



## Europe meets the world on the ocean:

### A case for ocean science diplomacy

*An InsSciDE issue paper*

Climate change, direct exploitation and pollution are threatening to upend the fragile environment of the ocean. Further, extensive gaps in knowledge, maritime conflict and the vast areas of the ocean that are beyond national jurisdiction present additional challenges to countering the ocean's declining health and stability.

According to the 2021 European Union Blue Economy Report, industries reliant on the ocean provide 4.5 million direct jobs and generate over €650 billion in turnover. Beyond the European Union (EU), millions of people depend on the ocean for their livelihoods, its waters constitute over 90 percent of Earth's livable space, and its health is crucial to the sustainability of the whole planet.

Ocean governance is not receiving enough attention given the central position of the ocean in human survival, environmental sustainability and societal prosperity. Human activities – ranging from resource exploitation to military activities to pollution and beyond – are invoking dire consequences for the ocean with no clear path to recovery.

While different regions of the ocean face unique challenges requiring tailored approaches, we refer to the ocean as a single entity to underscore that the consequences of its destruction and mismanagement are boundaryless.

European ocean science diplomacy (OSD) tools can be used to elevate the issues facing the ocean and develop sustainable pathways ahead. With the United Nations Decade of the Ocean for Sustainable Development still in the early stages, we review formal and informal experiences of OSD and examine the resources at the EU's disposal to attain the objectives for ocean sustainability in the coming years.

## What is ocean science diplomacy?

OSD refers to processes and practices in which diplomacy and sciences related to the ocean intersect. As with the umbrella term of 'science diplomacy', OSD is a relatively new and fluid concept referring to a wide range of activities that have been occurring far beyond the term's lifetime.

Science is regularly used to inform responsible decision making on the ocean and to support countries' foreign policies. In the other direction, diplomacy and foreign policies greatly impact the production of knowledge. Governments facilitate international cooperation and fund research that supports its agenda, and at other times obstruct it, for instance by failing to provide sufficient research funds or by country-specific restrictions on collaboration.

Although not perfect, the popular 2010 framework for defining science diplomacy can be extended to OSD, interpreting three primary categories for the practice to be: *ocean sciences in diplomacy*, *diplomacy for ocean sciences* and *ocean sciences for diplomacy*. In an article in *Frontiers in Marine Science*, Andrei Polejack outlines examples of each:

*Ocean sciences in diplomacy*: scientific evidence informs negotiations and supports decision making.

- Fish stocks management, marine ecosystem protection and restoration, hazards forecast

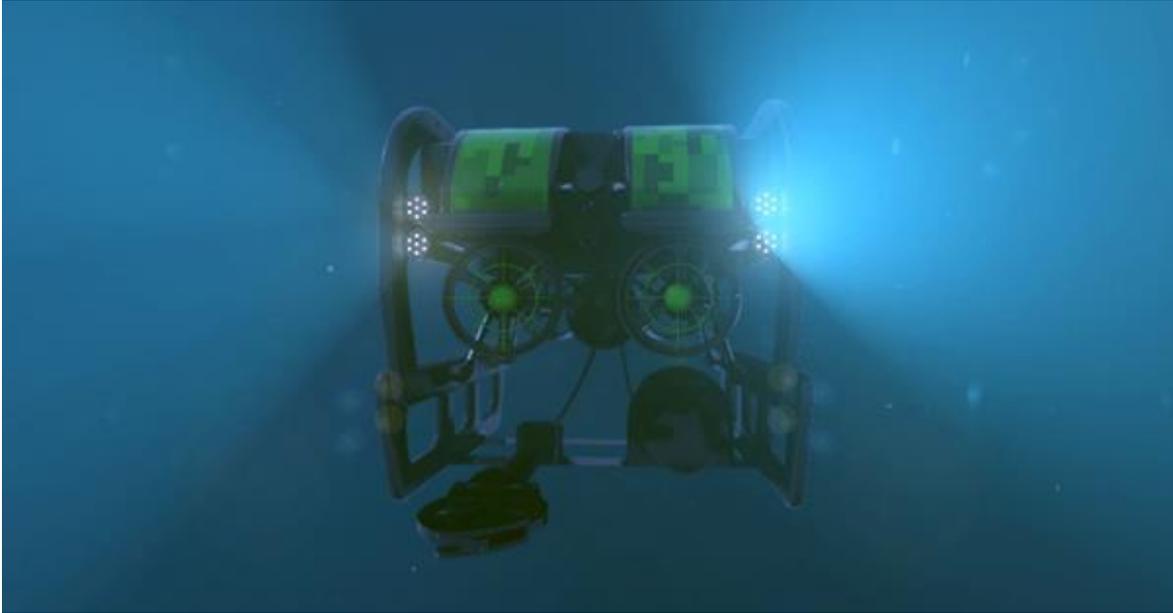
*Diplomacy for ocean sciences*: ocean science is cooperative, diplomacy fosters joint global ocean research projects and capacity building.

