



T7 Task Force Climate and environment

POLICY BRIEF

SAFEGUARDING THE BLUE PLANET – EIGHT RECOMMENDATIONS TO SUSTAINABLY USE AND GOVERN THE OCEAN AND ITS RESOURCES

21.03.2022

Mirja Schoderer, German Development Institute (DIE), **Henry Bittig** Leibniz Institute for Baltic Sea Research Warnemünde (IOW), **Françoise Gaill** CNRS Institute for ecology and environment (INEE), **Kristina Gjerde** Senior High Seas Advisor, IUCN Global Marine and Polar Programme, **Sheila JJ Heymans** European Marine Board (EMB), **Birgit Klein** Federal Maritime and Hydrographic Agency (BSH), **David Obura** CORDIO East Africa, **Torsten Thiele** Institute for Advanced Sustainability Studies (IASS), **Sebastian Unger** Institute for Advanced Sustainability Studies (IASS), **Martin Visbeck** GEOMAR Helmholtz Centre for Ocean Research Kiel, and **Anna-Katharina Hornidge** German Development Institute (DIE)

Executive Summary

Over 30% of the world's population lives within 100 km of the oceanic coast. More than three billion people rely on fishing and other ocean-related livelihoods. The ocean is a biodiversity hotspot and moderates the climate, having absorbed around 40% of the world's total carbon emissions. Oceanscapes provide an essential cultural good, offer recreational opportunities, health benefits, artistic inspiration and an entire cosmology and way of life for indigenous communities. However, anthropogenic pressures have seriously impacted the ocean and threaten its ability to provide human societies with the required climatic and ecosystem conditions for life on earth. The German G7 presidency has proposed a G7 "Ocean Deal" for the sustainable use, protection and effective governance of the ocean and its resources. Several ongoing global ocean governance processes require strong multilateral leadership and close alignment between the G7, in particular in this period of serious international tensions following the Russian invasion of Ukraine. At the One Ocean Summit in February 2022, global leaders have put forth first commitments to make 2022 a decision year for the ocean. Building on the final declaration of the summit and the UK G7 Ocean Decade Navigation Plan, we highlight that a G7 "Ocean Deal" should include provisions for 1) ambitious ocean governance to safeguard ocean health and climate (in the G7's own waters and through leadership in international settings), 2) improving ocean observation, data infrastructure and knowledge sharing, and 3) financing the transition towards more sustainable interactions with the ocean. Specifically, we recommend that G7 states:

- 1a. Eliminate national subsidies that contribute to overfishing and push to finalize the related WTO agreement; step up international cooperation, financial & technical assistance to prevent IUU fishing.
- 1b. Reduce marine debris through a comprehensive global agreement on plastic pollution.
- 1c. Pause deep sea mining until risks are better understood and a transparent, inclusive and accountable institutional structure is in place that guarantees the effective protection of the marine environment.
- 1d. Expand marine protected areas in line with the proposed goal of at least 30% by 2030, and accelerate work in the coming months to successfully finalize negotiations for a legally binding instrument to conserve and sustainably use marine biological diversity in areas beyond national jurisdiction (BBNJ).
- 1e. Fully recognize the importance of the ocean-climate nexus and strengthen the ocean dimension in key climate negotiations.
- 2a. Adopt a legal framework and binding commitments for a sustained and shared global coordination of ocean observations and infrastructure on marine data, compliant with FAIR and CARE principles.
- 2b. Ensure long-term, guaranteed funding, clear institutional affiliations, coordinated and integrated data products to enable continuous, comprehensive observations supporting policy monitoring & evaluation
- 3a. Redesign and scale up ocean finance by increasing funding of early-stage, nature-positive and science-based opportunities, and large-scale investment into zero-carbon, resilient and nature-based coastal blue infrastructure, and by integrating ocean criteria into sustainability finance frameworks (EU Taxonomy, Task Force on Climate-related Financial Disclosures (TCFD), Taskforce for Nature-related Financial Disclosures (TNFD)).

Challenge

1) Ambitious ocean governance and political change to safeguard ocean health and climate

Without urgent global action and strong leadership from the G7 countries to stem current and emerging threats at the source, **overfishing**, the effects of **ocean warming and acidification**, **(plastic) pollution** and yet unknown consequences of resource extraction including **deep sea mining** threaten ocean health and undermine global efforts to **protect marine biodiversity**. At present, nearly 90% of global marine fish stocks are fully exploited or overfished, while 35.4 billion USD are globally spent on fisheries subsidies each year (Skeritt & Sumaila 2021). In addition, up to 26 million tons of fish are caught illegally each year (around a quarter of the estimated total annual catch), undermining national and regional efforts to manage fisheries sustainably and threatening small-scale fisheries in developing countries (Pauly & Zeller 2016). Marine debris, made up of macro and micro plastics largely from land based sources, derelict fishing gear and abandoned vessels, presents a persistent pollution problem, threatens marine life, compromises coastal habitat and threatens human health through bioaccumulation in fish and seafood.

