pollution poses serious risks to marine species and ecosystems.

3. The present paper presents the status, trends, challenges and opportunities for the achievement of relevant targets of Sustainable Development Goal 14. In the paper, the current state of land- and sea-based pollution is explored, emerging challenges are identified and scalable, action-oriented solutions are highlighted.

4. There have been a number of significant ocean-related multilateral developments since the second United Nations Conference to Support the Implementation of Sustainable Development Goal 14, including the adoption of the Agreement on Fisheries Subsidies (2022); the Agreement under the United Nations Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction (2023); the Kunming-Montreal Global Biodiversity Framework (2022); and the Global Framework on Chemicals – For a Planet Free of Harm from Chemicals and Waste (2023). Other significant developments include the launch of the intergovernmental negotiating committee to develop an international legally binding instrument on plastic pollution, including in the marine environment, the launch of an ad hoc open-ended working group to establish a science-policy panel to contribute further to the sound management of chemicals and waste and to prevent pollution, and the ongoing work of the International Seabed Authority on regulations with respect to activities in the Area. Furthermore, at its sixth session, the United Nations Environment Assembly adopted resolutions on oceans (6/15), water (6/13) and sound management of chemicals and waste (6/9). Looking ahead in 2025 and beyond, the intergovernmental negotiating committee is anticipated to conclude its work at a resumed session, the ad hoc open-ended working group on the science-policy panel is expected to finalize its work at its resumed session, and the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009, will enter into force on 26 June 2025.

5. Many lessons learned, best practices and solutions in preventing and addressing marine pollution can be shared, including those identified from the implementation of the legally binding treaties under the International Maritime Organization (IMO), such as the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto, and as further amended by the Protocol of 1997, and the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter and its 1996 Protocol, as well as the 50 years of work under the regional seas conventions and action plans and the 30 years of work under the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities.

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<sup>1</sup> *Trade and Environment Review 2023: Building a Sustainable and Resilient Ocean Economy beyond 2030* (United Nations publication, 2023).

6. The third United Nations Conference to Support the Implementation of Sustainable Development Goal 14 will be convened in June, halfway through the United Nations Decade of Ocean Science for Sustainable Development and the United Nations Decade on Ecosystem Restoration, with five years remaining to progress on the Sustainable Development Goals and key targets in the Kunming-Montreal Global Biodiversity Framework and the Paris Agreement under the United Nations Framework Convention on Climate Change.

7. The third United Nations Conference to Support the Implementation of Sustainable Development Goal 14 provides an opportunity to accelerate global efforts to conserve and sustainably use the ocean and its resources, including those related to preventing and significantly reducing marine pollution of all kinds. To achieve this, the world must transition from commitments to escalated and accelerated action, weaving together diverse data, knowledge and governance systems, as well as connecting actors and lessons learned.

## II. Status and trends

8. The world is now two thirds of the way to the deadline for achieving the Sustainable Development Goals, the blueprint for a more resilient and prosperous world and the road map out of current global crises. With just five years to go, current progress falls short of what is required. According to *The Sustainable Development Goals Report 2024*, only 17 per cent of the Sustainable Development Goal targets are currently on track for achievement, with nearly half showing minimal or moderate progress, and over one third stalled or regressing. Target 14.1 of the Goals calls for the prevention and significant reduction by 2025 of marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution. This involves addressing sources such as improper wastewater disposal and waste management, agricultural run-off and industrial discharges. Progress towards achieving target 14.1 has been marginal, and, despite global efforts to prevent and reduce marine pollution, significant acceleration is needed. The report also shows that progress has been limited and substantial acceleration is needed on target 6.3, which is aimed at improving water quality by reducing pollution by 2030. The water continuum moves pollutants from freshwater to ocean, which highlights the relevance of adopting a source-to-sea approach in the prevention and reduction of marine pollution.

9. The global ocean economy doubled from \$1.3 trillion in 1995 to \$2.6 trillion in 2020 in gross value added, growing at an average of approximately 2.9 per cent each year. Despite positive economic impacts, this growth can have negative consequences for the environment, including increased marine pollution, carbon emissions and other pressures, all of which will prevent the ocean economy from expanding as it has for the past 25 years.<sup>2</sup> For example, the cumulative impacts of pollution, along with overfishing and the unsustainable management of stocks, could lead to the continued decline of global fishery resources.

10. Human-induced eutrophication, caused by the release of excess nutrients into the ocean due to urban, industrial and agricultural effluents and run-off, can lead to harmful algal blooms, dead zones and loss of biodiversity in aquatic ecosystems. This issue continues to escalate, requiring better assessment of the drivers of eutrophication to inform reduction strategies and policies.<sup>3</sup> Globally, nitrogen use is

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<sup>2</sup> See e.g. Organisation for Economic Co-operation and Development, *The Ocean Economy to 2050* (Paris, 2025).

<sup>3</sup> Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization (UNESCO), *State of the Ocean Report 2024* (Paris, UNESCO, 2024).

extremely inefficient, with over 80 per cent of anthropogenic reactive nitrogen lost to the environment, equating to around 200 million tons<sup>4</sup> of reactive nitrogen lost annually. Similarly, approximately 80 per cent<sup>5</sup> of mined phosphorus used in agriculture is either stored, wasted or lost throughout the food chain. The global cost of phosphorus pollution is staggering, estimated at \$265 billion<sup>6</sup> per year.

11. The growing intensity of industrialization and urbanization in coastal areas, especially in developing economies, has led to a surge in untreated wastewater and industrial discharges into rivers, coasts and marine ecosystems. These discharges can carry heavy metals, toxins, microplastics, nutrients and persistent pollutants that can cause long-term damage to biodiversity, ecosystem services and human health. Under global commitments such as target 6.3 of the Sustainable Development Goals and international initiatives such as the Global Wastewater Initiative,<sup>7</sup> emphasis is placed on the importance of addressing wastewater reuse as a dual solution to pollution and water scarcity. Similarly, the revised European Union Directive on urban wastewater treatment incorporates microplastics and emerging pollutants, serving as a benchmark for global wastewater management. Despite these advancements, many States struggle to enforce regulations, provide technical support, finance wastewater treatment, recover valuable resources from wastewater (such as energy, nutrients and clean water) and implement effective industrial practices. By 2030, the health and livelihoods of 4.8 billion people could be at risk if water quality monitoring is not improved. In 2023, over 2 million water quality measurements were used to report on Sustainable Development Goal indicator 6.3.2, but countries in the bottom half of the global income distribution contributed less than 3 per cent of this total.<sup>8</sup> Regional pollution protocols, strategies and action plans developed within the framework of the Regional Seas Programme facilitate coordinated regional action to address the challenges of wastewater management.