- Harmful algal bloom monitoring and forecasting, tsunami warning system, UN Decade of Ocean Sciences for Sustainable Development

*Ocean sciences for diplomacy*: shared challenges and threats encourage coordinated and problem-driven scientific cooperation and dialogue between countries to inform better decisions.

- Marine research projects between conflicting nations (e.g. between the U.S. and Cuba)

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## How and where does ocean science diplomacy take place?

A variety of fora have served OSD in the recent and distant past. Most notably, the United Nations (UN) convened a series of conferences in the 1960s to mediate geopolitical tensions caused by ‘scientific imaginaries’ of emerging capabilities to exploit and occupy the deep sea. The result was the UN Convention on the Law of the Sea (UNCLOS), negotiated among myriad factions seeking to (de)militarize, protect, police, study or exploit the ocean.

UNCLOS remains the most sweeping legal framework for the ocean. Despite being ratified by 133 states, the treaty is under-implemented and largely ineffective in its plan to support developing countries’ marine research capacities. In no small part because UNCLOS diplomats attempted to construct a fixed law of the seas at a time when what could be done at sea was advancing at a rate that far outpaced the legal frameworks under construction. In short, the ocean economy of the 1960s; when UNCLOS discussions began, was vastly expanded and technologically transformed by the 1990s when UNCLOS was finalized. Coupled with the intensifying environmental and climatic crisis of today, UNCLOS is deemed unfit for purpose by many scholars and policy experts.

Under UNCLOS, another legally binding instrument is taking form: the Biodiversity Beyond National Jurisdiction (BBNJ) is a proposed treaty for the preservation and sustainable use of biodiversity that exists in the 95 percent of ocean space that is beyond any current jurisdiction. The fourth intergovernmental meeting held in March 2022 was anticipated to finalize the agreement, but the complexity of the issues at hand drove the conference to foresee at least one more meeting.

Whatever the final outcome of future meetings with regards to the BBNJ the conferences have already revealed longstanding issues regarding marine technology transfer, capacity building, marine sustainability, use of biological resources (both fisheries and genetic resources), and ocean equity.

The vast range of interests at stake on the global ocean and in regional seas means that actors of OSD may be representing public or private institutions, non-governmental organizations or civil society.

#### **UNCLOS and its Imaginary Origins: From an InsSciDE Case Study by Sam Robinson**

As technologies of ocean exploitation emerged during the late 1960s, science policy and diplomacy were formed in response to anticipated capabilities that did not match the realities of extracting deep-sea minerals and of resource exploitation in the deep ocean at the time. Promoters of ocean exploitation in the late 1960s envisaged wonders such as rare mineral extraction and the stationing of divers in underwater habitats from which they would operate seabed machinery not connected to the turbulent surface waters. Their promises coincided with others' fears that nuclear weaponry would be placed on the seabed. Those who lacked the technological capability to extract minerals from the seabed also had concerns that other nations would exploit their resources. Scientific imaginaries caused uncertainty in the international community—especially in the “Global South.” The UN called the “Law of the Sea” conferences to mediate emerging geopolitical tensions caused by these imaginaries of exploitation of ocean resources. These conferences became a site where lawmakers projected futures rather than merely responding to past or present dilemmas. Diplomats' negotiations, with their basis in anticipation of the future uses of science and technology, reveal the role of scientific imaginaries within complex negotiations. Here, we see the impact of the distinction (or blurring) of the real and the imagined on the balance of relations between Global North and South increasing global imbalances of resources and power. Sam Robinson's InsSciDE case study's analysis of such scientific diplomacy provides a valuable example of the power of scientific imaginaries to have a global impact.