A political consensus is forming that **at least 30%** (30-50%, according to the most recent IPCC report) of the world's ocean **should be protected** from fisheries, mining etc. by 2030 to meaningfully safeguard marine biodiversity. However, global governance efforts are afflicted by **fragmented governance** and **short term management goals**. At present, only 3% of the ocean lies within a highly protected zone and only 7.5% enjoy any kind of protection. Within areas beyond national jurisdiction (ABNJ), which cover 65% of the ocean surface and 95% of its volume (De Santo et al. 2019), the legal regime to establish marine protected areas (MPAs) is still under development. Ocean ecosystems are further threatened by potential long-term effects of growing ambitions for resource extraction incl. deep sea mining and possible future geoengineering in the ocean, e.g. ocean fertilization or ocean alkalization. The International Seabed Authority (ISA) – established by UNCLOS to manage mineral resources in ABNJ to the benefit of humankind – is working to adopt a regulation enabling future exploitation activities by 2023 despite a **profound lack of knowledge of how to control risks**. This rush is taking place despite significant concerns from [scientists, the fishing industry, business, political and religious leaders, Pacific islanders and the conservation community](#).

2) Improving ocean observation, data infrastructure and knowledge sharing

Ocean observations provide information about the state of the ocean and on the atmospheric system (e.g. climate and weather) and therefore constitute an essential public good. They enable services that safeguard human lives and livelihoods by contributing to the monitoring of oceanic heat waves, sea level rise, carbon levels and storage, fish stocks, biodiversity, and marine life. This data is required for hazard warning systems, to calculate oxygen and carbon budgets for climate models and policy, and to model and predict resources and biodiversity changes. Various national, regional, and international efforts seek to expand observation stations and networks to either include new (biological, chemical, and/or physical) parameters that improve the usefulness of ocean observations for climate predictions or to close observation gaps (e.g. in the Arctic). This is needed to assess, e.g., to what extent the capacity of the ocean to absorb carbon is affected by ocean acidification and warming. Without this information, climate models

might overlook ocean-related tipping points that affect the validity of international climate targets and the effectiveness of ecosystem-based adaptation measures to the extent that global scenarios and targets need to be reconfigured entirely (IPCC 2022). Reliable ocean observations also allow for the monitoring of progress and the assessment of policy effectiveness for biodiversity protection, climate change mitigation, and sustainable development. However, expanding, operating and maintaining ocean observation systems is highly cost-intensive and requires continuous funding to securely produce and process the time series data required by various models. At the moment, ocean observations frequently rely on **unsustainable, project-based, discontinuous funding** and suffer from **weak institutional coordination**, due to which **ocean data is often dispersed across numerous platforms and lacks interoperability**, limiting its capacity to reliably feed global climate and ecosystem models and to inform political processes and decision-making.

3) Financing the transition towards more sustainable interactions with the ocean

Financing for sustainable ocean action is **limited, dispersed and dwarfed by historic funding of unsustainable ocean activities**, including fossil fuel subsidies supporting overfishing, which contribute to ocean degradation (Laffoley et al. 2021). The Organisation for Economic Co-operation and Development (OECD) puts the share of Official Development Assistance (ODA) provided for the sustainable development of the Blue Economy from 2013 to 2018 at an average of 2.9 billion US dollars per year (1.6 per cent of total ODA). There is some philanthropic funding but the overall private sector finance of sustainable ocean interactions is still small. Furthermore, there is **no dedicated ocean finance institution**, such as an Ocean Sustainability Bank, and whilst there have been recent funding commitments through “coalitions of the willing” for instance for forests at UNFCCC COP26 there has been no commensurate commitment for ocean solutions (De Noon et al. 2021). Development Banks such as the World Bank and the Asian Development Bank have recently launched blue finance initiatives but these need to be integrated with efforts such as the Decade for Ocean Science (Claudet et al. 2020) to develop a broader ocean finance architecture that supports a rapid transition and provides entry points for ocean technology innovation for sustainability and for significant investments into the protection of blue natural capital within and beyond national borders.

Proposals

G7 countries collectively govern 28% of global EEZs, with five out of the eight largest national EEZs belonging to G7 countries. G7 countries are responsible for a fourth of the cumulative CO2 emissions. They allocate some of the largest budgets to ocean science and therefore collectively hold the vast majority of global ocean science capacity in relation to human resources and physical research infrastructure. The G7 are thus well-positioned to lead by example on their national ocean agendas so that others follow suit.