12. Plastic pollution remains particularly alarming, as it constitutes at least 85 per cent of total marine waste,<sup>9</sup> with approximately 11 million tons entering oceans annually, a figure projected to triple by 2040 if no action is taken. Plastic pollution continues to have extensive and detrimental impacts on marine ecosystems, wildlife, human health and economies, impacts that extend beyond the safe operating space for humanity.<sup>10</sup> More than 4,000 animal species are thought to be adversely affected,<sup>11</sup> with interactions including ingestion, entanglement and habitat disruption.

13. In 2022, 62 million tons of global electronic waste (e-waste) were generated, up from 53.6 million tons in 2019. Of this, 22.3 per cent was documented as properly collected and recycled, an improvement from 17.4 per cent reported in 2019. However, the growth in e-waste generation is outpacing recycling efforts by nearly a

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<sup>4</sup> See <http://nora.nerc.ac.uk/id/eprint/500700/>.

<sup>5</sup> Dana Cordell, Jan-Olof Drangert and Stuart White, “The story of phosphorus: global food security and food for thought”, *Global Environmental Change*, vol. 19, No. 2 (May 2009). Available at <https://doi.org/10.1016/j.gloenvcha.2008.10.009>.

<sup>6</sup> Arthur H. W. Beusen and others, “Global riverine N and P transport to ocean increased during the 20th century despite increased retention along the aquatic continuum”, *Biogeosciences*, vol. 13, No. 8 (2016). Available at <https://doi.org/10.5194/bg-13-2441-2016>.

<sup>7</sup> See <https://www.unep.org/topics/ocean-seas-and-coasts/ecosystem-degradation-pollution/wastewater/global-wastewater>.

<sup>8</sup> See [https://www.unwater.org/sites/default/files/2024-08/SDG6\\_Indicator\\_Report\\_632\\_Progress-on-Ambient-Water-Quality\\_2024\\_EN\\_0.pdf](https://www.unwater.org/sites/default/files/2024-08/SDG6_Indicator_Report_632_Progress-on-Ambient-Water-Quality_2024_EN_0.pdf).

<sup>9</sup> United Nations Environment Programme (UNEP), *From Pollution to Solution: A Global Assessment of Marine Litter and Plastic Pollution* (Nairobi, 2021).

<sup>10</sup> Linn Persson and others, “Outside the safe operating space of the planetary boundary for novel entities”, *Environmental Science and Technology*, vol. 56, No. 3 (February 2022). Available at <https://doi.org/10.1021/acs.est.1c04158>.

<sup>11</sup> Third World Ocean Assessment (forthcoming).

factor of five. Improper disposal can have a negative impact on ocean health due to the release of hazardous substances, including microplastics.

14. Successful waste management will also entail the establishment of adequate reception facilities for ship-generated wastes in ports, as mandated under annex V to the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the 1978 and 1997 Protocols, as well as global implementation of the regulatory framework established under the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter and its 1996 Protocol.

15. In the context of the Paris Agreement, nationally determined contributions are central to global climate action, outlining each country's commitments to reduce greenhouse gas emissions and adapt to climate change impacts. While such contributions focus primarily on climate mitigation and adaptation, there is growing recognition of the role that wastewater management plays in these efforts. Improved wastewater treatment can reduce the emission of methane and nitrous oxide, which are potent greenhouse gases, and enhance water quality, benefiting both climate and marine ecosystems. Estimations from the Intergovernmental Panel on Climate Change suggest that the amount of greenhouse gases generated by wastewater is similar to that generated by the aviation industry (approximately 2 per cent of total greenhouse gas emissions).<sup>12</sup> However, recent research has suggested that this figure could be underestimated and that wastewater could actually account for approximately 5 per cent of greenhouse gases.<sup>13</sup> Furthermore, wastewater contains five times more energy (such as biogas, heat and electricity) than is required to treat it.<sup>14</sup> If energy from wastewater were fully utilized globally, more than half a billion people could be provided with power.<sup>15</sup> The nutrients in wastewater globally are enough to meet around 12 per cent of global fertilizer demand,<sup>16</sup> which has a potential value of around \$30 million to \$40 million. Nutrient recovery has the potential to decrease the share of global greenhouse gas emissions from fertilizer production and use, amounting to 5 per cent,<sup>17</sup> along with reducing biodiversity loss and improving access to fertilizer in low-income areas.

16. Several emerging aspects of marine pollution need more attention. Underwater noise from shipping, oil exploration and military activities disrupt marine life, and marine mammals in particular. A growing number of synthetic chemicals (e.g. personal care products, pharmaceuticals and industrial chemicals such as perfluoroalkyl and polyfluoroalkyl substances) are entering marine ecosystems in increasing quantities, with potentially harmful effects on marine ecosystems and human health. Antimicrobial resistance threatens marine biodiversity by disrupting

<sup>12</sup> Intergovernmental Panel on Climate Change, *Climate Change 2022: Mitigation of Climate Change – Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge, United Kingdom of Great Britain and Northern Ireland, and New York, Cambridge University Press, 2022). Available at <https://doi.org/10.1017/9781009157926.004>.

<sup>13</sup> Mojtaba Maktabifard and others, “Net-zero carbon condition in wastewater treatment plants: a systematic review of mitigation strategies and challenges”, *Renewable and Sustainable Energy Reviews*, vol. 185 (October 2023). Available at <https://doi.org/10.1016/j.rser.2023.113638>.

<sup>14</sup> Xiaodi Hao and others, “Energy recovery from wastewater: heat over organics”, *Water Research*, vol. 161 (September 2019). Available at <https://doi.org/10.1016/j.watres.2019.05.106>.

<sup>15</sup> UNEP, *Wastewater – Turning Problem to Solution* (Nairobi, 2023). Available at <https://wedocs.unep.org/20.500.11822/43142>.

<sup>16</sup> Manzoor Qadir and others, “Global and regional potential of wastewater as a water, nutrient and energy source”, *Natural Resources Forum*, vol. 44, No. 1 (February 2020). Available at <https://doi.org/10.1111/1477-8947.12187>.

