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Ocean Action Panels

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Ocean Action Panel 7: Leveraging Ocean, climate and biodiversity interlinkages

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 7, entitled “Leveraging Ocean, climate and biodiversity interlinkages”. In the paper, the status, trends, challenges and opportunities in leveraging interlinkages between ocean, climate and biodiversity for the achievement of 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”.

I. Introduction

1. The ocean plays a central role in the climate system and climate solutions. It regulates the climate and absorbs thirty per cent of human-generated CO_2 from the atmosphere[1] . Marine ecosystems contribute significantly to the global carbon cycle and climate stability. Coastal 'blue carbon' habitats such as mangroves, tidal marshes, and seagrass meadows not only efficiently sequester carbon but also provide essential breeding, nursery, and feeding grounds for a wide range of marine species, including important fish stocks that underpin fisheries and aquaculture systems. As one of the world's major reservoirs of biodiversity, the ocean contains between 500,000 and 10 million marine species, many of which have yet to be identified. Furthermore, there is a large degree of uncertainty in the number of marine species and thus on marine biodiversity and its implications for key ecosystem services including food production and coastal protection.

2. Yet the ocean and its biodiversity, which humans depend heavily on for food, livelihoods and protection is being altered as a result of the impacts of human activities, including climate change, which is compounding other pressures. Habitats, in particular in coastal areas, are being damaged by the effects of climate change and human activities. There also remains an incomplete understanding of how species shifts driven by climate change affect the functioning of different types of marine ecosystems.

3. Rising ocean temperatures, acidification, and deoxygenation, primarily driven by anthropogenic CO_2 emissions, can accelerate biodiversity loss and undermining marine ecosystem functioning. Indirect drivers such as economic, demographic, and technological changes intensify direct pressures like habitat destruction, overexploitation, pollution, and invasive species, worsening biodiversity loss across ecosystems. Fragmented governance across ocean, biodiversity, water, food, health, and climate frameworks leads to conflicting objectives and inefficiencies, exacerbating cascading environmental impacts.

4. Addressing these challenges of biodiversity loss, climate change causes and impacts, alongside economic resilience must consider the entirety of the ocean-climate-biodiversity nexus , which requires a holistic, coordinated, cross-sectoral approach that integrates marine conservation, sustainable uses and resource management, and climate action.

5. The interlinkages between the ocean, climate, and biodiversity and their critical role in achieving sustainable development have been increasingly mainstreamed in global processes and discussions, including under the auspices of the United Nations Framework Convention on Climate Change (UNFCCC), the Convention on Biological Diversity (CBD), the International Maritime Organisation (IMO) and within the recently

[1] (WMO, 2023)

adopted Agreement under the United Nations Convention on the Law of the Sea on the Conservation of Marine Biodiversity of Areas Beyond National Jurisdiction (BBNJ Agreement). Regional Seas conventions are also important fora to address these interlinkages. The second United Nation Ocean Conferences in 2022 (UNOC2) called for synergized efforts in implementing the SDG 13, 14 and 15. This requires to develop integrated adaptation and mitigation efforts based on science and to achieve SDGs as well as the goals and objectives of the UNFCCC and the Paris Agreement, and of the CBD and the Kunming-Montreal Global Biodiversity Framework, as well as those under the BBNJ Agreement.

II. Status and trends

Trends of ocean warming, deoxygenation and acidification, and sea level rise

6. Recent reports show that ocean warming is happening at an unprecedented pace with the rate of warming accelerating across all depths from the surface down to the abyss[2]. Ocean warming in 2024 has led to new record high ocean temperatures, with the ocean now the hottest it has ever been[3].

7. Observations estimate an accumulated loss of about 2% of the ocean's oxygen inventory over the five decades between 1960 and 2010[4]. Apart from coastal areas where eutrophication is a major cause of anthropogenically driven loss of marine oxygen, ocean deoxygenation is primarily driven by global warming and the associated increase in stratification and reduction in ventilation[5]. Ocean models predict a continued decline in oxygen inventory of 1–7% by the year 2100.

8. The absorption of CO_2 trigger chemical processes that decrease the pH of seawater, a process known as ocean acidification. Since the pre-industrial era, the pH of the ocean has decreased by approximately 30%. In coastal areas, local factors such as upwelling, stratification, freshwater influx and eutrophication can exacerbate acidification, creating "hot spots" of rapid pH change[6]. Further decreases in pH are projected in the future[7] and it is projected that the ocean will become 150 per cent more acidic by the year 2100[8].

9. Increasing ocean temperatures directly account for about 40% of global sea level rise[9]. Over the last 30 years global sea levels have risen by 9cm, with the rate of rising doubled over this period[10] driven largely by the accelerated melting of the Greenland and West Antarctica ice sheets.

[2] IOC-UNESCO, 2024
[3] Cheng, L. et al., 2025
[4] Schmidtko et al., 2017
[5] Oschlies et al., 2018
[6] Cai et al. 2021, https://doi.org/10.1146/annurev-marine-010419011004
[7] Reference to be added.
[8] Add ref.
[9] Reference to be added.
[10] Reference to be added.

Interconnected impacts of ocean warming, deoxygenation and acidification on marine biodiversity

10. Biodiversity loss and climate change amplify each other, weakening ecosystem resilience and reducing the ability of the ocean to sequester carbon, thereby accelerating impacts[11].

11. Large scale ocean warming is resulting in shifting distributions of many species[12] and has the potential to alter the migratory patterns both temporally and spatially of those species that undertake large-scale movements between important habitats, with impacts on coastal communities that depend on ocean resources. These changes have the potential to also result in biological mismatches reducing connectivity and productivity, and associated provision of ecosystem services[13]. These distributional changes have also contributed to an acceleration in the spread of aquatic non-indigenous or invasive species, impacting aquatic ecosystems and fisheries systems[14].

12. The links between ocean warming and coastal eutrophication and associated hypoxia are increasingly evident[15]. Such events result in 'dead zones', which in turn result in mass mortalities, habitat reduction and fisheries disruptions[16].

13. Ocean acidification has the potential to significantly affect marine biodiversity, impacting organisms from microscopic plankton to large predators[17]. Particularly likely to be affected are those organisms that form shells and skeletons, such as corals, mollusks, and certain plankton[18]. Coral reefs, often termed the "rainforests of the sea" due to their rich biodiversity, face the potential loss of structural complexity, threatening the habitats that support numerous marine species and thus reducing ecosystem function[19]. Furthermore, lab-based experiments identify that reducing the pH of seawater can alter the behavior, physiology, and survival rates of non-calcifying species, including fish, potentially affecting predator-prey interactions, reproductive success, and overall ecosystem stability[20].

