DOSI
DEEP-OCEAN STEWARDSHIP INITIATIVE

POLICY BRIEF
November 2023

Incorporating Deep-Ocean Biodiversity into Climate Change Policy

Key Messages

- Deep-ocean biodiversity underpins climate stability by sequestering carbon and regulating the global carbon cycle.
- Human disturbance of deep-ocean biodiversity diminishes the ocean's capacity to remove carbon from the atmosphere.
- It is essential to incorporate protection of deep-ocean biodiversity into UNFCCC policy.

Biodiversity in the Deep Ocean Helps Regulate Earth's Climate

Life in the deep ocean (200 meters or more below the surface) plays a central role in the marine carbon cycle by fixing, transferring, storing, and sequestering carbon from surface waters, forming the largest carbon reservoir on the planet. These processes have allowed the ocean to absorb 90% of excess heat and 25% of CO_2 released into the atmosphere by human activities. Their resilience depends on maintaining high productivity and diversity of species and ecosystems capable of performing these critical functions.

Invertebrates on Seamount 7, Costa Rica Margin. While often overlooked, the deep ocean contains a wide range of biodiversity critical to planetary health. Image courtesy of Schmidt Ocean Institute, Costa Rican Deep Sea Connections. Brightened for visibility.

Including Protection of Deep-Ocean Biodiversity Will Improve Climate Change Policy

Climate change, biodiversity and the ocean need to be addressed together, not separately. Protecting biodiversity in the deep ocean represents a nature-based solution that complements other efforts to limit the increase of global temperature to the Paris Agreement 1.5°C target. High biodiversity strengthens:

- The resilience of the deep ocean to climate change impacts
- The potential for climate change adaptation and mitigation
- Options for ocean-based solutions to the climate crisis

Major Threats to Deep-Ocean Biodiversity and the Carbon Cycle

- **Climate change impacts** including ocean warming, deoxygenation, and acidification.
- **Carbon release and habitat destruction** associated with deep-seabed mining, high seas/bottom fishing, and deep oil and gas extraction.
- **Waste disposal and contamination** including plastics, organic pollutants, mine tailings, etc.
- **CO_2 disposal** in the deep ocean, e.g., via iron fertilization and the sinking of macroalgae, crop waste, and wood waste.

75% of EEZ Area Is Deep Ocean

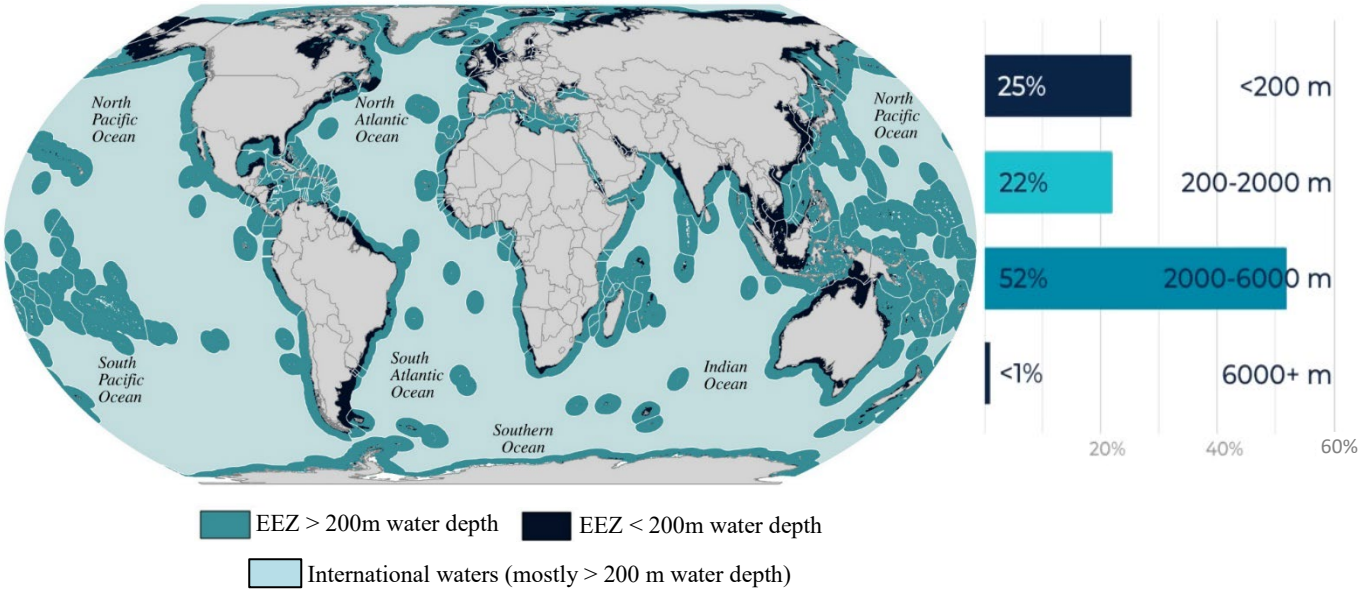

Figure 1: Global Exclusive Economic Zones (EEZs). Map (left) compares deep ocean area in national EEZs (dark teal) to shallow water area in national EEZs (dark blue). International waters are represented by light teal. Bar graph (right) shows the fraction of total EEZ area at different water depths. EEZs for 135 out of 194 States Parties to the Paris Agreement include deep ocean, indicating that many UNFCCC states have key opportunities to include deep-ocean biodiversity in climate policy. Figure credit: (left: Amon et al. 2022; right: Ocean Discovery League).