1) Governance and political change for ocean health and climate

1a. Eliminate subsidies that contribute to overfishing and prevent IUU fishing. The World Trade Organization has been charged with negotiating rules to prohibit unsustainable fishing subsidies since 2001 but has yet to reach an agreement. The 12th WTO Ministerial Meeting, which will take place 13-17 June 2022, should be used to **finalize an agreement on curbing harmful fishing subsidies**. In addition, G7 members that allocate major funds to enhance the capacity of vessels and ports (e.g. the EU, USA and

Japan) need to **lead by example and phase out subsidies that directly contribute to environmental harm**. High-sea fishing activities may need to be sharply curtailed and national capacities enhanced in developing countries, in order to strengthen coastal small-scale fisheries while safeguarding the health and resilience of ocean species and ecosystems. To prevent Illegal, Unregulated and Unreported (IUU) fishing, better international cooperation, financial support and technical assistance for monitoring and surveillance at sea and at ports where catch is landed are essential, for example through the ratification and implementation of the Agreement on Port State Measures (PSMA).

1b. Reduce marine debris through a global agreement on plastic pollution. Various national and regional regulations exist to limit plastic pollution. Yet an international agreement is missing. In a major step, United Nations Member States agreed at the fifth UN Environmental Assembly in March 2022 on the mandate for the legally-binding negotiation of a [global agreement](#). The G7 should **support the development of a comprehensive agreement that covers the whole life cycle of plastics, fosters a circular economy approach and leads to a reduction** and, as far as possible, ultimate phasing out of the production of virgin plastics (Simon et al. 2021). In addition, existing instruments and initiatives need to be scaled up (Wienrich et al. 2021).

1c. Pause deep sea mining until risks are better understood. A strong consensus in marine science exists on the potential of deep sea mining to cause significant environmental harm to ecosystems and thereby undermine global efforts to halt the loss of biodiversity (Niner et al. 2018). Given the high risks and associated uncertainties, G7 countries should **pause the development of activities in relation to the exploitation of deep sea minerals** (both in areas beyond national jurisdiction through the ISA and within their own EEZs) **until the impacts** of deep seabed mining **are comprehensively understood**, policies are in place to ensure the **effective protection of the marine environment** and the responsible use of metals, and **a transparent, inclusive and accountable institutional structure is in place** that incorporates public consultation mechanisms into all decision-making processes. Given the international nature of deep sea mining and global mineral supply chains, G7 Members should **foster transparent and inclusive dialogue** on the future of deep sea mining with China and other key actors. Further the G7 in partnership with major developing economies should foster recycling of metals and circular economy approaches consistent with ocean health and the 2030 Agenda for Sustainable Development.

1d. Improve marine biodiversity protection by reducing pressures and expanding protected areas. To close legal and institutional gaps in ABNJ, the UN is currently negotiating a **legally binding instrument for the conservation and sustainable use of marine biological diversity in areas beyond national jurisdiction (BBNJ)**. This process needs the full engagement and leadership of the G7 countries. They are urged to support the high ambition coalition launched at the One Ocean Summit to reach an ambitious agreement in 2022. Many hopes were pinned on the final negotiation round (IGC4) in March mandated by the UN General Assembly to conclude the multi-year process to develop a new “High Seas Treaty”. The G7 should now **step up at ministerial level to accelerate work in the coming months and secure the successful finalization of the negotiations** via an additional meeting this year. In order to effectively protect marine biodiversity in line with most recent IPCC recommendations that suggest expanding the 30x30 goal to aim for the protection of 30-50% of marine and terrestrial areas instead, G7 states should **commit to expanding**

their own MPAs and put into place an implementation framework towards comprehensively meeting - and potentially updating - global biodiversity targets, including the target of at least 10% highly or fully protected marine areas and targets that seek to foster restoration and protect biodiversity by reducing the pressures from human activities driving biodiversity decline. The G7 should also support **the establishment of MPAs in Antarctica** as already highlighted by G7 Heads of States and Governments and other global leaders. Complementary to the 30x30 goal as well as international ecosystem restoration targets, the G7 should agree to a **goal of 100% ocean sustainability in waters under their national jurisdiction**, supported by transparent and measurable targets and thresholds.

1e. Strengthen the recognition of the ocean in climate negotiations and agreements. At the 2021 Climate COP, the ocean was mentioned in the preamble of the Glasgow Pact, noting “the importance of ensuring the integrity of all ecosystems, including forests, the ocean and the cryosphere [...]”. Marine ecosystems are recognized as “carbon sinks” in Article 21 of the final decision, emphasizing the importance of protecting, conserving and restoring terrestrial and marine ecosystems to reduce greenhouse gas (GHG) emissions. G7 countries should continue to **encourage a deep commitment to the ocean-climate nexus**. Around twenty countries have already signed the 3rd “Because the Ocean” declaration that supports such an approach. Further, the G7 countries should **support nature-based climate mitigation and adaptation actions**. Intact marine and coastal ecosystems have vast potential in storing greenhouse gas (blue carbon). G7 States should collectively **commit to accelerating their efforts in conserving existing “blue carbon” ecosystems** such as mangroves, seagrass beds, and salt marshes and **scale up restoration efforts** as part of their nature-based climate solutions. They should explore possible risks and benefits of ocean based Carbon Dioxide Removal (CDR) options from an efficiency, legal, economic, social and ethical perspective. This would represent a real step forward reinforcing the recognition of the intangible links between the ocean, climate and biodiversity and the **need to address them jointly in international climate and biodiversity processes**.