14. Exposure of biodiversity to risks from climate change is projected to double between 1.5°C and 2°C global warming levels[21] and double again between 2°C and 3°C[22]. This

[11] IPBES nexus assessment: ref to be completed
[12] Pinsky et al. 2020, Gervais et al. 2021
[13] Edwards and Richardson 2004, Bideault et al. 2020, Wilson et al. 2021
[14] Azzurro et al., 2024; Bailey et al., 2020
[15] Cooley et al. 2022
[16] Georgian et al. 2022
[17] Widdicombe et al., 2023
[18] Doney et al., 2020; Orr et al., 2005
[19] Hoegh-Guldberg et al., 2017
[20] Nagelkerken & Munday, 2016
[21] Well established under UNFCC …
[22] Established but incomplete under UNFCC …

presents a growing challenge to biodiversity and the integrity and functioning of ecosystems in terrestrial, freshwater and marine environments[23].

15. Coastal and marine habitats offer coastal protection, shelter for coastal communities, prevent erosion and sand loss. When these ecosystems decline, the ability of coastal areas to withstand extreme events becomes severely compromised and communities become more vulnerable.

Status and trends in international governance processes

16. The interlinkages between the ocean, climate, and biodiversity have been increasingly integrated into global policy frameworks and multilateral processes. The General Assembly has highlighted the link between oceans, climate change and biodiversity in its resolutions on oceans and the law of the sea, including by reiterating its serious concern at the current and projected adverse effects of climate change and ocean acidification on the marine environment and marine biodiversity, and emphasizing the urgency of addressing these adverse effects, considering also the importance of preserving the role of the ocean as a carbon sink.[24]

17. Convention on Biological Diversity and Kunming-Montreal Global Biodiversity Framework. Target 8 of Kunming-Montreal Global Biodiversity Framework (KMGBF), adopted by the Conference of the Parties to the Convention on Biological Diversity at its 15th meeting (CBD COP 15), focuses specifically on minimizing the impacts of climate change on biodiversity and building the resilience of ecosystems to climate change. Specifically, the target calls for minimizing the impact of climate change and ocean acidification on biodiversity and increasing its resilience through mitigation, adaptation, and disaster risk reduction actions, including through nature-based solutions and/or ecosystem-based approaches, while minimizing negative and fostering positive impacts of climate action on biodiversity. Although it deals with biodiversity broadly, it has specific relevance for marine ecosystems and singles out ocean acidification as a key concern. It also has strong interlinkages with other targets of the KMGBF, in particular on spatial planning ,restoration, ecosystem services and the “30x30”target. This reflects not only the cross-cutting relevance of ocean-climate-biodiversity linkages but also the mutual benefits that can be maximized through a synergistic and holistic approach to planning and implementation across these three areas. Decision COP16/22 on Biodiversity and Climate Change also urges to identify and maximize potential synergies between biodiversity and climate action.

18. The BBNJ Agreement, once it enters into force, will provide a framework for action, including by addressing the impacts of climate change on marine biological diversity in the vast areas of the ocean beyond national jurisdiction. The general objective of the BBNJ Agreement is to ensure the conservation and sustainable use of marine biological

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[23] UNFCCC Decision 1/ CMA.5

[24] A/RES/79/144.

diversity of areas beyond national jurisdiction, for the present and in the long term, through effective implementation of the relevant provisions of the United Nations Convention on the Law of the Sea (UNCLOS) and further international cooperation and coordination (article 2). The Agreement acknowledges the need of addressing, in a coherent and cooperative manner, biological diversity loss and degradation of ecosystems of the ocean, due, in particular, to climate change impacts on marine ecosystems, such as warming and ocean deoxygenation, as well as ocean acidification, pollution, including plastic pollution, and unsustainable use (preamble). In accordance with the general principles and approaches set out in the Agreement, its Parties shall be guided by an approach that builds ecosystem resilience, including to adverse effects of climate change and ocean acidification, and also maintains and restores ecosystem integrity, including carbon cycling services that underpin the role of the ocean in climate (article 7(h)). Among the objectives of Part III on measures such as area-based management tools, including marine protected areas, is the objective of protecting, preserving, restoring and maintaining biological diversity and ecosystems and strengthen resilience to stressors, including those related to climate change, ocean acidification and marine pollution (article 17(c)).

19. *UNFCCC, ocean dialogues and the inclusion of ocean action in national climate goals and plans and strategies.* Recognition of the fragmentation of discussions and the interest of many stakeholders in the protection and utilization of ocean resources resulted in Parties of UNFCCC establishing an Ocean and Climate Dialogue at COP25 in 2019 [25]. This was identified as an annual dialogue under the Conference of the Parties at COP26 in 2021 with the aim of fostering ocean-based action by UNFCCC constituted bodies and work streams. COP 27 encouraged Parties to consider, as appropriate, ocean-based action in their national climate goals and in the implementation of these goals, including, but not limited to nationally determined contributions (NDCs), long-term strategies and adaptation communications. The 2023 dialogue selected "coastal ecosystem restoration, including blue carbon" and "fisheries and food security" as the two topics for deep-dive discussions, emphasizing the need of integrating climate adaptation and mitigation action for coastal ecosystems and aquatic food systems into both national and multilateral climate processes.

In the Outcome of the 2023 first Global Stocktake[26], Parties to the Paris Agreement noted 'with concern the pre-2020 gaps in both mitigation ambition and implementation by developed country Parties and that the Intergovernmental Panel on Climate Change had earlier indicated that developed countries must reduce emissions by 25–40 per cent below 1990 levels by 2020, which was not achieved." In the preamble, Parties to the Paris Agreement further underlined "the urgent need to address, in a comprehensive and synergistic manner, the interlinked global crises of climate change and biodiversity loss in the broader context of achieving the Sustainable Development Goals […]". The outcome of the first Global Stocktake also invited Parties "to preserve and restore oceans and coastal ecosystems and scale up, as appropriate, ocean-based mitigation action". In

[25] The Chile Madrid Time for Action https://unfccc.int/documents/210472
[26] UNFCCC decision 1/ CMA.5, 2023, https://unfccc.int/documents/637073

the 2024 NDCs synthesis report of the UNFCCC Secretariat[27] that reported on ocean ecosystems, 12 per cent included reference to human- and climate-induced ocean changes such as acidification, extreme weather events, sea level rise, storms and drought. According to the 2024 report on the progress in the process to formulate and implement national adaptation plans (NAPs),[28] 53% of NAPs identify sea level rise as a significant climate hazard, alongside ocean acidification, saltwater intrusion, and increased sea surface temperatures.