<sup>17</sup> Yunhu Gao and André Cabrera Serrenho, “Greenhouse gas emissions from nitrogen fertilizers could be reduced by up to one-fifth of current levels by 2050 with combined interventions”, *Nature Food*, vol. 4 (February 2023). Available at <https://doi.org/10.1038/s43016-023-00698-w>.

ecosystems, endangering aquatic species and weakening disease management in marine life, ultimately reducing the health and resilience of ocean habitats. Knowledge gaps regarding these chemicals of emerging concern are vast, and the effects of their interactions with marine ecosystems are complex. Some pollutants cause chronic toxicity and endocrine disruption in aquatic wildlife. Others, when exposures are high enough, can cause acute impacts, including mortality.<sup>18</sup>

17. The United Nations Decade of Ocean Science for Sustainable Development (2021–2030) stresses the need to understand and map land- and sea-based sources of pollutants and contaminants and their potential impacts on human health and ocean ecosystems, so as to develop solutions in order to remove or mitigate such impacts. The challenges identified under the Vision 2030 process of the Decade set ambitious, interconnected goals representing the most immediate needs for ocean knowledge. In 2024, a white paper on challenge 1, understand and beat marine pollution, outlined a set of strategic ambitions to address critical gaps in science, knowledge and solutions needed to achieve a clean ocean.<sup>19</sup> By 2030, the success of this challenge is expected to be demonstrated by the generation of scientifically sound data enabling a holistic understanding of the extent and impact of pollution across the land-ocean continuum.<sup>20</sup>

18 The Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socioeconomic Aspects, is an intergovernmental process aimed at regularly reviewing the environmental, economic and social aspects of the state of the ocean in order to contribute to enhancing the scientific basis for ocean-related policymaking. Under the Regular Process, work is currently being done towards the publication of the third World Ocean Assessment, which will comprise an updated and comprehensive overview of the state of the ocean, covering all environmental, social and economic aspects, including marine pollution, eutrophication and contaminants. The preliminary findings of the third World Ocean Assessment will be presented at the 2025 United Nations Conference to Support the Implementation of Sustainable Development Goal 14.

### **Recent developments in multilateral agreements and governance frameworks**

19. The Agreement under the United Nations Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction, which was adopted on 19 June 2023, applies to areas beyond national jurisdiction, which include the high seas and the international seabed area (the “Area”). Like other maritime zones, areas beyond national jurisdiction are affected by anthropogenic pressures, including pollution. The Agreement recognizes the need to address, in a coherent and cooperative manner, biological diversity loss and the degradation of ecosystems of the ocean due to pollution, including plastic pollution, among other factors. It incorporates a number of general principles and approaches that are directly relevant to marine pollution and addresses several issues that are relevant in this regard. Future area-based management tools, including marine protected areas, may, in geographically defined areas beyond national jurisdiction, restrict activities that commonly lead to sea-based pollution, such as shipping or fishing. Such tools may also contribute to improving the health of ecosystems and

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<sup>18</sup> Zhenyu Tian and others, “A ubiquitous tire rubber-derived chemical induces acute mortality in coho salmon”, *Science*, vol. 371, No. 6525 (January 2021). Available at <https://www.science.org/doi/10.1126/science.abd6951>.

<sup>19</sup> Intergovernmental Oceanographic Commission, “Ambition, action, impact: the Ocean Decade pathway to 2030 – consolidated outcomes of the Vision 2030 process”, 2024.

<sup>20</sup> Vanessa Hatje, Rosemary Rayfuse and others, “Ocean Decade Vision 2030 white papers – challenge 1: understand and beat marine pollution”, 2024. Available at <https://doi.org/10.25607/6m86-s908>.

thus enhance resilience to pollution. In addition, emergency measures may provide a tool for States to address acute pollution events which have caused, or are likely to cause, serious or irreversible harm to marine biological diversity of areas beyond national jurisdiction. The provisions on environmental impact assessments are aimed at preventing, mitigating and managing the impacts, including cumulative impacts, of planned activities on the marine environment. Moreover, through its provisions on capacity-building and the transfer of marine technology, the Agreement is expected to lead to increased access to the latest scientific expertise and marine technology, which can assist States in preventing, reducing and controlling marine pollution more effectively.

20. Following the historic resolution adopted at the resumed fifth session of the United Nations Environment Assembly, in March 2022, the intergovernmental negotiating committee to develop an international legally binding instrument on plastic pollution, including in the marine environment, convened, between November 2022 and December 2024, five sessions, focusing on the development of such an instrument based on a comprehensive approach addressing the full life cycle of plastic, including its production, design, consumption and disposal, and taking into account, among other things, the principles of the Rio Declaration on Environment and Development, as well as national circumstances and capabilities. The intergovernmental negotiating committee will continue its work in 2025, with the aim of concluding negotiations at a resumed fifth session. The final agreement is anticipated to set a framework for international cooperation and action.

21. In its resolution 5/8, adopted at its resumed fifth session, the United Nations Environment Assembly decided that a science-policy panel should be established to contribute further to the sound management of chemicals and waste and prevent pollution, and that an ad hoc open-ended working group would prepare proposals for the establishment of such a science-policy panel. Between October 2022 and June 2024, this open-ended working group convened three sessions focused on developing foundational documents for the panel. The resumed third session of the open-ended working group will be held back to back with the intergovernmental meeting to consider the establishment of the science-policy panel in Uruguay from 14 to 20 June 2025.

22. Adopted on 19 December 2022, the Kunming-Montreal Global Biodiversity Framework calls for a reduction by 2030 of the risks and negative impact of pollution from all sources to levels that are not harmful to biodiversity and ecosystem functions and services, considering cumulative effects (target 7). Target 18 is aimed at identifying, by 2025, incentives, including subsidies, that are harmful to biodiversity; eliminating, phasing out or reforming such incentives with the goal of reducing them by at least \$500 billion per year by 2030; and scaling up positive incentives for the conservation and sustainable use of biodiversity. The Framework is aligned with global efforts to mitigate marine pollution, such as the reduction of single-use and short-lived plastics and the promotion of circular economy practices to reduce waste generation. In addition, it encourages the restoration and protection of ecosystems that are particularly vulnerable to pollution, such as coral reefs and mangroves, and that play critical roles in marine biodiversity and ocean health.

23. The United Nations Convention on the Law of the Sea sets out the legal framework within which all activities in the oceans and seas must be carried out. Pursuant to part XII of the Convention, States have a general obligation to protect and preserve the marine environment. In particular, States are required to take the necessary measures to prevent, reduce and control pollution of the marine environment and take all necessary measures to ensure that activities under their jurisdiction or control are so conducted as not to cause damage by pollution to other

States and their environment. This includes all sources of pollutants, including land, sea and the atmosphere. Notably, 2024 marked the thirtieth anniversary of the entry into force of the Convention. In 2024, in response to a request submitted by the Commission of Small Island States on Climate Change and International Law, the International Tribunal for the Law of the Sea delivered an advisory opinion in which it unanimously determined that anthropogenic emissions of greenhouse gases constituted pollution of the marine environment and that the aforementioned obligations under the Convention were therefore applicable to such emissions.