2) Improving ocean observation, data infrastructure and knowledge sharing

2a. Adopt a legal framework and binding commitments for a sustained and shared global coordination of ocean observations and infrastructure on marine data so that observations and data can be used in an integrated and holistic fashion to inform policy-making. Using their status as a pathfinder group that pilots activities for broader initiatives, the G7 countries could spearhead a transformation to a more **sustainable and effective observation and data infrastructure** by forging **stronger institutional coordination through a legally binding framework**. They have the convening power and capacity to support the development and adoption of **multilaterally negotiated standards, clearly assigned responsibilities, and sustained resourcing** for data collection, quality control, and data integration. The G7 countries should support an institutional framework and initiatives to provide better, shared and equitable ocean data adhering to the **FAIR (Findable, Accessible, Interoperable, and Reusable)** and **CARE (Collective benefit, Authority to control, Responsibility, and Ethics)** principles in line with the G7 Research Compact agreed upon during the UK presidency.

2b. The need for an improved data structure has given rise to, for example, plans by the European Commission to develop a [Digital Twin Ocean](#). However, such novel infrastructures should not detract from

the need to establish long-term, guaranteed funding, clear institutional affiliations, and coordinated data products for ocean observation and monitoring across the globe that are capable of covering the various parameters needed to assess the state of the ocean (EMB 2021). Sustained and sufficiently funded, integrated ocean observations could also support the further development of the Regular Process for assessing the state of the ocean that is conducted under the auspices of UNCLOS.

3) Financing the transition towards more sustainable interactions with the ocean

Redesign and scale up ocean finance to address the needs of global communities at a time of climate emergency, adaptation challenges and the urgency to restore blue ecosystems (Sumaila et al. 2020). This investment away from subsidies to exploitation and destructive practices and into a sustainable blue bio-economy requires a serious commitment both from the public and the private sector. This ranges from **increased funding of early-stage, nature-positive and ocean-science-based opportunities to large-scale investment into coastal blue infrastructure that is zero-carbon, resilient and implements nature-based solutions** (Thiele et al. 2020). The ocean-climate nexus needs to be fully supported through finance (Vierros et al. 2021), including for the High Seas (Thiele and Gerber 2017). At the same time **ocean criteria need to be expressly integrated into sustainability finance frameworks**, such as the EU Taxonomy, the Task Force on Climate-related Financial Disclosures (TCFD) and the Taskforce for Nature-related Financial Disclosures (TNFD) and applied to all of the ocean governance frameworks, including for the High Seas. This requires increased commitments to relevant projects and institutions, such as the Adaptation Fund and the Green Climate Fund and express allocations to ocean solutions for multilateral development banks as well as for private sector asset managers. In addition, it necessitates innovative finance mechanisms, such as blue bonds (Roth et al. 2019) as well as new public-private partnership approaches such as proposed by the Ocean Risk and Resilience Action Alliance (ORRAA 2020).

Implementations

As largest democracies globally, the G7 can and should assume a leadership position in forming a High Ambition Coalition for Ocean Action. The **UN Ocean Conference in June 2022** in Lisbon provides an ideal platform for the G7 to announce **Voluntary Commitments** for ocean action, to **forge consensus** with global partners and to put in place a **transparent framework to accelerate implementation** for Sustainable Development Goal 14 and other critical ocean goals related to biodiversity, climate and pollution (Neumann & Unger 2019).

1) Governance and political change for ocean health and climate

1a. The EU, US, and Japan should substantially reduce subsidies for industrial fisheries. This is essential to comply with their commitments in the **G7 2030 Nature Compact**, in which **states agree to review domestic policies** that have a harmful effect on the environment. It will support the **credibility of the G7 in WTO negotiations** in 2022 where G7 states have committed to supporting an agreement to eliminate harmful fisheries subsidies in the Carbis Bay Communiqué. Special **support for small-scale and coastal fisheries in developing and middle-income countries** should be launched in alignment with the FAO Small-scale Fisheries Guidelines (FAO 2015). Further, targeted development of local fish-processing industries and

(trans-)regional marketing, including gender-sensitive job creation measures, social and environmental standards, capacity development and training is required.

1b. In the now officially mandated development of a legally-binding global agreement on plastic pollution, G7 support for an ambitious outcome (accounting for the whole life cycle and pursuing the long-term goal of a circular economy) would be consistent with the **intention expressed in the 2030 Nature Compact to accelerate action on plastic pollution in the ocean from all sources** - land and marine - by strengthening existing instruments, developing a potential new global agreement or other instruments. Having agreed to stop the production of single-use plastic for e.g. food packaging and utensils in 2019, the EU could take a leadership role in this process.