On the global scale, OSD may be implemented through intergovernmental organizations, including the International Council for the Exploration of the Sea (ICES) and UN organs such as the Intergovernmental Oceanographic Commission (IOC) of UNESCO and the International Maritime Organisation (IMO). Another arena of OSD are regional fisheries management organizations, which are overseen by the Food and Agriculture Organization (FAO).

Notably, many major intergovernmental organizations are headquartered in Europe. The high density of such essential global governance structures in Europe and North America is testimony to the disproportionate influence wielded by Western nations in comparison with the rest of the world.

Groups and initiatives operate within larger host organizations, such as UN agencies, or engage directly in bilateral and multilateral OSD. The below initiatives and institutions provide a glance of the vast OSD landscape:

- **SDG Bergen**, a strategic initiative of the University of Bergen in Norway, pushes for a greater role of universities in science diplomacy and positions the practice as a pillar in its activities as a UN-designated Hub for Sustainable Development Goal 14.
- Evolved from the 2011 EU 'Maritime Strategy in the Atlantic Area', the **All-Atlantic Ocean Research Alliance** connects the ambitions of three synchronized agreements on the Atlantic between North-North, North-South and South-South countries. Its initiatives unite the Atlantic countries to bolster marine research, foster cooperation and exchange and support a broad program of capacity-building, from the Arctic to Antarctica.
- The **High Level Panel for a Sustainable Ocean Economy** is behind one of the most significant pledges to sustainably transform economic activities on the ocean, at the time of writing consisting of fourteen countries from every continent except Antarctica and comprising 40 percent of the world's coastlines.
- The banding together of **Small Islands and Developing States (SIDS)** has had momentous impact on the attention and funding afforded to ocean issues. A major feat of SIDS's effective OSD was securing a place for SDG 14 on the 2030 Agenda for Sustainable Development. SIDS comprise populations that are some of the most vulnerable to the consequences of a warming and rising ocean, while their contribution to the human activities that inflict this change is comparably miniscule. Indigenous communities, in SIDS and elsewhere, are especially vulnerable.
- **Indigenous peoples** are slowly gaining more recognition in OSD spheres as important stakeholders, and indigenous knowledge is increasingly understood as a valuable complement to conventional ocean sciences.

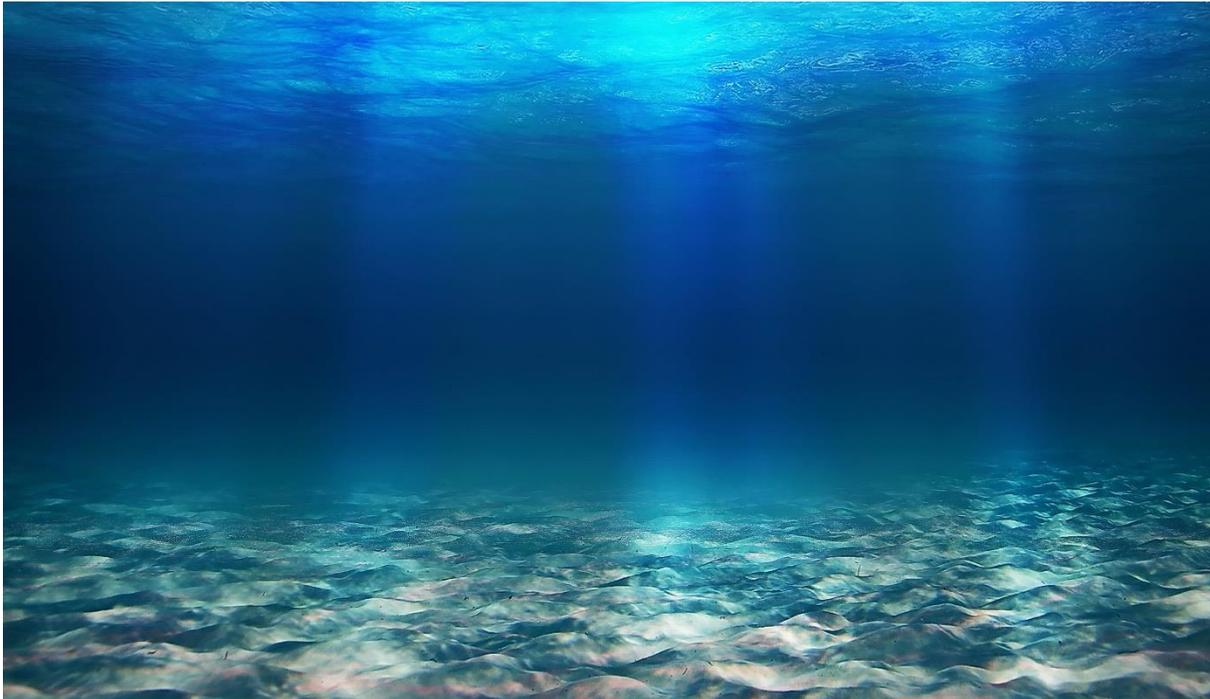
#### ***Examples of global mechanisms of OSD***