24. In June 2023, the resumed Review Conference on the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks recommended that States and regional economic integration organizations recognize the links between abandoned, lost or otherwise discarded fishing gear, including ghost fishing, and broader marine pollution challenges, particularly marine debris, including plastics and microplastics. The Conference also recommended enhancing efforts to prevent and mitigate the impacts of all kinds of abandoned, lost or otherwise discarded fishing gear.<sup>21</sup>

25. The General Assembly continued to consider the protection and preservation of the marine environment, including issues of marine pollution, through its annual resolutions on oceans and the law of the sea (see Assembly resolution [79/144](#)) and sustainable fisheries (see Assembly resolution [79/145](#)).

26. Adopted in September 2023, the Global Framework on Chemicals – For a Planet Free of Harm from Chemicals and Waste of the United Nations Environment Programme (UNEP) presents a plan to support States and stakeholders in addressing the full life cycle of chemicals. Through its strategic objectives and associated targets, the Global Framework on Chemicals is aimed at promoting multisectoral and multi-stakeholder engagement and initiatives to enhance the safe and sustainable management of chemicals and waste. Although the Framework is non-binding, it takes due account of other relevant chemicals and waste instruments, agreements and sectors, including health and labour, and possesses the flexibility to take into account new instruments, agreements and activities.

27. The regional seas conventions and action plans under the Regional Seas Programme, which covers over 183 countries, facilitate the implementation of region-specific activities, bringing together stakeholders including Governments, scientific communities, civil society, Indigenous Peoples, local communities and young people to address the accelerating degradation of the world’s oceans and coastal areas through a “shared seas” approach. The development of regional pollution reduction strategies and plans and pollution assessment reports enables more targeted and harmonized regional, national and local responses.

### **III. Challenges and opportunities**

28. The concept paper entitled “Interactive dialogue 1: Addressing marine pollution”, submitted for consideration at the second United Nations Conference to Support the Implementation of Sustainable Development Goal 14,<sup>22</sup> highlights the varying nature of the impacts of pollution on ecosystems and human well-being and underscores that pollution remains a major obstacle to achieving the Sustainable

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<sup>21</sup> See [A/CONF.210/2023/6](#), annex, sect. A.9.

<sup>22</sup> Available at [http://sdgs.un.org/sites/default/files/2022-05/ID\\_1\\_Addressing\\_marine\\_pollution.pdf](http://sdgs.un.org/sites/default/files/2022-05/ID_1_Addressing_marine_pollution.pdf).

Development Goals, with Governments and local authorities struggling to address the issue effectively and in an integrated manner.

### **Main challenges**

29. The challenges identified in 2022 remain today, including the need to strengthen and reinforce the effective implementation of regulatory frameworks, which necessitates improved collaborative efforts and cooperation across all levels of governance. The global nature of marine pollution requires collaborative international efforts. Achieving consensus among States and stakeholders with different priorities, barriers and capacities presents a significant challenge.

30. The transboundary effects of marine pollution make this a truly global challenge that requires coordination across and beyond maritime zones. The lack of coordination, not only among environmental and other authorities that may have roles to play in the implementation of policies and regulations to address marine pollution at the national level, but also between countries, remains a challenge in many regions with regard to both land- and sea-based sources of pollution.

31. Despite a number of new and ongoing initiatives (see the table below), several of which have been endorsed as programmes under the United Nations Decade of Ocean Science for Sustainable Development, the limited availability of the knowledge, data, and technical and human capacity required and insufficient funding remain substantial barriers to addressing the challenges effectively (see the concept paper for Ocean Action panel 2, on the theme “Increasing ocean-related scientific cooperation, knowledge, capacity-building, marine technology and education to strengthen the science-policy interface for ocean health”).

32. Despite positive progress, there are several hurdles to achieving a transformation at the scale and pace needed, including fragmentation of solutions, lack of political attention and prioritization, and insufficient investments.

33. The limited availability of data and the lack of harmonization among stakeholders also hamper action. In some key sectors, engaging the private sector remains a challenge, while in others, it plays a leading and impactful role.

34. Global instruments and multilateral environmental agreements provide governance frameworks for targeted and harmonized action to effectively address many types of pollution, with several developments having arisen since the second United Nations Conference to Support the Implementation of Sustainable Development Goal 14. However, for these to have the intended impact, they need to be not only agreed upon and ratified but also implemented effectively and in a timely manner. Furthermore, tracking the progress of efforts to address pollution remains a challenge.

35. One of the main challenges identified in reducing marine pollution (including plastic pollution) is a lack of appropriate waste management systems to prevent leakages to aquatic environments.

36. Furthermore, the negative consequences of poor water management, including the lack of a source-to-sea perspective, are significant not only for sea-based activities such as fisheries, aquaculture and coastal tourism but also for land-based activities such as agriculture and manufacturing. Transboundary river systems remain pollution hotspots, exacerbating marine degradation downstream. This not only causes environmental damage but also exacerbates economic and social inequalities.

37. Despite international commitments to address these issues, several of which have concluded in the period since the second United Nations Conference to Support the Implementation of Sustainable Development Goal 14, a number of challenges

persist. These include gaps in technical capacity for industrial compliance, inadequate infrastructure for waste and wastewater management (including treatment and recovery of resources), and insufficient financing to conduct operations and maintenance, or to scale up solutions. Industries, particularly small and medium-sized enterprises, often lack incentives and resources to adopt cleaner production technologies or circular economy practices.

38. Many countries have implemented stricter regulations relating to single-use plastic products, plastic use and waste management, as well as initiatives to improve wastewater treatment and reduce agricultural run-off to tackle nutrient pollution. However, challenges remain, including the high and increasing volume of plastic waste, among other things; insufficient infrastructure in some regions; and the need for stronger enhancement and enforcement of existing regulations towards waste reduction, reuse and recycling. There are also large data gaps on pollution which, if addressed, would help to track progress and further direct relevant efforts.

### **Emerging opportunities**

39. Since the second United Nations Conference to Support the Implementation of Sustainable Development Goal 14, waste and wastewater challenges have intensified due to increasing pollution and to gaps in the implementation of international legal frameworks at the national, regional and global levels, such as the protocols adopted under the Regional Seas Programme on the protection of marine ecosystems from land-based pollution. Many countries struggle with enforcing wastewater regulations, aligning national policies with global commitments and mobilizing resources for sustainable wastewater management.

40. The Global Framework on Chemicals introduces the possibility of establishing implementation programmes to provide coherence between existing activities, identify gaps and amplify and accelerate the action required for transformational change.

41. The momentum created by United Nations Environment Assembly resolution 5/14, in which the Assembly established an intergovernmental negotiating committee to develop an international legally binding instrument on plastic pollution, including in the marine environment, appears to have increased the funding being allocated to address plastic pollution, but this is not the case for other pollutants, and the available funding is not evenly distributed across the life cycle of the pollutants. There are opportunities for more efficient coordination among donors.