20. *International Maritime Organization.* Discussions are on-going regarding the implementation of the 2023 IMO Strategy on Reduction of GHG Emissions from Ships". Building upon the initial strategy adopted back in 2018 aiming to align international shipping with the long-term temperature goal of the Paris Agreement, the 2030 Strategy now incorporates a net-zero GHG emission goal to be achieved by or around 2050.

The need for integrated ocean, climate, and biodiversity responses

21. Inadequate climate action, together with other unmanaged anthropogenic impacts, exacerbates the deterioration of ocean health, habitat destruction and biodiversity loss and diminishes the ocean's ability to adapt to and mitigate future climate change impacts[29]. Current approaches to managing human activities both on land and in the ocean have failed to acknowledge the full potential of benefits that the ocean and associated marine biodiversity provide because they have been designed and implemented in isolation, at limited scales or without adequate consideration of the interdependencies and interconnections between the ocean, marine biodiversity and the climate and amongst management responses[30]. This deterioration in ocean health compromises the ocean's ability to provide goods and services and act as a climate change mitigator, forming a feedback loop whereby increasing climate change further exacerbates ocean degradation and biodiversity loss, creating a dangerous cycle of environmental decline.

22. However, despite science-based evidence demonstrating the interlinkages and dependencies between ocean, climate change and biodiversity, until recently policy action to address anthropogenic pressures have often remained focused on individual sectors. Synergy and alignment in ocean, climate and biodiversity actions that leverage the interlinkages between Goals 14, 13 and 15 and other SDGs are critical to break this cycle[31].

[27] Available here https://unfccc.int/process-and-meetings/the-paris-agreement/nationally-determined-contributions-ndcs/2024-ndc-synthesis-report

[28] UNFCCC (2024). Progress in the process to formulate and implement national adaptation plans. Note by the secretariat. FCCC/SBI/2024/23. Available at https://unfccc.int/documents/641839.

[29] UNOC3 Secretariat BN note.

[30] IPBES Nexus report, provide better referencing.

[31] Para 19 UNOC3 Secretariat BN.

III. Challenges and opportunities in leveraging interlinkages between ocean, climate change and biodiversity and synergies in advancing Sustainable Development Goal 14 and Goals 13 and 15

Climate change mitigation

23. *Mainstreaming of ocean-based mitigation action*. Whilst the ocean-climate-biodiversity interface has benefited from accrued attention, further discussions are needed in multilateral fora to mainstream ocean-based mitigation action across sectors and share experience of implementation at national level.

24. *'Carbon Dioxide Removal' (CDRs) and interlinks with marine biodiversity*. Since net zero greenhouse gas emissions targets have become a keystone of climate policy, there has been increasing debate about the need to actively remove carbon dioxide from the atmosphere or referred to as 'carbon dioxide removal' (CDR) in addition to reducing emissions[32]. In marine systems, proposed CDR approaches that are currently being studied comprise biologically based approaches, such as coastal blue carbon ecosystem restoration, large-scale seaweed cultivation, and ocean fertilization to increase phytoplankton productivity, and chemically based approaches involving the manipulation of carbonate chemistry, mostly through ocean alkalinity enhancement (OAE) and the electrochemical removal of CO2 from seawater, with its subsequent collection and geological storage. These techniques have not yet proven their efficiency to capture CO_2, while a few have proven to be counterproductive or inefficient, such as ocean fertilization. They may have have potential negative, transboundary impacts on ecosystems, climate, socio-ecosystems and human activities. More research is needed before considering small or large scale deployment of these techniques, put aside the restauration of natural ecosystems.

25. *Ecosystem-based approaches and nature-based solutions.* It is estimated that one third of the climate mitigation needed to meet the goals of the Paris Agreement could be provided by Nature-based Solutions[33]. In addition, ecosystem services from Nature-based Solutions focused on climate could offer promising economic prospects, with $170 billion estimated global benefits[34].

26. *Offshore renewable energy*. Offshore renewable energy will play a key role in decarbonising our economies in the coming decades. To be sustainable, the expansion of renewable energy developments should respect commitments made to a healthy and biologically diverse marine environment. The lack of comprehensive knowledge about the impact of offshore renewable energy on the marine environment currently hampers its development.

[32]IPCC, 2022[33] UNEA5/Res.5
[33] UNEA5/Res.5
[34] https://iucn.org/our-work/nature-based-solutions

27. *Decarbonisation of the maritime sector*. Synergies between decarbonization and measures to reduce pollution from ships such as clean air policies in shipping could be leveraged. For instance the development of new low-carbon fuels and new propulsion modes would benefit both climate and the marine environment.

28. *Marine-based CDR (mCDR)* is not explicitly included in mitigation scenarios for climate change. This is due to scientific uncertainties including on the carbon cycle itself, which limits assessment of the effectiveness and environmental risks of individual approaches. Models can assist in determining the effectiveness and safety of mCDR approaches. Further research could be considered in controlled environments –lab experiments, with no deployment on field. Should be assessed : (i) carbon-related parameters (permanence, additionality, efficacy) (ii) risks and potential negative impacts on marine ecosystems, socio-economical and human activities ; (iii) validation methods (measurement, monitoring, verification) and engineering parameters (scalability, costs, energy demand, resources inputs ; (v)as the impacts on the climate system. Field experiments, even at small scale, should only be considered in relation to the precautionary approach and with a strict regulatory framework such as the one developed by the London Convention/London Protocol – which has developed an assessment framework for ocean fertilization activities allowing only legitimate scientific research

29. *Acting against deoxygenation to the benefice of marine biodiversity.* Ocean deoxygenation must be recognized as one of multiple climate stressors. It is essential to reduce greenhouse gas emissions that cause atmospheric and ocean warming for restoring the ocean's oxygen and minimizing the impacts of deoxygenation. Specific steps to slow and reverse deoxygenation will vary among locations depending on the cause of the problem, cooccurring stressors and locally specific capacities and demands. Challenges remain in unifying research, management and policy actions in the coastal and open ocean across biology, geochemistry and physics, across problems of warming, acidification and deoxygenation, and across academic, industry, government and regulatory sectors. Some of the specific steps are strongly interlinked with marine biodiversity issues. They include the reduction of land-based nutrient inputs that exacerbate oxygen loss in coastal waters and semi-enclosed seas and the inclusion of climate change effects in developing nutrient reduction strategies. Others are linked with the exploitation of marine living resource, including the adoption of marine spatial planning and fisheries management strategies addressing deoxygenation vulnerabilities and the protection of affected species and habitats. These steps can also be enhanced and facilitated by promoting global awareness and the exchange of information about ocean deoxygenation through global, regional and local efforts.