[Intergovernmental Oceanographic Commission](#) – a body of UNESCO, the IOC is the primary global forum for UNCLOS and the coordinating entity of the UN Decade of the Ocean.

[World Ocean Assessment](#) – the most comprehensive report on the ocean, covering environmental, economic and social aspects, launched by the UN General Assembly to support policy development and decision-making at the national, regional and global levels.

[Census of Marine Life](#) – a ten-year project involving scientists from more than eighty countries that set a baseline for marine life, paving the way for the Biodiversity Beyond National Jurisdiction agreement and future ocean legislation

[Seabed 2030](#) – a collaborative project between the Nippon Foundation of Japan and the General Bathymetric Chart of the Oceans (GEBCO) which aims to generate a comprehensive map of the ocean floor by 2030, positioned to inform the International Seabed Authority (ISA)



## Why do we need ocean science diplomacy?

Good ocean management relies, as it has done for over 100 years, on scientifically informed policies and regulations around sustainability. Ocean scientists are best placed to identify future risks and contemporary hazards of anthropomorphic change in the ocean. Robust systems for supporting ocean sciences and translating its findings into action are a crucial component for mitigating the climate catastrophe.

The year 2021 marked the beginning of the UN Decade of the Ocean for Sustainable Development, aiming to bring the UN Sustainable Development Goal 14 (SDG14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development) to the forefront of political and scientific agendas.

The endorsed SDG14 targets — protecting biodiversity, reducing pollution, tackling ocean acidification and warming, and enhancing sustainability of economic activities on the ocean — call for unprecedented diplomatic resolve and a powerful boost to ocean sciences and related knowledges.

The EU's ambition to transition its far-reaching 'ocean economy' — the economic and trade activities reliant on the ocean environment and its resources — to align with the European Green Deal implies extensive support across scientific, political and commercial spheres on a global scale. OSD is inextricable from the processes needed to realize the objectives of the Decade and of a 'blue economy'.

Reflecting on the challenges facing the ocean, the primary interests in competition today reflect those of the UNLOS negotiations in the latter half of the 20<sup>th</sup> century, to different degrees and with new urgencies. In comparison to the era of the UNCLOS negotiations, today technology is advancing even more rapidly, and environmental concerns are more widely accepted as central considerations in ocean-related activities.

The power exercised over ocean spaces is detrimentally unequal. While only a handful of powers are positioned to explore and exploit the ocean, the relative rise or return of great powers outside the West drives increased militarization of ocean spaces.

The **EU has a vast maritime presence**. The French Exclusive Economic Zone (EEZ) constitutes the second largest in the world, of which 93 percent is in the Indopacific. The global reach of the EU's economy ('blue' and otherwise) is a direct result of Europe's imperial history, which has retained European island territories in every ocean. This far-reaching presence is a strength in driving forward a sustainable agenda for the ocean but also leaves a legacy of resource and commodity conflict with the potential to unbalance and destabilize efforts to European objectives at sea.