1c. G7 leaders should demonstrate their commitment to ocean health by announcing strong support for a pause to the exploitation of deep seabed minerals. Such support, accompanied by a strengthening of the necessary science and innovation, as well as by the promotion of transparent dialogue with other key states and actors in the ISA would **send a strong international signal**. It would **also contribute significantly to policy coherence in protecting marine biodiversity and moving towards a global circular economy**.

1d. The G7 should support the **swift finalization of an ambitious BBNJ agreement** and ensure it facilitates the **achievement of the global biodiversity framework**, including through the creation of representative and well-managed networks of MPAs (in line with the at least 30 x30 goal, which G7 states have reaffirmed in the **2030 Nature Compact**). The G7 should support the strengthening of the assessment and management of all human activities affecting ocean health both within and beyond national jurisdiction and support the capacity of all states to study, use, manage and benefit from marine biodiversity. Efforts to sustainably manage 100% of ocean areas under national jurisdiction guided by Sustainable Ocean Plans would be in line with the **Ocean Panel's ambition signed by several G7 States** to be achieved by 2025. Moreover, the G7 should seek to work through relevant international organizations to agree on a similar level of protection for ocean areas beyond national jurisdiction.

1e. G7 countries should continue to provide leadership by scaling up commitments in the ocean-climate nexus. At the institutional level, Article 60 of the final decision (1/CP.26) invites relevant work programs and constituted bodies under the UNFCCC to consider how to integrate and strengthen ocean-based actions in their existing mandates and work plans. Article 61 introduces the organization of an annual **"ocean-climate" dialogue** held by the Chair of the Subsidiary Body for Scientific and Technological Advice (SBSTA) from June 2022. This decision was warmly welcomed by the ocean community, which was calling for this measure to be taken at this COP to formally **anchor the ocean within climate negotiations**.

2) Improving ocean observations, data infrastructure and knowledge sharing

The G7 countries should substantially improve the integration and coordination of existing data platforms in compliance with the FAIR and CARE principles, provide access to cloud-based data systems and support the development of a framework for improved ocean prediction and digital twins of the ocean. Specifically, G7 countries should support the integration of marine CO₂ observations, which are essential for global climate science and policy but still conducted in two complementary observation networks - the Surface Ocean CO₂ Network (SOCO₂NET) as well as the Argo network, which cover different areas of the ocean but

have yet to be structurally integrated due to a lack of dedicated funds and mandate. G7 countries should reaffirm their commitment to **support the UN Decade of Ocean Science for Sustainable Development (2021-2030)** by providing adequate resources to decade programmes and projects, and consider **creating a mechanism to bundle scientific insights** on how the ocean is changing and will continue to change on account of human influence (e.g. a scientific working group to structure an international panel on ocean sustainability), ideally in time for the United Nations Conference on the Ocean in June in Lisbon.

Improving ocean observations, data infrastructure and knowledge sharing would fulfill the **G7's commitment to democratic values** by ensuring that knowledge is openly accessible, produced by diverse actors and disciplines, and free from political censorship or modification. This would comply with the intention stated in the **G7 2021 Research Compact** to promote the efficient processing and sharing of research data, to improve the availability, sustainability, usability and interoperability of data, technologies, infrastructure and services, and to jointly address the administrative, legal, and regulatory barriers that hinder scientific cooperation. It would also advance the goal of the **G7 Future of the Seas and Ocean Initiative** to support the **development of an enhanced, global, sustained sea and ocean observing system with a global data sharing infrastructure**. The Research Compact recognizes the importance of science for prevention, preparedness, response, recovery and resilience and the need for sustained investment in research and supporting infrastructure. By ensuring that a coordinated, sustained, and freely accessible infrastructure for ocean observations and data is in place, G7 countries would support essential services such as weather and climate forecasting or the monitoring of fish stocks, **ensuring that investments, e.g. in climate adaptation and mitigation, are well-directed and effective**. The recently released report of IPCC Working Group 2 confirms that enhancing knowledge on climate risks, impacts, and their consequences, and available adaptation options promotes societal and policy responses (IPCC 2022).

3) Financing the transition towards more sustainable interactions with the ocean

The transition to a sustainable blue Economy requires a targeted G7 perspective that focuses on global ecosystem health and provides support for all States to deliver on the SDGs and the Paris Agreement (Laffoley et al. 2021). This requires a concerted finance approach. The G7 effort needs to be based on a global ocean goal that is aligned with climate finance efforts, such as setting up a **dedicated ocean finance institution** that can deliver scale and efficiency for renewable ocean energy, green shipping and coastal resilience using nature-based solutions, going beyond infrastructure targeted by the Chinese “Belt and Road” initiative. A significant commitment by the G7 to ocean finance could not only be an important component of **closing the gap in the amount developed countries will be delivering towards Paris Agreement** ambition, it would also, at the time of the UN Ocean Conference in Lisbon, indicate a **willingness to proactively engage in the delivery of ocean solutions for developing countries** (Thiele 2021), based on common standards and impact frameworks that are aligned to the ambition of the International Sustainability Standards Board (ISSB) and other efforts. This leadership by G7 nations on finance is critical in order to **fully engage private sector investment** that will be required to deliver the billions that are needed to stop ocean degradation and advance ocean health and recovery, delivering economic opportunities to the billions of people that directly depend on it. The commitment to an Ocean Sustainability Bank would be an appropriate highlight of the G7 summit.