30. *Food from the ocean.* Fisheries and in particular aquaculture have a lower carbon footprint than many land-based animal food production systems. They still hold significant growth potential and can play an important role in climate change mitigation by providing low-carbon and high-quality nutrition to meet the needs of a growing global population.

Climate change adaptation

31. *Protecting the cryosphere.* Melting cryosphere impacts inland water cycles and leads to rising sea levels, both of which directly affects humans. Adaptation in water management and cooperation are needed, particularly in transboundary basins, based on a source to sea approach.

32. *Vulnerability and resilience of Small Island Developing States and low-lying coastal areas*. For some small island developing States and low-lying coastal areas, sea level rise may make land uninhabitable, requiring planned relocation initiatives. The rise in sea levels not only leads to loss of life, threatens human security, and causes material impacts but also poses a risk of loss of heritage, culture, tradition, statehood, and dignity. Similarly, sea-level rise can result in security risks for both individuals and States. Without immediate and ambitious action se-level rise could lead to local ecosystems and biodiversity loss and force the displacement of inhabitants.

33. *Adapting fisheries and aquaculture to safeguard food security.* Aquatic food systems are highly vulnerable to climate change, facing increasing risks such as rising water temperatures, ocean acidification, oxygen depletion, and more frequent or severe extreme weather events. These changes threaten the productivity, sustainability, and economic viability of the aquatic food sector, with potentially far-reaching nutritional, economic, and geopolitical consequences, particularly for those countries and communities most dependent on fisheries and aquaculture. Adaptation strategies are essential for achieving long-term sustainability of aquatic food production and value chains under climate change.

34. Interlinkages with other Sustainable Development Goals: example of Goal 5. Human movement is often influenced by interconnected factors, such as human security, economic opportunities and climate and environmental degradation. Response measures must take into account interlinkages across Goals. It is well established that climate change has a gender inequality dimension[35]. The major role of women and gender equality in achieving Sustainable Development Goal 14 is also well documented[36]. Recent studies highlighted that the climate crisis is making gender inequality worse in developing coastal communities[37].

Protecting and restoring ocean ecosystems as a win-win for ocean, climate and biodiversity

[35] https://www.unwomen.org/en/news-stories/explainer/2022/02/explainer-how-gender-inequality-and-climate-change-are-interconnected
[36] UNOC3 Secretariat BN.
[37] https://climate.leeds.ac.uk/the-climate-crisis-is-making-gender-inequality-worse-in-developing-coastal-communities/#:~:text=Sea%2Dlevel%20rise%2C%20storm%20surges,directly%20affected%20by%20climate%20change

35. Habitats such as seagrasses, salt marshes and mangroves play a vital role in climate regulation and climate change mitigation by storing carbon in the seabed. New approaches to forecasting and expanded modelling efforts identify that ocean-based mitigation actions could contribute 12% of the emissions reductions required by 2030 to keep warming to less than 1.5 ºC[38][39]. Along with habitats such as reef systems, they also contribute to enhancing biodiversity, filtering water, and preventing coastal erosion[40][41][42].

36. Despite their ecological significance, these marine ecosystems have faced widespread decline worldwide, prompting the need for intensified conservation and restoration efforts. Achievable actions that can assist in building resilience are available and deployable and if implemented before 2030 can substantially assist in improving the resilience of marine ecosystems[43][44].

37. The UN Decade of Ecosystem Restoration[45], and the UN Decade of Ocean Science for Sustainable Development and initiatives such as the International Partnership for Blue Carbon and the International Coral Reef Initiative[46] are underway to revive these ecosystems, thereby contributing to efforts addressing the climate and biodiversity crisis.

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[38]Trebilco, R., Fleming, A., Hobday, A.J. et al. Warming world, changing ocean: mitigation and adaptation to support resilient marine systems. Rev Fish Biol Fisheries 32, 39–63 (2022). https://doi.org/10.1007/s11160-021-09678-4[39]Schipper et al., 2022: Climate Resilient Development Pathways. In: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 2655–2807, doi:10.1017/9781009325844.027.[40] Fourqurean, J., Duarte, C., Kennedy, H. et al. Seagrass ecosystems as a globally significant carbon stock. Nature Geosci 5, 505–509 (2012). https://doi.org/10.1038/ngeo1477

[39]Schipper et al., 2022: Climate Resilient Development Pathways. In: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 2655–2807, doi:10.1017/9781009325844.027.[40] Fourqurean, J., Duarte, C., Kennedy, H. et al. Seagrass ecosystems as a globally significant carbon stock. Nature Geosci 5, 505–509 (2012). https://doi.org/10.1038/ngeo1477

[40] Fourqurean, J., Duarte, C., Kennedy, H. et al. Seagrass ecosystems as a globally significant carbon stock. Nature Geosci 5, 505–509 (2012). https://doi.org/10.1038/ngeo1477

[41] Lee et al. Reassessment of mangrove ecosystem services. Global Ecology and Biogeography, 23: 726-743 (2014). https://doi.org/10.1111/geb.12155

[42] Eddy et al., Global decline in capacity of coral reefs to provide ecosystem services (2021). 10.1016/j.oneear.2021.08.016

[43] Ward et al. 2022

[44] Ann et al., Marine Biodiversity and Climate Change: Multidimensional Approaches for "The Ocean We Want" by 2030 (2024). In: Leal Filho, W., Ng, T.F., Iyer-Raniga, U., Ng, A., Sharifi, A. (eds) SDGs in the Asia and Pacific Region. Implementing the UN Sustainable Development Goals – Regional Perspectives. Springer, Cham. https://doi.org/10.1007/978-3-031-17463-6_117

[45] FAO, IUCN CEM and SER. 2021. Principles for ecosystem restoration to guide the United Nations Decade 2021–2030. Rome, FAO.