Opportunities to Incorporate Deep-Ocean Biodiversity into UNFCCC Policy

Deep-ocean biodiversity protection can be incorporated into climate policy through direct **mechanisms under the UNFCCC, harmonization of UNFCCC policy** with other relevant policy frameworks and by **extending UNFCCC actions** to areas beyond national jurisdiction. Addressing biodiversity in areas within and beyond national jurisdiction through the UNFCCC can help **transcend the zonal approach of UNCLOS** as well as the national focus of the UNFCCC regime, creating more coherent regulations across the high seas, international seafloor, EEZs and territorial waters. The following mechanisms will be especially useful for incorporating deep-ocean biodiversity into climate change policy.

Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs).
Climate-positive measures include:

- Create and/or expand enforced Marine Protected Areas (MPAs) with climate change-adapted management plans that include monitoring and evaluation of deep-ocean species and habitats.
- Establish 'no take zones' to restore biodiversity.
- Facilitate the recovery of whales and deep-ocean seafloor habitats such as coral and sponge gardens impacted by fisheries.
- Maintain the integrity of mesopelagic fishes.
- Account for climate change in all fisheries management.
- Prevent the release of seafloor carbon by carefully regulating (or prohibiting) disturbance such as bottom trawling and deep-seabed mining.
- Avoid damage to natural carbon cycle processes from CO_2 removal interventions.

Global Stocktake (GST). The GST should include ocean biodiversity as a recognized category relevant to climate change adaptation and mitigation and broaden the approach of the UNFCCC to actions in support of the Paris Agreement by extending to areas beyond national jurisdiction.

Loss and Damage Mechanism. Deep-ocean biodiversity is damaged by extreme events such as marine heat waves as well as slow onset impacts including deoxygenation and acidification. This damage harms people through impacts on livelihoods, food security and climate change resilience. Losses can be reduced by mobilizing expertise on risk management, including preventative efforts, appropriate finance, technology and capacity building, and development of innovative approaches.

Ocean and Climate Change Dialogue. The Ocean and Climate Change Dialogue underlines the need to break down the traditional siloing of ocean and climate governance. Attention to deep-ocean biodiversity within the Dialogue can achieve further integration. Incorporating protection of deep-sea biodiversity and how waters within as well as beyond national jurisdiction can be considered within the UNFCCC could be a focal topic for the 2024 Ocean and Climate Change Dialogue.

Alignment with the BBNJ Agreement. As of October 2023, 81 States Parties to the Paris Agreement have also signed the BBNJ Agreement, substantially increasing opportunities for co-benefits between climate and biodiversity policy. The BBNJ Agreement provides tools to support the achievement of shared objectives under UNFCCC and BBNJ while also fostering harmonization, such as through provisions calling for the BBNJ Scientific and Technical Body to draw on advice emanating from other relevant legal instruments. Pathways for exchange of expertise between the scientific and technical bodies of the UNFCCC, the IPCC, and initial institutional modalities of the BBNJ Agreement could support further coordination.

Ocean-Climate Investment. Biodiversity-positive climate solutions include eliminating offshore oil and gas extraction, expanding marine conservation and recovery, and decarbonizing ship transport. It will be important to minimize biodiversity loss in an expanding deep blue economy and in climate mitigation activities in the deep ocean. It is also essential to invest in deep-ocean biodiversity research, including monitoring and assessment of climate change impacts.

A coral and sponge community seen near the Aleutian Islands during Dive 07 of the Seascape Alaska 3 Expedition in July of 2023. Image courtesy of NOAA Ocean Exploration, Seascape Alaska.

Prepared by DOSI members:

Susanna Lidström, Lisa Levin, Pavanee Annasawmy, Isabel Baker, Maria Baker, Fuad Bateh, Narissa Bax, Tremaine Bowman, Joachim Claudet, Ana Colaço, Elva Escobar, Patricia Esquete, Christine Gaebel, Brandon Gertz, Jonatha Giddens, Kristina M. Gjerde, Michelle Guraieb, Elizabeth Hetherington, Ana Hilário, Nathalie Hilmi, Henk-Jan Hoving, Juliette Jacquemont, Daniel Jones, Anna Metaxas, Telmo Morato, Naidu Sa, Sarah Seabrook, Pradeep A. Singh, Frederic Sinniger, Eulogio Soto, Torsten Thiele, Anesti Vega, Michael White, Joana R. Xavier and Moriaki Yasuhara

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About DOSI:

The Deep-Ocean Stewardship Initiative is a global network of experts that integrate science, technology, policy, law and economics to advise on ecosystem-based management of resource use in the deep ocean and strategies to maintain the integrity of deep-ocean ecosystems within and beyond national jurisdiction.

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Contact us: DOSIcomms@gmail.com

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