References

- Amon, D., Arauz, R., Baum, J.K., Baxter, J., Claudet, J., Di Franco, A., Downs, C., Fuller, S., Gjerde, K.M., Hall-Spencer, J., Inaba, K., Koldewey, H., Laffoley, D., Levin, L., Milazzo, M., Reid, P.C., Roberts, C., Rogers, A.D., Taylor, M., Thiele, T., Woodall, L. (2021). Seven asks for the G7. Why embracing the ocean is central to tackling climate disruption, supporting human wellbeing, and sustaining a successful recovery from the COVID-19 pandemic. OceanProject.
- Claudet, J., Bopp, L., Cheung, W.L.W., Devillers, R., Escobar-Briones, E., Haugan, P., Heymans, J.J., Masson-Delmotte, V., Matz-Lück, N., Miloslavich, P., Mullineaux, L., Visbeck, M., Watson, R., Zivian, A.M., Ansorge, I., Araujo, M., Aricò, S., Bailly, D., Barbière, J., Barnerias, C., Bowler, C., Brun, V., Cazenave, A., Diver, C., Euzen, A., Gaye, A.T., Hilmi, N., Ménard, F., Moulin, C., Muñoz, N.P., Parmentier, R., Pebayle, A., Pörtner, H.-O., Osvaldina, S., Ricard, P., Serrão Santos, R., Sicre, M.A., Thiébault, S., Thiele, T., Troublé, R., Turra, A., Uku, J., Gaill, F. (2020). A Roadmap for using the UN Decade of Ocean Science for Sustainable Development in Support of Science, Policy, and Action. *One Earth* 2: 34-42. <https://archimer.ifremer.fr/doc/00637/74861/>
- De Noon, P., Kraemer, R.A., Massai, L., Orbach, M.K., Stelljes, N., Thiele, T., Virdin, J. (2021) Fixing Financial, Economic and Governance Structures to Save Forests and the Ocean and Enhance Their Contributions to Climate Change Solutions. T20 Policy Brief. <https://www.t20italy.org/2021/09/21/fixing-financial-economic-and-governance-structures-to-save-forests-and-the-ocean-and-enhance-their-contributions-to-climate-change-solutions/>
- De Santo, E. M., Ásgeirsdóttir, Á., Barros-Platiau, A., Biermann, F., Dryzek, J., Gonçalves, L. R., ... & Young, O. (2019). Protecting biodiversity in areas beyond national jurisdiction: An earth system governance perspective. *Earth System Governance*, 2, 100029.
- EMB (2021). Sustaining in situ Ocean Observations in the Age of the Digital Ocean. . EMB Policy Brief No. 9, June 2021. J. J. Heymans. Oostende, BE, European Marine Board: 16. DOI: 10.5281/zenodo.4836060
- Gao, H. (2011). China's Ascent in Global Trade Governance: From Rule Taker to Rule Shaker, and Maybe Rule Maker? In C. Deere-Birkbeck (Ed.), *Making Global Trade Governance Work for Development* (pp. 153-180). Cambridge: Cambridge University Press.
- Google, BMW, AB Volvo, Samsung back environmental call for pause on deep-sea mining (2021, March 31). Reuters. <https://www.reuters.com/business/sustainable-business/google-bmw-volvo-samsung-sdi-sign-up-wwf-call-temporary-ban-deep-sea-mining-2021-03-31/>
- Laffoley, D., Baxter, J.M., Amon, D.J., Claudet, J., Downs, C.A., Earle, S.A., Gjerde, K.M., Hall-Spencer, J.M., Koldewey, H.J., Levin, L.A., Reid, P.C., Roberts, C.M., Sumaila, U.R., Taylor, M., Thiele, T., Woodall, L.C. (2021). The forgotten ocean: Why COP26 must call for vastly greater ambition and urgency to

address ocean change. *Aquatic Conservation: Marine and Freshwater Ecosystems* 32(1), 217-228.
DOI: 10.1002/aqc.3751 <https://onlinelibrary.wiley.com/doi/epdf/10.1002/aqc.3751>

Neumann, B., & Unger, S. (2019). From voluntary commitments to ocean sustainability. *Science*, 363(6422), 35–36. doi:10.1126/science.aav5727.

Niner, H. J., Ardron, J. A., Escobar, E. G., Gianni, M., Jaeckel, A., Jones, D. O., ... & Gjerde, K. M. (2018). Deep-sea mining with no net loss of biodiversity—an impossible aim. *Frontiers in Marine Science*, 53.