[46] Margaux Hein, Elizabeth Mcleod, Tries Razak, Helen Fox 2022. MEETING 30 BY 30:

38. Substantial knowledge gaps still remain in ensuring restoration efforts are effective, emphasizing the necessity to fill these gaps promptly in order to effectively contribute to rebuilding marine life and ensuring the sustainability of the ecosystem services they provide.

Governance challenges and opportunities

39. *Institutional gaps and policy incoherence hinder effective actions across the ocean-climate-biodiversity interlinkages*. Institutional gaps in ocean-climate change-biodiversity governance arise from fragmented approaches and overlapping but uncoordinated mandates, which hinder effective policy implementation and cohesive action. The lack of coordination among relevant institutions exacerbates these challenges, leading to inefficiencies and missed opportunities for integrated and sustainable management that meet the ocean-climate change-biodiversity goals. Policies and actions that reflect the interconnectedness of the ocean, climate and biodiversity are imperative[47]. Existing policies and approaches arising from sectoral and narrow perspectives have resulted in misaligned, duplicative and inconsistent governance and have failed to address direct and indirect drivers of change[48]. There is an urgent need to bridge these gaps by strengthening coherence and synergies among climate, biodiversity, and ocean-related frameworks. Coordinated capacity-building and technical assistance interventions can offer opportunities to strengthen human and institutional capacity, promote inclusive and integrated approaches that leverage the interlinkages between ocean-climate change-biodiversity action, and ensure the retention and utilization of existing capacities to achieve long-term goals.

40. *Advancing integrated ocean management can help build institutional coherence and improve policy alignment*. Integrated ocean management approaches such as marine spatial planning, enabled by harmonizing policies across sectors, can help building institutional bridges and clarifying governance frameworks between sector-specific policies relevant to ocean use and conservation at the national level.

41. *Reinforcing inclusive governance frameworks is key to addressing the interlinked challenges.* Inclusive governance must recognize and incorporate the knowledge, practices, and stewardship of indigenous peoples and local communities, small-scale fishers and fish farmers, civil society organizations, and the scientific community. Their engagement is vital to achieving SDG 14 ,13 and 15. Strengthening inclusive governance contributes to more equitable, knowledge-informed, and resilient responses to interconnected climate, ocean, and biodiversity challenges.

THE ROLE OF CORAL REEF RESTORATION. International Coral Reef Initiative. https://icriforum.org/wp-content/uploads/2022/12/Hein-McLeod-et-al.-2022-Reef-Restoration-White-Paper.pdf

[47] UNOC3 BN para 25

[48] IPBES, better referencing needed.

42. *Leveraging multilateral instruments is essential to expedite cohesive global responses*. The BBNJ Agreement marks a major opportunity to integrate the ocean-climate-biodiversity interlinkages into measures to conserve and sustainably use marine biodiversity in nearly two thirds of the ocean. The Kunming - Montreal Global Biodiversity Framework has catalyzed new political attention and commitment to the conservation and sustainable use of marine and coastal biodiversity, and to the fair and equitable sharing of benefits from the use of genetic resources. They provide important opportunities to ensure that biodiversity actions are aligned with the implementation of the 2030 Agenda. In line with the KMGBF, Parties to the Paris Agreement also emphasized "the importance of conserving, protecting and restoring nature and ecosystems towards achieving the Paris Agreement temperature goal, including through enhanced efforts towards halting and reversing deforestation and forest degradation by 2030, and other terrestrial and marine ecosystems acting as sinks and reservoirs of greenhouse gases and by conserving biodiversity, while ensuring social and environmental safeguards"[49]. Moreover, the 2024 UNFCCC ocean dialogue stressed that the next round of NDCs, due in February 2025, provides an opportunity for Parties to enhance their ocean-based mitigation and adaptation efforts – noting that nature-based solutions should not be a substitute for rapid and sustained emissions reductions.

43. *Exploring financial incentives for maritime decarbonization is important*. Emissions trading system or new financial mechanisms to provide incentives for compliance with the decarbonization objectives of the maritime, trade and leisure sectors are opportunities to be looked at, in accordance with the objectives set by the Decarbonization Strategy adopted within the framework of the International Maritime Organization (IMO) in 2023. In this regard, the IMO has a key role to play in ensuring that climate action is implemented by all actors of the maritime sector.

44. *Ocean acidification continues to receive insufficient policy attention and investment.* Monitoring remains limited in many regions, and its impacts are not yet fully integrated into national biodiversity or climate strategies. Although both SDG Target 14.3 and KMGBF Target 8 call for action, many countries face capacity and data limitations that hinder effective implementation and progress tracking. Failure to address ocean acidification risks undermining broader goals for marine ecosystem resilience and sustainable use. The Antigua and Barbuda Agenda for SIDS (ABAS) specifically highlights the need for strategies to address ocean acidification, which has severe implications for biodiversity and fisheries.

Financing ocean, climate and biodiversity action

45. Mobilizing finance for Goal 14 and investing in sustainable ocean-based economies will be pivotal to transforming the global economy for greater sustainability while restoring ocean health. Studies suggest that nearly $175 billion per year is needed to achieve Goal

[49] Para. 33.Reference to para 63(d) of the GST decision

14 by 2030, but less than $10 billion was allocated to this goal between 2015 and 2019.[50] Compared with other Goals, Goal 14 remains the most underinvested Goal[51]. The increase in public and private funding for ocean health and the sustainable use of ocean resources has not succeeded in filling in the ocean finance gap. In some instances, the interlinkages between ocean, biodiversity and climate change directly feed funding gaps. For instance, a 2024 FAO study revealed that the climate change adaptation finance gap specific to the aquatic food sector for developing countries is estimated at around USD 4.5 billion per year[52].

46. Due to overlapping priorities and limited resources, ocean, climate and biodiversity are sometimes competing for financing. It is important to optimise the co-benefits and synergies of funding targeting the biodiversity and climate crises in a way that also benefits the ocean[53].

47. On top of financing gaps, some of the financial flows are further hampering the achievements of ocean, climate and biodiversity objectives. For instance, private sector financial flows that are directly damaging to biodiversity are estimated at $5.3 trillion, and public subsidies incentivizing such activities, distorting trade and increasing pressure on natural resources are estimated at approximately $10.7 trillion per year[54]. Redirecting these financial flows would constitute a major opportunity to fund ocean, climate and biodiversity actions.