42. The new science-policy panel to contribute further to the sound management of chemicals and waste and to prevent pollution can help to translate scientific findings into policy action and is expected to work strategically in alignment with the recently adopted Global Framework on Chemicals and numerous multilateral environmental agreements. Negotiators are fine-tuning the details of this new science-policy panel. Once operational, the panel, together with the Intergovernmental Panel on Climate Change and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, will complete a trifecta of global science-policy bodies designed to counter the triple planetary crisis of climate change, nature and biodiversity loss, and pollution and waste.

43. There are also emerging opportunities that may offer scalable solutions to the challenges in addressing marine pollution. Circular resource efficiency approaches, as outlined in the next section, provide actionable pathways for cities, industries and agriculture to optimize resource use, reduce waste and minimize emissions. Nature-based solutions, such as the replantation of mangroves, constructed wetlands and biofiltration systems, can be essential for restoring marine ecosystems and

strengthening biodiversity, while also building resilience to climate change. Such solutions may also be more cost-effective.

44. Financial institutions have been increasing their role in addressing pollution challenges by mobilizing capital and addressing environmental risks in their operations and adopting innovative financing mechanisms, such as blue bonds, blended finance and results-based funding, to support sustainable infrastructure solutions and pollution prevention measures. In addition, financial institutions can create further incentives for compliance with regional and international commitments by integrating environmental, social and governance criteria into lending and investment decisions.

45. Nature-based solutions, particularly those concerning coastal and marine ecosystems, are increasingly being included in updated nationally determined contributions under the Paris Agreement. As at September 2023, 97 out of 148 countries had incorporated coastal and marine nature-based solutions into their nationally determined contributions,<sup>23</sup> reflecting a growing commitment to leveraging natural systems for climate mitigation and adaptation. These solutions often encompass sustainable wastewater management practices that protect and restore marine environments. However, the countries which contribute to 85 per cent of global greenhouse gas emissions did not include wastewater management as part of their mitigation measures within their nationally determined contributions. This reveals a significant opportunity to capitalize, within nationally determined contributions relating to climate mitigation, on the potential offered by wastewater management for reducing greenhouse gas emissions.

46. Community-driven action and the empowerment of local communities also present potential opportunities, including through community education and participation in international negotiations to inform governance and regulatory measures.<sup>24</sup> Increasing public awareness and involving local communities at the local, regional and international levels provide an opportunity to strengthen action aimed at tackling pollution going forward, and to address some of the aforementioned challenges. Further strengthening of international partnerships can also provide an opportunity to tackle transboundary pollution and safeguard shared marine resources.

47. The private sector holds further potential for driving solutions. Public-private partnerships can accelerate innovation, mobilize financing and facilitate the adoption of technologies that reduce pollution at its source. Without the active engagement and collaboration of the private sector, the development and implementation of effective and feasible solutions may prove challenging, as the private sector may act not only as the engine to create solutions but also as a catalyst for behavioural change among industry stakeholders and consumers. These can be supported by trade-related opportunities that embrace the circular economy, such as through business models

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<sup>23</sup> Marine Lecerf and others, *Coastal and Marine Ecosystems as Nature-based Solutions in New or Updated Nationally Determined Contributions* (Ocean & Climate Platform and others, 2023).

<sup>24</sup> Adam Stickney and others, "Global online stakeholder consultation: inputs to Ocean Action panels' concept papers – summary report", October 2024. Available at [https://sdgs.un.org/sites/default/files/2024-10/2025%20UN%20Ocean%20Conference%20Stakeholder%20Consultation%20Summary%20Report\\_0.pdf](https://sdgs.un.org/sites/default/files/2024-10/2025%20UN%20Ocean%20Conference%20Stakeholder%20Consultation%20Summary%20Report_0.pdf).

centred on alternative production solutions. Governments can act as facilitators of positive transition, including by promoting international cooperation.<sup>25</sup>

48. As efforts intensify to prevent and reduce pollution of all kinds, there is an opportunity to move towards more circular economy approaches that prioritize prevention and promote circular goods and services through coherent and effective trade policies. This includes efforts to identify barriers and opportunities for environmentally sustainable and effective non-polluting substitutes and alternatives, in particular those that are based on the traditional knowledge of Indigenous Peoples and local communities and are locally adapted and conducive to sustainable development. Conducive trade policies, such as favourable tariff regimes and non-tariff measures, are also crucial for the diffusion of low-carbon technologies and renewable energy sources. These technologies may not be available locally, especially in developing countries, but are necessary to decarbonize highly polluting ocean industries such as maritime transport.

49. The Agreement on Marine Biological Diversity of Areas beyond National Jurisdiction may provide a valuable opportunity to further strengthen efforts to address marine pollution in areas beyond national jurisdiction, with potential positive effects for other maritime zones as well. The Agreement is aimed at enhancing cross-sectoral cooperation, with likely benefits for addressing marine pollution. Building on the United Nations Convention on the Law of the Sea, the Parties to the Agreement are to cooperate for the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, including through cooperation with and among relevant legal instruments and frameworks and relevant global, regional, subregional and sectoral bodies. The Conference of the Parties to the Agreement is required to promote cooperation and coordination with and among such relevant instruments, frameworks and bodies, including by developing appropriate processes for such cooperation.

50. Noise pollution, including from offshore wind development, can have negative impacts on marine wildlife species. However, these impacts can be significantly reduced through good planning and other measures. In this regard, guidance has been developed under the Convention on the Conservation of Migratory Species of Wild Animals and by other relevant actors. Moreover, the Energy Task Force under the Convention has identified reconciling renewable energy developments with the conservation of migratory species as one of its priorities. In addition, in 2023, IMO issued revised guidelines for the reduction of underwater noise from commercial shipping to address adverse impacts on marine life,<sup>26</sup> and in 2024 it approved an action plan for the reduction of underwater noise from commercial shipping.<sup>27</sup>

51. Several other overarching themes and processes are also relevant to the discussion. The “leave no one behind” principle, enshrined in the 2030 Agenda for Sustainable Development, requires the United Nations to prioritize equity and inclusivity in its work and distinguishes inequalities between countries – such as differences in economic development and climate vulnerability – from those within

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<sup>25</sup> As an example, the ministerial statement of the World Trade Organization dialogue on plastic pollution and environmentally sustainable plastics trade (WT/MIN(24)/14) contains calls for concrete, pragmatic and effective outcomes by 2026, including opportunities to align and harmonize restrictions on single-use plastics; identify gaps in international standards applicable to environmentally sustainable and effective non-plastic substitutes and alternatives; facilitate access to technologies and services required for environmentally sustainable waste management; improve transparency of trade flows of plastics associated with international trade and embedded in traded goods; and better match existing trade-related needs and available assistance to address plastic pollution.