### **International interests and transboundary challenges on the ocean**

An overview of some of the main issues and economic activities at stake on the ocean today illustrates the need for an all-hands-on-deck approach with OSD:

**Climate change** is altering sea levels, ocean currents and marine environments across the world. Discrepancies between the Global North and South in data, technology and funding makes it more difficult to glean a complete view of the problem and anticipate its consequence. Small island developing states (SIDS) will be particularly impacted by climate change, some risking 'near-total loss' of land if the average temperature reaches three degrees above the pre-industrial era.<sup>1</sup> These countries have some of the smallest carbon footprints in the world and significantly less capacity to mitigate and adapt to global warming. In the pursuit of new and improved treaties on the ocean and marine life, these disparate circumstances beg the question of how much support should be entitled to the peoples and countries facing the highest and most imminent risks.

**The ocean is being polluted** by industrial waste, oil spills and an estimated eight million metric tons of plastic which enters the ocean every year.<sup>1</sup> The ocean has absorbed up to half of all anthropogenic carbon since the Industrial Revolution, while a third of some of our planet's most intense carbon sinks – mangroves, coral reefs and salt marshes of the ocean coasts – have been destroyed. The GOSR2020 found that only 21 percent of the countries surveyed had a specific strategy for achieving SDG14. The health and sustainability of the ocean must be placed at the forefront of the various activities competing for ocean space and political backing.

The ocean is sometimes referred to as the **last frontier on Earth**, alluding to a possible abundance of valuable resources still largely unexploited by humans. For instance, technological advances are promising more effective extraction of metals and minerals of the deep sea that were previously difficult to access. Manganese nodules found on the deep-sea floor have a dense composition of metals used in batteries and their extraction from the ocean floor beyond any national jurisdiction may be a lucrative endeavour for those with the technical capacities.



**Conservationists and scientists** argue that the energy-intensive, noisy and invasive process causes severe disruptions in the marine environment. They have long been at odds with corporations and governments who assert that the metals are essential to human progress, a stance that is gaining support as the world's green transition beckons greater reliance on batteries. Mining of deep-sea resources is not only controversial for ecological reasons but has historically contributed to geopolitical turmoil due to fears of ocean riches being monopolized by the more technologically advanced nations of the world. It was the promise of 'easy' extraction of these minerals that caused the geopolitical tension that caused the UNCLOS negotiations in general and the seabed mining regime debate to become so protracted and acrimonious during the 1970s.<sup>1,1</sup>

**Genetic resources** from the ocean may serve as key to both the restoration of threatened marine species like corals and to the development of new medicines such as anticancer drugs. Considering the ocean as one globally interlinked body of water, with vast areas beyond any national jurisdiction, these potentially life-saving resources provide a complex dilemma as to who has the right to study, extract and benefit from them.<sup>1</sup>

The **ocean environment is still relatively unknown**, with hundreds of thousands of species thought to be undiscovered. Last year, scientists passed the milestone of mapping 20 percent of the seafloor as part of the ambition to map its entirety by 2030<sup>1</sup>. Ocean research is also heavily concentrated in the Global North and significantly less data and knowledge are accessible or available from low- and middle-income countries.  
<sup>1</sup> This means that even if policymakers ground decisions in scientific evidence, the process still fails to account for perspectives and conditions in the Global South and ultimately generates practices skewed to favour Western stakeholders.

Conservationists and marine scientists warn that consolidated effort to **protect the ocean and preserve its biodiversity and ecosystem services** is of utmost importance in the battle for long-term ocean health. The target under SDG 14 to protect 10 percent of the ocean by 2030 is gaining momentum among governments, civil society and non-governmental organizations. The initiative is supported by research showing that spatial protection of marine and coastal resources can both mitigate climate change and facilitate adaptation to ongoing effects such as ocean acidification and sea-level rise. Spatial protection is also in line with many existing traditions. The global community is moving towards shared definitions and practices for spatial management, including formal marine protected areas and Other Effective Area-Based Conservation Measures.