48. The economic impacts of biodiversity loss and climate change vary between countries and regions, with higher relative impacts in developing countries where there are also higher barriers to mobilizing sustainable financial flows. While domestic government spending remains the largest share of finance for nature conservation, international public funding can play a catalytic role especially for LDCs and SIDS.

IV. Action-oriented solutions

Science-based policy making

49. Progress in marine science, research, and technology plays a critical role in conserving and restoring marine ecosystems, thereby bolstering their resilience and capacity to sustain live and livelihood as well as shield coastal communities.

50. Monitoring systems for the ocean, climate system and marine biodiversity such as the ‘Global Ocean Acidification Observing Network’ (GOA-ON),Ocean Biodiversity Information System

[50] Add ref (from secretariat UNOC3 BN)
[51] UNOC 3 BN para 50
[52] FAO.2024. The fisheries and aquaculture adaptation finance gap. https://openknowledge.fao.org/handle/20.500.14283/cd1588en .
[53] Ref KMGBF
[54] IPBES, further reference is needed , summary for policy makers of the transformative change assessment

(OBIS) of IOC-UNESCO , Global Ocean Observing System (GOOS), and the FAO Fisheries and Marine Ecosystem Model Intercomparison Project (FishMIP) provide the data and information required to increase knowledge on the interlinkages and ensuring data-driven decision-making. These platforms also play a vital role in facilitating transdisciplinary research and ocean education and literacy. Based on the best available science developed and shared by these initiatives, organizations are able to derive series of practical tools such as voluntary guidelines, toolboxes and strategic guidance documents to assist and inform of not only decision-makers but other relevant stakeholders.

51. A newly gained understanding about the ocean carbon cycle is critical to meet the societal challenges posed by climate and ocean change as recognized in international frameworks and conventions such as the UNFCCC, the Agenda 2030, and the KMGBF. However, the landscape of ocean carbon science at the international, regional and national level is vast. Many research activities are addressing different parts of the carbon cycle with fewer efforts attempt to assess the changes of the ocean carbon cycle across different ecosystems and the pools and fluxes of carbon between them. This integrated perspective of the ocean carbon cycle, accounting for the different and changing forms of ocean carbon and including carbon reservoirs, fluxes and transports, is crucial to achieve the objectives and goals of a multitude of scientific programmes.

52. Assessments like the World Ocean Assessment and those prepared under IPCC and IPBES provide comprehensive scientific evaluations that inform policy decisions, including in relation to the interlinkages between ocean, climate change and biodiversity. Established by the UN General Assembly, the Regular Process, through its World Ocean Assessments (WOAs), provide a synthesis of the latest science available on the state of the world's ocean and the social, economic and cultural activities that take place in relation to the ocean. The WOAs provide key information of use by decision-makers for achieving sustainable management of the ocean and are intended to provide support to ocean-related international processes. The General Assembly has noted the importance of ensuring that assessments such as the World Ocean Assessment and those prepared under IPCC and IPBES support one another for greater synergy and complementarity. The IPBES Global Assessment Report on Biodiversity and Ecosystem Services to be published in 2028 will comprise a cross-chapter box on oceans.

53. Forecasting tools for ocean sectors are increasingly being recognized as solution for adaptive planning and targeted mitigation actions under national and regional strategies. Marine heatwaves, harmful algal blooms and associated ocean deoxygenation, ocean acidification and ocean warming are identified threats to most countries, disrupting fishery, aquaculture and tourism-based livelihoods and increasing risks to health, ongoing food security, and local economies with estimated annual economic losses exceeding millions of dollars. Moving beyond projections estimated under fixed scenarios, there is a need to develop multi-hazard early warning and early action systems that facilitate the forecasting of disruptive events. A number of countries have been implementing forecasting systems for coral bleaching[55][56], ocean acidification events[57]

[55] Spillman et al. 2013, https://doi.org/10.1002/joc.3486
[56] Lui et al. 2018, https://doi.org/10.3389/fmars.2018.00057
[57] Mogen et al. 2024, https://doi.org/10.1038/s41561-024-01593-0

and research initiatives underway working towards deployable systems for harmful algal blooms[58] and marine heatwaves[59].

54. Global frameworks such the UN Decade of Ecosystem Restoration[60] and the UN Decade of Ocean Science for Sustainable Development as well as initiatives such as the International Partnership for Blue Carbon and the International Coral Reef Initiative[61] can play a vital role in further reinforcing the science-to-policy interface and facilitating concrete actions based on priorities and tools developed by science.

Ecosystem-based approaches and nature-based solutions

55. Ecosystem-based adaptation and nature-based solutions offer promising perspective for synergized ocean, climate and biodiversity actions. For instance, the ecosystem approach to fisheries (EAF)[62] and to aquaculture (EAA)[63] can be leveraged to reduce the vulnerability of aquatic food systems and boost their resilience to climate change. In addition, ecosystem-based adaptation and nature-based solutions can also return significant economic benefits. For example, it is estimated that between 10 and 40 jobs are supported per $1 million invested in nature-based approaches[64].

56. Multilateral organizations remain the key platforms for the development and mainstreaming of ecosystem-based adaptation and nature-based solutions across scales and sectors within respective mandates. Intergovernmental consultations on nature-based solutions are undertaken by the UNEP. The CBD is elaborating guidance and tools for the design, implementation and scaling-up of nature-based solutions and ecosystem-based approaches to climate change mitigation and adaptation. Initiatives like the SIDS Coalition for Nature also aim to integrate nature-based solutions into climate action, enhancing resilience and promoting sustainable development. The IUCN has developed a global Standard for Nature Based Solutions to inform their design, implementation and evaluation and supports governments in mainstreaming nature-based solutions in national policies and strategic plans[65].

57. To ensure that ecosystem-based adaptation and nature-based solutions contribute to all dimensions of sustainable development by delivering not only environmental but also socio-economic benefits, their development should ensure the integration of issues such as gender, information management and monitoring capacities, national policies and existing legal frameworks, and diversified livelihoods.