<sup>26</sup> IMO, document MEPC.1/Circ.906.

<sup>27</sup> IMO, document MEPC 82/17, annex 8.

countries, which are now predominant.<sup>28</sup> This principle was reiterated by the General Assembly in 2022, in its resolution 76/300 on the human right to a safe and healthy environment, and in 2024, in the Pact for the Future. In addition, the fourth International Conference on Small Island Developing States, held from 24 to 30 May 2024, agreed on the Antigua and Barbuda Agenda for Small Island Developing States: A Renewed Declaration for Resilient Prosperity.

#### **IV. Action-oriented, pragmatic solutions**

52. Building on the identified challenges and opportunities, the present section highlights pragmatic and scalable solutions to prevent and significantly reduce marine pollution of all kinds. By aligning technical innovation, financing mechanisms and governance frameworks, these solutions demonstrate how Governments and stakeholders, including the private sector, can work together to prevent and reduce marine pollution of all kinds, in particular from land-based sources. It should be noted that further examples of replicable and scalable solutions can be collected, generated and shared. Some broader areas are mentioned below, as are illustrative examples in the table.

##### **Digital transformation to reduce land-based pollution**

53. In February 2024, UNEP unveiled the prototype of the Wastewater Solution Space, a practical, artificial intelligence-powered digital tool designed to drive scalable solutions in wastewater management. This user-driven platform will provide both specialized and non-specialized users with rapid access to actionable wastewater management solutions, financing models and implementation strategies tailored to diverse contexts. UNEP is currently developing a tool called “minimal viable product”, which, once operationalized, will promote meaningful wastewater solutions worldwide. The digital platform of the Global Partnership on Plastic Pollution and Marine Litter is the global hub for crowd-sourced resources and data on plastic pollution and is an exemplar of digital transformation and user-centric access to digital solutions. UNEP will continue to expand and strengthen the functionalities of the platform to drive collaborative change, including a new solutions hub, and to further improve the accessibility of solutions that cater to women, young people and disadvantaged groups, for a just transition.

##### **Industrial transformation through resource efficiency**

54. Industries can be enabled to reduce wastewater discharges, conserve resources and improve environmental performance. For example, the Test Niger project reduced industrial pollution by 36 per cent and catalysed \$4.2 million in private investments. The Sustainable Manufacturing and Environmental Pollution Programme of the Foreign, Commonwealth and Development Office of the United Kingdom of Great Britain and Northern Ireland and the United Nations Conference on Trade and Development (UNCTAD)<sup>29</sup> is funding 23 projects in sub-Saharan Africa and South Asia, deploying £24.6 million to integrate circular economy solutions into manufacturing systems and identify and incubate solutions that address the environmental and health impacts of manufacturing. Solutions include the enhancement of the treatment of wastewater from the textiles and tanneries sectors, the development of biodegradable alternatives to conventional fishing gear to minimize ghost fishing, and the advancement of novel fibres sourced from agriculture

<sup>28</sup> See [A/77/CRP.1](#).

<sup>29</sup> See <https://smepprogramme.org/>.

waste to indirectly reduce the demand for polyester, which is a major source of marine microplastics.

### **Circular solutions for plastic pollution**

55. The SwitchMed programme of the United Nations Industrial Development Organization (UNIDO) and the Global Environment Facility (GEF) integrated programme on plastics demonstrate how industries can adopt circular economy models to valorize plastic waste streams, reduce single-use plastics and strengthen recycling infrastructure. UNEP is leading, with the World Wide Fund for Nature, the implementation of the GEF-funded integrated programme entitled “Circular solutions to plastic pollution”,<sup>30</sup> designed to transition countries towards a circular plastics economy, particularly in the food and beverage sector. This \$96 million programme will be delivered through 15 national child projects and one global child project (Global Platform) in cooperation with the United Nations Development Programme (UNDP), UNIDO and the relevant national environmental agencies.

56. The Sustainable Manufacturing and Environmental Pollution Programme of the Foreign, Commonwealth and Development Office of the United Kingdom and UNCTAD also responds to the circularity challenge by exploring how industries can shift from linear waste systems to resource-efficient, closed-loop models. As an example, the Programme supports the improvement of recycling processes through, for example, the recovery and treatment of wastewater from plastic washing lines at Mr. Green, a plastics recycler in Kenya. Another initiative under the Programme, the FlipFlopi project, combines plastic waste upcycling with the safeguarding of heritage knowledge to transform plastic waste into boats and furniture in the Lamu archipelago, including Lamu Town, a United Nations Educational, Scientific and Cultural Organization (UNESCO) world heritage site in Kenya.

### **Nature-based solutions**

57. Nature-based solutions, such as constructed wetlands and natural vegetation buffers, can enhance industrial wastewater treatment systems by providing cost-effective, scalable approaches to reduce residual pollutants while restoring ecosystems and improving water quality. To support the use of nature-based solutions to prevent and reduce pollution, UNEP, in collaboration with the International Organization for Migration, established a demonstration of a treatment wetland system in Iraq as a replicable, cost-effective and low-maintenance solution to sustain natural wetlands and support agricultural livelihoods, in addition to mitigating serious water scarcity and reducing pollution. Protecting the Iraqi marshes is key to preserving biodiversity, agriculture, livestock, fishing and human health.

### **Financing innovation for pollution reduction**

58. Innovative financing mechanisms, including blended finance, public-private partnerships and green bonds, mobilize resources for industrial upgrades, circular economy systems and wastewater infrastructure.

### **Data-driven monitoring and progress**

59. Digital technologies, such as remote sensing and real-time water quality sensors, improve transparency, accountability and data-driven decision-making for pollution control and management.

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<sup>30</sup> See <https://www.thegef.org/projects-operations/projects/11181>.