Ocean Risk and Resilience Action Alliance (ORRAA) (2020) <https://www.oceanriskalliance.org/ocean-risk/>

OECD (2020): Sustainable Ocean for All Harnessing the Benefits of Sustainable Ocean Economies for Developing Countries. Paris: OECD. <https://doi.org/10.1787/19901372>

Ostrom, E. (2000). Collective Action and the Evolution of Social Norms. *Journal of Economic Perspectives*, 14(3), 137-158.

Pauly, D., Zeller, D. Catch reconstructions reveal that global marine fisheries catches are higher than reported and declining. *Nat Commun* 7, 10244 (2016). <https://doi.org/10.1038/ncomms10244>

Roth, N., Thiele, T. & von Unger, M. (2019) Blue Bonds: Financing Resilience of Coastal Ecosystems: A technical guideline prepared for IUCN GMPP.

Simon, N., Raubenheimer, K., Urho, N., Unger, S., Azoulay, D., Farrelly, T., Sousa, J., van Asselt, H., Carlini, G., Sekomo, C., Schulte, M. L., Busch, P.-O., Wienrich, N., & Weiland, L. (2021). A binding global agreement to address the life cycle of plastics. *Science*, 373(6550), 43–47.
doi:10.1126/science.abi9010

Skerritt, D.J., Sumaila, U.R. (2021): Assessing the spatial burden of harmful fisheries subsidies. *Oceana*. https://oceana.org/sites/default/files/OceanaDWF_FinalReport.pdf

Sumaila, U.R., M. Walsh, K. Hoareau, et al. (2020) Ocean Finance: Financing the Transition to a Sustainable Ocean Economy. Washington, DC: World Resources Institute. www.oceanpanel.org

Thiele, T. (2021) Innovative Finance for Africa’s Blue Economy. In D. Sparks (ed) *Blue Economy in sub-Saharan Africa*. Taylor Routledge.

Thiele, T., Alleng, G., Biermann, A. et al. (2020) Blue Infrastructure Finance: A new approach. integrating Nature-based Solutions for coastal resilience. IUCN.

Thiele, T. & Gerber, L. (2017) Innovative financing for the high seas. *Aquatic Conserv* 27(1) 89-99.

Tooze, A. (2018). *Crashed: How a decade of financial crises changed the world*. New York: Allen Lane.

Vierros, M., Balgos, M. et al. (2021) Assessing Progress on Ocean and Climate Action: A Report of the Roadmap to Oceans and Climate Action (ROCA) Initiative. <https://www.spf.org/global-data/opri/roca-report-2020-2021s.pdf>

Wienrich, N., Weiland, L., Unger, S. (2021). Stronger together: The role of regional instruments is strengthening global governance of marine plastic pollution. IASS Study. DOI: 10.48440/iass.2021.008

About the Authors

Henry Bittig - Leibniz Institute for Baltic Sea Research Warnemünde (IOW)



Henry Bittig is a scientist at the Leibniz Institute for Baltic Sea Research Warnemünde (IOW). He has a background in marine chemistry with research interests that cover: (i) the marine carbon cycle and the biological carbon pump; (ii) in-situ biogeochemical sensors and platforms (e.g., free-floating Argo floats); (iii) linking ocean observing systems such as dedicated research campaigns, surface measurements by commercial vessels, autonomous measurement platforms, and remote sensing; (iv) linking ocean observation with modeling, as well as marine research infrastructures and research. He is member of the international BGC-Argo data management task team.

Françoise Gaill - CNRS Institute for ecology and environment (INEE)



Françoise Gaill is a deep-sea biologist. She has worked on adaptation to extreme environments at the CNRS, particularly on thermal adaptation and development. While in charge of the scientific direction of the environment and sustainable development department, she spearheaded the CNRS Institute of Ecology and Environment; and has supported the development of the French oceanographic fleet. She has been involved in the UN World Ocean Assessment and several UN actions (SDGs, BBNJ, WOA, Decade of ocean Sciences...) for the French government. She is now a scientific advisor at the CNRS Institute for ecology and environment (INEE), President of the national committee for marine and coastal research (COMER) and Vice president of the ocean and climate platform (OCP).

Kristina M. Gjerde, J.D. - Senior High Seas Advisor to IUCN's Global Marine and Polar Programme



For the past 30+ years, Kristina has focused on the nexus of law, science, and policy relevant to sustaining marine biodiversity. In addition to advancing a new UN treaty for marine life beyond boundaries, Kristina has co-founded four science-policy partnerships: the [Global Ocean Biodiversity Initiative](#), [The Sargasso Sea Project](#), the [High Seas Alliance](#) and the [Deep Ocean Stewardship Initiative](#) (DOSI), authored or co-authored more than 150 publications and serves on the advisory board of many ocean-related initiatives.