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[58] Zahir et al. 2024, https://doi.org/10.1016/j.aquaculture.2024.741351
[59] Smith et al. 2024, https://doi.org/10.1016/j.pocean.2024.103404
[60] FAO, IUCN CEM and SER. 2021. Principles for ecosystem restoration to guide the United Nations Decade 2021–2030. Rome, FAO.
[61] Margaux Hein, Elizabeth Mcleod, Tries Razak, Helen Fox 2022. MEETING 30 BY 30: THE ROLE OF CORAL REEF RESTORATION. International Coral Reef Initiative. https://icriforum.org/wp-content/uploads/2022/12/Hein-McLeod-et-al.-2022-Reef-Restoration-White-Paper.pdf
[62] FAO. 2003. http://www.fao.org/3/Y4470E/y4470e00.htm#Contents
[63] FAO. 2010. http://www.fao.org/3/a-i1750e.pdf
[64] UNEP, 2021.
[65] https://portals.iucn.org/library/node/49070

Governance and integrated ocean management

58. Integrated approaches incorporating planning and governance for use of coastal landscapes and seascapes are effective for addressing complex sustainability challenges for ocean, biodiversity and climate change. Inter-agency coordination at all levels, including through regular dialogue and by co-developing projects, is required to achieve coherent results that maximize impacts and avoid resource competition. It is also important that ocean-climate-biodiversity stakes are mainstreamed into relevant decisions, initiatives or agreements so as not to work in silos.

59. Addressing interlinkages would gain from co-designing with a variety of actors and institutions using processes and approaches that acknowledge and address trade-offs and facilitate and strengthen enabling conditions and synergies. The public and private sectors are cooperating within the IMO on the establishment and entry into force of a robust regulatory framework driving a globally effective and equitable progressive green transition of the shipping sector from 2027 onwards[66], with positive impacts expected for both climate and biodiversity.

60. A concrete way to address ocean, climate and biodiversity interlinkages would be to integrate biodiversity knowledge, nature values and climate action into overarching policy frameworks such as marine spatial planning, sustainable ocean plans and other integrated ocean management approaches.

61. Approaches supporting integrated ocean management are researched on, developed and mainstreamed at global, regional, national and local levels. The Marine Spatial Planning (MSP) Global 2.0. initiative supported by the IOC-UNESCO and the European Commission has engaged in creating and sharing expert knowledge in the integration of climate change into "climate-smart" maritime spatial plans[67]. In 2023, the International Council for the Exploration of the Sea (ICES) held a virtual workshop on "Climate Change Considerations in Marine Spatial Planning"[68] and ICES Annual Science Conference 2024 featured a session dedicated to "Accounting for climate change in Marine Spatial Planning: Experiences and lessons learnt"[69]. Academia also extensively engaged with the challenge of integrating climate change in ocean planning[70]. Together with UNEP and the European Commission, the IOC-UNESCO is also developing a guideline on Biodiversity Inclusive Marine Spatial Planning[71]. Academia further

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[66] https://www.gov.uk/government/publications/cop-26-clydebank-declaration-for-green-shipping-corridors/cop-26-clydebank-declaration-for-green-shipping-corridors
[67] https://www.mspglobal2030.org/fr/pem-intelligente-face-au-climat/
[68] https://www.ices.dk/community/groups/Pages/WKCCCMSP.aspx
[69] https://www.ices.dk/events/asc/2024/Pages/Theme-session-I.aspx
[70] https://www.researchgate.net/profile/Charles-Ehler/publication/341138653_Integrating_climate_change_in_ocean_planning/links/5ebd503f92851c11a867a355/Integrating-climate-change-in-ocean-planning.pdf
[71] https://www.mspglobal2030.org/biodiversity-inclusive-marine-spatial-planning/

explored how MSP and other area-based conservation measures could support biodiversity objectives[72][73].

62. Sustainable Development Goal 14. c. target on implementation and enforcement of international sea law can also contribute to actions leveraging the ocean-climate-biodiversity nexus. For example, as recognized by the International Tribunal for the Law of the Sea in its Advisory Opinion concerning the obligations of State Parties to the United Nations Convention on the Law of the Sea ("UNCLOS") with regard to climate change, States have the obligation to take all necessary measures to prevent, reduce and control pollution from anthropogenic GHG emissions and excess energy stored in the atmosphere and absorbed by the ocean. The Tribunal also recognized that States have the general obligation to protect and preserve the marine environment, including from climate change impacts and ocean acidification. Where the marine environment has been degraded due to anthropogenic GHG emissions and excess energy, this obligation may call for measures to restore marine habitats and ecosystems, both to maintain the mitigation function of ocean ecosystems as carbon sinks and to build ecosystems' resilience, a form of adaptation.

63. In addition, the implementation of the BBNJ Agreement will provide a framework for action, including by addressing the impacts of climate change on marine biological diversity in the vast areas of the ocean beyond national jurisdiction [74].

64. At the first UN Ocean Conference held in June 2017 at UN headquarters in New York, close to 1,400 voluntary commitments for concrete action to advance implementation of SDG 14 were made by governments, the United Nations system, civil society organizations, academia, the scientific community, and the private sector. A number of voluntary commitments reported to contribute to both SDG 14 and SDG 13 on climate action. The registry of the ocean commitments managed by UN Department of Economic and Social Affairs offers a pool of solutions to address ocean challenges and leveraging the crucial interlinkages between SDG14 and SDG13 and 15. Effective implementation of these voluntary commitments at local, subregional, regional and global level through partnerships and capacity building is therefore vital. The nine thematic multi-stakeholder Communities of Ocean Action (COAs) launched by the UN continue to mobilize new voluntary commitments and collaborate with each other on bringing different actors from coral reef, ocean acidification, marine ecosystem conservation, science and sustainable blue economy together to amplifying impacts of their initiatives. Strengthening the COAs offers effective avenues to catalyze future actions addressing the ocean-climate-biodiversity interlinks.

65. Initiatives and platforms supporting experience-sharing catalyze action. For instance, since its inception, the UNFCCC ocean dialogue has become a vital forum under the UNFCCC process for Parties and observers to share experiences and exchange good practices on ocean-based

[72] https://www.frontiersin.org/journals/marine-science/articles/10.3389/fmars.2023.1271397/full
[73] https://www.sciencedirect.com/science/article/pii/S0308597X23001823
[74] https://www.sciencedirect.com/science/article/abs/pii/S0308597X24004299#:~:text=The%20BBNJ%20Agreement%20is%20the,protection%20and%20climate%20change%20governance

mitigation and adaptation solutions. [75]. The 2023 dialogue selected “coastal ecosystem restoration, including blue carbon” and “fisheries and food security” as the two topics for deep-dive discussions based on a wide consultation, and during the dialogue over 250 case studies were highlighted by participants[76]. The UN Open-ended Consultative Process on Oceans and the Law of the Sea, a subsidiary body of the General Assembly, has also provided a forum for exchanging experiences on topics relevant to ocean and climate change by focusing its discussions over the years on marine renewable energies; the impacts of ocean acidification on the marine environment; the effects of climate change on oceans; and sea-level rise and its impacts.[77]

Resources mobilization and capacity building

66. Financial and economic policy reform are required to meet the needs of finance systems that are already being reshaped to respond to climate change and biodiversity loss. It is also critical for enhancing understanding of, and the ability to leverage and mobilize, equitable financial flows that support multiple co-benefits across ocean, climate change, and biodiversity.