## Pollution prevention and management initiatives

<i>Initiative</i>	<i>Partners</i>	<i>Description</i>
OceanLitter Programme	IMO and FAO	GloLitter Partnerships, the RegLitter project <sup>a</sup> and the PRO-SEAS project <sup>b</sup> on prevention and reduction of sea-based marine plastic litter, supporting 30 countries. Supports Member States in tackling, at the national and regional levels, issues related to marine plastic litter from both the shipping and fisheries sectors, through technical assistance in developing and implementing national and regional action plans on marine plastic litter; legal, policy and institutional reform; regional partnerships between countries; training; and pilot projects. Specific programme activities empower women to participate in finding solutions to marine plastic litter and showcase their success.
Voluntary Code of Conduct on the Sustainable Use and Management of Plastics in Agriculture	FAO	<p>Aimed at providing a policy framework in support of the sustainable use of plastics and plastic alternatives in agriculture by assisting policymakers in creating new and strengthening existing policies and strategies, and by providing other stakeholders along the agrifood value chain with recommendations and best practices.</p> <p>The Code is in the development phase, and an update on its status is provided in document COAG/2024/8 of the FAO Committee on Agriculture.</p>
GloNoise Partnership	IMO, GEF and UNDP	Aimed at reducing underwater radiated noise from shipping by facilitating capacity-building in six countries to support national monitoring programmes for defining baselines, stakeholder engagement and the integration of the management of such noise into marine policies.
Nuclear Technology for Controlling Plastic Pollution (NUTEC Plastics), including its Global Marine Monitoring Network	IAEA	<p>Focused on research, development, capacity-building and the implementation of nuclear techniques to tackle plastic upcycling and marine plastics monitoring. Upcycling aspects are addressed by reducing plastic waste volumes through the use of radiation technologies to improve plastic recycling methods and develop bio-based alternatives to single-use, petroleum-based plastics.</p> <p>Marine plastics aspects are addressed by enhancing the capacity of laboratories worldwide to track marine microplastics by providing sampling and analytical equipment along with tailored capacity-building and harmonized methods. As of 2024, 104 laboratories from 100 countries are participating in a global NUTEC network for microplastics monitoring in the marine environment, and 39 countries are developing recycling technology under the NUTEC initiative.</p>
Radioactive effluents into the marine environment	IAEA	Provides guidance based on its safety standards for regulating the release of radioactive effluents into the marine environment. This guidance supports environmental monitoring and surveillance of nuclear facilities, as well as the assessment of radiological impacts on both the public and marine flora and fauna. The IAEA Marine Radioactivity Information System is a global data repository for measurements of radioactivity in seawater, biota, sediment and suspended matter.

<i>Initiative</i>	<i>Partners</i>	<i>Description</i>
Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection	FAO, IMO, IAEA, IOC-UNESCO, International Seabed Authority, UNDP, UNEP, UNIDO, Division for Ocean Affairs and the Law of the Sea, WMO	The Group, composed of independent scientific experts, provides advice to the United Nations system on scientific aspects of marine environmental protection and mechanisms for cooperation, with a view to avoiding duplication of efforts. Examples of recent efforts to address current issues of relevance are: Working Group 40 on plastics and microplastics in the ocean (co-sponsored by IOC-UNESCO and UNEP), Working Group 43 on sea-based sources of marine litter (co-sponsored by FAO, IMO and UNEP) and Working Group 45 on climate change and greenhouse gas-related impacts on contaminants in the ocean (co-sponsored by IAEA, UNEP, IOC-UNESCO, WMO and IMO).
Resource-efficient and cleaner production and transfer of environmentally sound technologies methodologies	UNIDO	Achieve industrial transformation through resource efficiency in order to enable industries to reduce wastewater discharges, conserve resources and improve environmental performance.
Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities: <sup>c</sup> three partnerships	UNEP, IMO, FAO, Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection, WHO, IAEA, AfDB, UNDP, UNEP-Danish Hydraulic Institute, UN-Habitat, IOC-UNESCO, ADB, UK Centre for Ecology & Hydrology, New York University, Compassion in World Farming, Yara, International Fertilizer Industry Association, Research Institute for Humanity and Nature, Ragn-Sells and many other Governments and actors	UNEP provides secretariat services to three global multi-stakeholder partnerships aimed at reducing pollution from source to sea: the Global Partnership on Plastic Pollution and Marine Litter, the Global Partnership on Nutrient Management, <sup>d</sup> and the Global Wastewater Initiative. <sup>e</sup> They convene over 1,000 member organizations, including Governments, civil society, academia and the private sector; facilitate cooperation; and enhance the harmonization of scientific, technical and technological knowledge through their working groups, communities of practice and capacity-building initiatives at the national, regional and global levels. The digital platform of the Global Partnership on Plastic Pollution and Marine Litter, which integrates data and connects stakeholders to guide action on plastic pollution and marine litter, could be replicated for other pollutants.

<i>Initiative</i>	<i>Partners</i>	<i>Description</i>
WTO dialogue on plastic pollution and environmentally sustainable plastics trade <sup>f</sup>	WTO, supported by 50+ stakeholders, including UNCTAD, UNEP, FAO, the International Organization for Standardization, WHO, civil society, academia and the private sector	A total of 82 co-sponsors – representing around 90 per cent of the global trade in plastics – are working towards concrete, pragmatic and effective outcomes by 2026, as called for in the ministerial statement of the dialogue on plastic pollution and environmentally sustainable plastics trade (WT/MIN(24)/14). <sup>g</sup> These include opportunities to align and harmonize restrictions on single-use plastics; identify gaps in international standards applicable to environmentally sustainable and effective non-plastic substitutes and alternatives; facilitate access to technologies and services required for environmentally sustainable waste management; improve transparency of trade flows of plastics associated with international trade and embedded in traded goods; and better match existing trade-related needs and available assistance to address plastic pollution.
Sustainable Manufacturing and Environmental Pollution Programme	UNCTAD, the Foreign, Commonwealth and Development Office of the United Kingdom, SouthSouthNorth, Pegasys	The Programme addresses the environmental and health impacts of the manufacturing sector in sub-Saharan Africa and South Asia, and some of the most pressing challenges associated with plastic pollution. The Foreign, Commonwealth and Development Office of the United Kingdom has committed £24.6 million to deliver research and related interventions to meet Programme objectives. The Programme was commissioned in mid-2019 and will run until October 2026. It funds projects that address direct and indirect causes of ocean pollution by, inter alia, developing biodegradable fishing gear, developing natural fibres from agriwaste and supporting water treatment projects to avoid marine eutrophication.
UNCTAD Ocean Economy and Fisheries Programme	UNCTAD	The UNCTAD Ocean Economy and Fisheries Programme helps countries to integrate sustainability into trade and policy frameworks, ensuring that ocean-based industries contribute to economic growth without exacerbating marine pollution. It promotes trade policies that enable circular economy models, encouraging sustainable production and waste reduction in ocean-linked sectors. In collaboration with the Sustainable Manufacturing and Environmental Pollution Programme, it supports the implementation of pollution control measures through the UNCTAD mandate on marine pollution, strengthening the policy and economic foundations needed to reduce marine pollution at scale. The Oceans Forum on Trade-related Aspects of Sustainable Development Goal 14, held biennially with UNCTAD partners, builds consensus and generates policy recommendations on trade-related aspects of Goal 14, supporting the outcomes of the United Nations Conference to Support the Implementation of Sustainable Development Goal 14.
UNCTAD database on plastics and non-plastic substitutes	UNCTAD	UNCTAD hosts databases on trade in plastics <sup>h</sup> and non-plastic substitutes, <sup>i</sup> providing a data tool to track commercial trends in the global materials system. The tool enables the tracking of trade in novel non-plastic substitutes, such as the growing role of seaweed for non-food applications.