Sheila JJ Heymans - European Marine Board (EMB)



Prof. Sheila JJ Heymans is Executive Director of the European Marine Board - the leading European marine science policy think tank, and Professor in Ecosystem Modelling at the University of the Highlands and Islands in Scotland. She has 30 years' experience in research on the environmental impacts of ecosystem change. She is Co-Chair of the EOOS Steering Group, and editor of EMB Policy documents (<http://www.marineboard.eu/publications>).

Anna-Katharina Hornidge – Deutsches Institut für Entwicklungspolitik (DIE) & University of Bonn



Prof. Dr. Anna-Katharina Hornidge is Director of the German Development Institute / Deutsches Institut für Entwicklungspolitik (DIE) and Professor for Global Sustainable Development at the University of Bonn. In her research, Ms. Hornidge works on knowledges & innovation development for development, as well as questions of natural resources governance in agriculture and fisheries in Asia and Africa. Ms. Hornidge serves as expert advisor at national, EU and UN level: as Member of the German Advisory Council on Global Change of the German Government (WBGU), Co-Chair (with Gesine Schwan) of SDSN Germany, and as part of the executive council of the German UNESCO-Commission.

Birgit Klein - Federal Maritime and Hydrographic Agency (BSH)



Birgit Klein is an oceanographer and works at the Federal and Maritime and Hydrographic Agency (BSH). She is charge of the German contribution to the international Argo programme and chair of the Euro Argo management board. Her interests center on the ocean's role in the climate system and shaping of a sustainable observation systems incorporating Argo and other components.

David Obura - CORDIO East Africa



David Obura is a Founding Director of CORDIO East Africa, a knowledge organization supporting sustainability of coral reef and marine systems in the Western Indian Ocean. CORDIO takes research to management and policy, builds capacity, and works with stakeholders, managers and policy makers. David's primary research is on coral reef resilience, in particular to climate change, and the biogeography of the Indian Ocean.

Mirja Schoderer - Deutsches Institut für Entwicklungspolitik (DIE)



Mirja Schoderer is a researcher in the Environmental Governance Programme at the German Development Institute / Deutsches Institut für Entwicklungspolitik (DIE). She has a background in environmental social sciences and literature studies. Her research focuses on knowledge infrastructures and natural resources governance – in particular water and minerals / metals – in relation distributive, procedural and recognition environmental justice.

Torsten Thiele - Institute for Advanced Sustainability Studies (IASS) and Global Ocean Trust



Mr. Thiele applies his expertise in project and infrastructure finance to the development of ocean finance mechanisms to deliver a sustainable blue economy based on equitable ocean governance. Mr. Thiele is a Senior Advisor to the IUCN Blue Natural Capital Financing Facility and consults with the EU, UN agencies and others. As Member of the Steering Committee of CPIC, the Scientific Committee of the Ocean-Climate Platform and of the Advisory Board of the Deep Ocean Stewardship Initiative, among others, he contributes to ocean finance thought leadership globally.

Sebastian Unger - Institute for Advanced Sustainability Studies (IASS)



Sebastian Unger is head of the Ocean Governance Research Group at IASS Potsdam with over 15 years of experience in international ocean policy. His research focuses on key challenges in global ocean governance and opportunities for transformative change. Before joining IASS, Sebastian was appointed Deputy Secretary to the OSPAR Commission and served at the German Federal Foreign Office (Auswärtiges Amt). Sebastian frequently provides expert advice to governments and international organizations. He is Senior Fellow at TMG Think Tank for Sustainability and co-founder of the Marine Regions Forum.

Martin Visbeck - GEOMAR Helmholtz Centre for Ocean Research Kiel



Martin Visbeck is head of research unit Physical Oceanography at GEOMAR Helmholtz Centre for Ocean Research Kiel and professor at Kiel University, Germany. His research interests revolve around ocean's role in the climate system, ocean circulation, upwelling systems, integrated global ocean

observation, digital-twins of the ocean and the ocean dimension of sustainable development. He was elected fellow of the AGU, AMS, TOS and the European Academy of Sciences. Martin Visbeck is involved in strategic planning and decision-making processes about the ocean and sustainable development at a national, European and global level.



The Think7 engagement group under the German G7 presidency 2022 is jointly chaired by the Global Solutions Initiative and the German Development Institute / Deutsches Institut für Entwicklungspolitik (DIE) as mandated by the German Federal Chancellery.



Deutsches Institut für
Entwicklungspolitik



German Development
Institute



[This publication has been being published under the Creative Commons License CC BY-ND 4.0.](#) You are free to copy and redistribute the material in any medium or format for any purpose, even commercially. The licensor cannot revoke these freedoms as long as you follow the license terms:

Attribution — You must give appropriate credit, provide a link to the license, and indicate if changes were made. You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.

NoDerivatives — If you remix, transform, or build upon the material, you may not distribute the modified material.

No additional restrictions — You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits.

Publisher:



Deutsches Institut für
Entwicklungspolitik



German Development
Institute

Deutsches Institut für Entwicklungspolitik gGmbH
Tulpenfeld 6
D-53113 Bonn

www.die-gdi.de