**Funding** to manage and expand knowledge about the ocean is a relatively low priority on most countries' scientific agendas. The 2020 Global Ocean Science Report (GOSR2020) by the UNESCO-IOC conveyed the need for greater research funding by contrasting global spending on ocean science – an average of 1% of national research budgets – against the 1.5 trillion USD contribution of the ocean to the global economy. Of the top ten spenders on ocean sciences, eight are rich Western countries. Both an increase in research funding and a more just funding distribution is essential to building comprehensive understanding of the ocean's physical and biological environment as well as to strengthen climate change foresight.



## What role for the EU in ocean science diplomacy?

Ocean science diplomacy is a central process in the world's path towards a sustainable, prosperous and equitable relationship with our planet's ocean. But all voices are not equal in current OSD practices and processes. The health of the ocean is contingent on OSD that is inclusive and considerate of the environment at every single turn.

Like the rest of the world, the EU is heavily reliant on a healthy ocean. The EU is advancing its ocean management, from transforming its vast ocean-based economy to be more sustainable to advancing research on the global marine environment. A wealth of ocean research and knowledge infrastructures makes the EU a unique actor in the sphere of ocean science diplomacy with the potential to steer policies and support the capacities of its member states as well of those of its more resource-limited international partners.

A few cornerstone actions can organize the EU's capacities to harness OSD to address urgent challenges facing the Union, the ocean and the world.

### 1. **Embody good ocean governance**

The EU can be a leader in the movement towards sustainable ocean management. There is only one ocean on Earth and there is no Earth without the ocean. It is therefore essential that we do not hold back in policies nor resources in ensuring the ocean's long-term health. Considering the ocean connects Europe to the rest of the world, both physically and financially, EU-based policies and resources to address challenges of the ocean and the blue economy should naturally extend beyond the shores of member states. Science and diplomacy can couple to address human, social, economic and environmental sustainability, including ethical aspects, throughout the EU's global supply chain.

- Dedicate an OSD strategy or task force to the global climatic and environmental impacts of the EU's ocean-based economy
- Develop systematic support for reconciling economic needs with environmental necessities of the blue economy
- Provide practical support to countries acting throughout the EU's supply chains to ensure sustainability in every interaction with the ocean.

## **2. Engage comprehensive ocean knowledge for ocean diplomacy**

With a complex web of interests and risks at stake in/on the ocean, comprehensive knowledge and international cooperation are central to charting the EU's path forward. Sustainable development of ocean-based industries requires respecting the ocean as one global interconnected body and integrating environmental, technological, legal, economic, social, and humanities understanding into ocean policies. European marine scientists need to be trained and incentivized to embrace genuine global partnerships in research, including at the publishing and application stages.

- Support inclusive marine science and integrate a diversity of perspectives in the development of ocean governance
- Foster better convergence in Europe's extensive ocean research and knowledge infrastructures and channels
- Expand the geographic confines of our ocean knowledge by supporting ocean sciences research in and with the global south
- Embrace science diplomacy exercises. On one front, science diplomacy can broaden ocean scientists' understanding of their own research's application to industry and national objectives; and on another, commercial actors can build their ecological acumen towards more environmentally conscious business decisions.

## **3. Capitalise on existing ocean science and governance resources in Europe**

The EU neighbourhood collectively is the global leader in ocean sciences funding. However, ocean topics still constitute a small portion of the EU's total research budget, lower than expected considering the ocean's integral role in planetary processes as well as the EU and global economies. In addition to key intergovernmental institutions headquartered in Europe, every EU member state has an oceanographic centre and at least one university with an institute for maritime affairs. Together with the authority of the Common Fisheries Policy, the EU can capitalise on these governance and research resources to strengthen intra-EU interactions between diplomacy and knowledge professions.

- Boost ocean research funding
- Draw on the high-calibre expertise and infrastructures that already exist in Europe to advance OSD, including through genuine partnerships within and outside of the region
- Enhance channels for marine institutes to support OSD as providers of crucial data and impact monitoring.

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