<i>Initiative</i>	<i>Partners</i>	<i>Description</i>
Regional Seas Programme	Regional seas conventions and actions plans, including Regional Seas Programme activity centres, regional nodes and partners	The regional seas conventions and action plans continue to work through agreements and protocols such as those relating to land-based sources, oil spills and dumping to respond to current and emerging pollution priorities. Regional strategies and action plans and regional assessment reports support harmonized action on pollution.

*Abbreviations:* ADB, Asian Development Bank; AfDB, African Development Bank; FAO, Food and Agriculture Organization of the United Nations; IAEA, International Atomic Energy Agency; IOC-UNESCO, Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization; UN-Habitat, United Nations Human Settlements Programme; WHO, World Health Organization; WMO, World Meteorological Organization; WTO, World Trade Organization.

<sup>a</sup> See <https://glolitter.imo.org/>.

<sup>b</sup> See <https://www.thegef.org/projects-operations/projects/11166>.

<sup>c</sup> See <https://www.unep.org/topics/ocean-seas-and-coasts/ecosystem-degradation-pollution/global-programme-action-gpa>.

<sup>d</sup> See <https://www.unep.org/explore-topics/oceans-seas/global-partnership-nutrient-management>.

<sup>e</sup> See <https://www.unep.org/resources/report/global-wastewater-initiative-gwi-response>.

<sup>f</sup> See [https://www.wto.org/english/tratop\\_e/ppesp\\_e/ppesp\\_e.htm](https://www.wto.org/english/tratop_e/ppesp_e/ppesp_e.htm).

<sup>g</sup> Available at <https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/MIN24/14.pdf&Open=True>.

<sup>h</sup> See <https://unctadstat.unctad.org/datacentre/>.

<sup>i</sup> See <https://unctad.org/news/new-data-tracks-global-trade-non-plastic-substitutes>.

## V. Conclusions and recommendations

60. Preventing and significantly reducing marine pollution of all kinds, in particular from land-based activities, requires an integrated approach that combines resource efficiency, circular and nature-based solutions, infrastructure investments, innovative financing and robust governance.

61. The existing framework of regulations and global standards set through various sectoral bodies and international conventions has developed over decades and has been strengthened over the past few years to address the urgency reflected in the 2030 Agenda and the Sustainable Development Goals, including through the adoption of the Agreement on Marine Biological Diversity of Areas beyond National Jurisdiction, which adds to the existing global and regional ocean governance framework. Targeted support must be leveraged to build the capacity to ratify and implement the provisions of relevant governance frameworks.

62. For many kinds of marine pollution, reductions at the source are the most effective action. The engagement of all stakeholders, including the private sector, in marine pollution prevention and reduction is essential at all levels in order to drive change in product design and value chain management and to support investment in circular solutions. Given that pollution is generated from different sectors, varies among different geographies and has cross-sectoral and transboundary impacts, intersectoral coordination and source-to-sea approaches are needed to effectively address marine pollution. This needs to be supported by targeted public education and awareness programmes that also consider behavioural change.

63. To accelerate progress towards agreed goals and targets relating to marine pollution, particularly target 14.1 of the Sustainable Development Goals,

Governments, development partners, financial institutions, the private sector and other relevant stakeholders should prioritize:

- Scaling resource efficiency and cleaner production in cities, industrial sectors and food systems, including agriculture, horticulture and aquaculture.
- Enhancing human, technical and institutional capacity at all levels (from local to global) to promote action on the shared vision of reducing marine pollution of all kinds.
- Scaling up investments in nature-based and innovative solutions as sustainable alternatives for all relevant sources of pollution, including conventional wastewater treatment.
- Promoting effective and coherent governance and legislation to create an enabling political and regulatory environment at the global, regional, national and local levels, including strengthening governance and regional cooperation to effectively implement and enforce obligations.
- Filling knowledge gaps and leveraging robust data management practices, big data and artificial intelligence analytics and digital decision support tools in open-access platforms to improve transparency, accountability, learning and data-driven and evidence-based decision-making.
- Strengthening global to local action by implementing a source-to-sea approach to address pollution.
- Avoiding siloed approaches to preventing and reducing marine pollution, such as interventions with a single thematic focus in isolation.
- Assessing impacts, including cumulative impacts, of pollution, such as chronic and acute effects on human health, marine species and ecosystems, and the integration of such impacts into conservation plans, as well as identifying high-risk areas where marine pollution and migratory marine species or vulnerable ecosystems significantly intersect.
- Aligning international commitments with actionable, scalable pathways and solutions.
- Enhancing the development of regional pollution reduction strategies and action plans, including through the development or updating of legally binding regional pollution-related protocols and agreements through the Regional Seas Programme.

## VI. Guiding questions

64. The following guiding questions may be used to inform the panel:

(a) What national or regional initiatives aimed at reducing marine pollution have been developed or implemented in the past two years, and how can these serve as a model for other countries and regions to accelerate action towards the achievement of target 14.1 of the Sustainable Development Goals?

(b) Regarding the role of the private sector, how can relevant industry sectors scale up resource-efficient and cleaner production practices to reduce marine pollution, including through wastewater treatment and emission reduction?

(c) How can public-private partnerships accelerate investments in pollution reduction technologies, and how can their long-term sustainability and scalability be ensured?

(d) How can nature-based solutions contribute to the mitigation of marine pollution, and what role can Governments, the private sector and civil society play in their implementation?

(e) What capacity-building measures are needed to support the adoption of technology that can contribute to the mitigation of marine pollution? How can partnerships and innovative finance mechanisms be leveraged to support and strengthen capacity-building?

(f) How can Governments enhance governance and the enforcement of domestic laws to effectively reduce marine pollution from land-based sources?

(g) How can the role of international legal instruments in the prevention and reduction of marine pollution be enhanced? What further contribution can they make to coordinating efforts to tackle marine biodiversity loss and pollution, as well as addressing transboundary issues in major river systems, in order to ensure effective source-to-sea policies?

(h) What role can existing platforms such as the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities and the regional seas conventions and action plans play in addressing marine biodiversity and pollution challenges?

(i) How can data-driven tools support monitoring and accountability, and how can such tools play a role in pollution management?

(j) How can the promotion of synergies across multilateral environmental agreements and other existing institutional regulatory frameworks and bodies move from a conceptual approach to an approach that can be operationalized on the ground and supports national- and regional-level implementation?

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