67. Innovative financial and economic mechanisms should be encouraged. In the field of climate, financial enablers designed to promote decarbonization of energy systems include financial and economic instruments such as reporting and disclosure frameworks that identify the risks of climate change to financial systems and businesses and provide for more accurate calculation of greenhouse gas emissions[78]. Such frameworks are moving beyond being voluntary, being applied nationally and integrated into multi-lateral agreement reporting mechanisms including nationally determined contributions under the Paris Agreement. Similar approaches are being developed for biodiversity[79] and integrated into nature-positive frameworks at national levels. The benefits of concepts valuing the contribution of the environment to the economy and the impact of the economy on the environment have also been recognized. They include frameworks such as Natural capital accounting (NCA), implemented through the UN coordinated System of Environmental Economic Accounting (SEEA).

68. To address financial gaps at the ocean-climate-biodiversity nexus, international public financial institutions and development banks play a critical role. However, public funding alone is not sufficient. Mobilizing private sector finance is essential to meet the scale of investment required. Innovative public-private and multilateral funding mechanisms such as the Global Environment Facility (GEF) and the Green Climate Fund (GCF) can bridge this gap. Instruments such as blended finance and catalytic public contributions can help unlock significant private investment.

69. In the face of complex, interlinked challenges, mobilizing and channeling resources for capacity-building actions is instrumental. Strengthening capacity-building efforts with a focus on specific technical and institutional capacities is essential to advancing improved nexus governance approaches.

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[75] https://unfccc.int/topics/ocean#Case-studies
[76] https://unfccc.int/documents/631689
[77] https://www.un.org/Depts/los/consultative_process/consultative_process.html
[78] TCFD 2021, https://www.fsb-tcfd.org/publications/
[79] TNFD 2024, https://tnfd.global/publication/recommendations-of-the-taskforce-on-nature-related-financial-disclosures/

70. Investing in scientific knowledge for coastal resilience, and in capacity building is essential for addressing immediate risks and strengthening community resilience against ocean-related hazards, including those impacting aquatic food production and livelihoods. This requires a comprehensive approach that integrates disaster risk reduction with climate change adaptation. Loss and damage can come from extreme events like increasingly frequent floods and hurricanes due to human-driven climate change, as well as from onset events like sea level rise and ocean acidification, largely caused by climate change. Providing countries with support through capacity-building, financial resources, data and technology and partnerships, is essential for strengthening institutional and community resilience against ocean-related hazards and preventing, reducing, and managing the impacts of climate-related loss and damage.

V. Conclusion

71. Ensuring the conservation and sustainable use of the ocean and its resources and the achievement of SDG 14 requires the identification of trade-offs and synergies with Goals 13 and 15. Scientific knowledge should be used to propose evidence-based policy options. Harnessing financial and technological resources through multi-stakeholder and cross-sectoral partnerships will help address the challenges in leveraging the interlinkages.

72. Improved governance approaches across ocean, climate and biodiversity can help respond to interlinked and compounding challenges by focusing on policies, institutions actors and actions that promote integration, inclusion, equity and accountability, and coordinated and adaptive approaches[80].

73. Synergies between ocean, climate and biodiversity offer significant opportunities to further advance Goal 14 and Goals 13 and 15 and sustainable development in general. Co-benefits between climate, biodiversity and ocean actions should be encouraged across all sectors concerned. Integrated actions benefiting all three Goals are being researched on, tested, implemented and promoted across sectors and levels. However, further leveraging these interlinks will also require addressing significant remaining obstacles, including knowledge and capacity gaps, financial shortcomings and enduring policy and governance fragmentation.

74. Upcoming international events and fora, including the UNFCCC COP30, CBD COP17, the 4th International Conference on Financing for Development present major opportunities to reinforce or further develop synergetic ocean-climate-biodiversity actions.

VI. Guiding questions

75. The following guiding questions may be used to inform the Panel:

[80] IPBES nexus report, summary for policy makers, D1: https://zenodo.org/records/15017206

On ocean-climate-biodiversity interlinkages

a) What is needed to further strengthen the role of the ocean and biodiversity in climate change mitigation and adaptation through UN processes, including the, NDCs, NAPs, NBSAPs, etc.?

b) How can climate and biodiversity goals and targets be included into ocean-related international fora and organizations such as the IMO, the FAO, the ILO, the WTO, and how can SDG14 targets be further integrated into climate and biodiversity discussions?

c) What is needed to increase the recognition of coastal ecosystems as assets, to increase investments, and improve processes to protect and restore them?

d) What is needed to facilitate the use and application of multiple knowledge systems to fill gaps in understanding and to design and implement inclusive, equitable and sustainable practices and management frameworks?

e) How can we empower and unlock the full potential of vulnerable coastal communities, including small-scale fishers and fish farmers, in scaling up climate adaptation and mitigation actions and serving as stewards of biodiversity? What are their most pressing adaptation needs, and what key barriers must be addressed to enable the implementation of available ocean-based climate solutions at a larger scale across sectors and regions that leverage the full potential of the natural systems they depend upon?

On the expected outcomes from the Panel discussions

f) How can the thematic panel support Parties in the inclusion of ocean-based measures in their NDCs to enhance climate ambition?

g) How can the dialogue of UN Ocean Conferences be further strengthened to provide more concrete actions for addressing ocean stressors, including climate change?

h) How can the discussions and outcomes of UNOC3 on ocean-climate-biodiversity interlinkages be effectively carried forward to drive synergies and impactful action in upcoming major global events and fora, including the UNFCCC COP30, FAO 37th session of Committee on Fisheries (COFI37), CBD COP17, BBNJ Agreement Preparatory Commission, MEPCs?