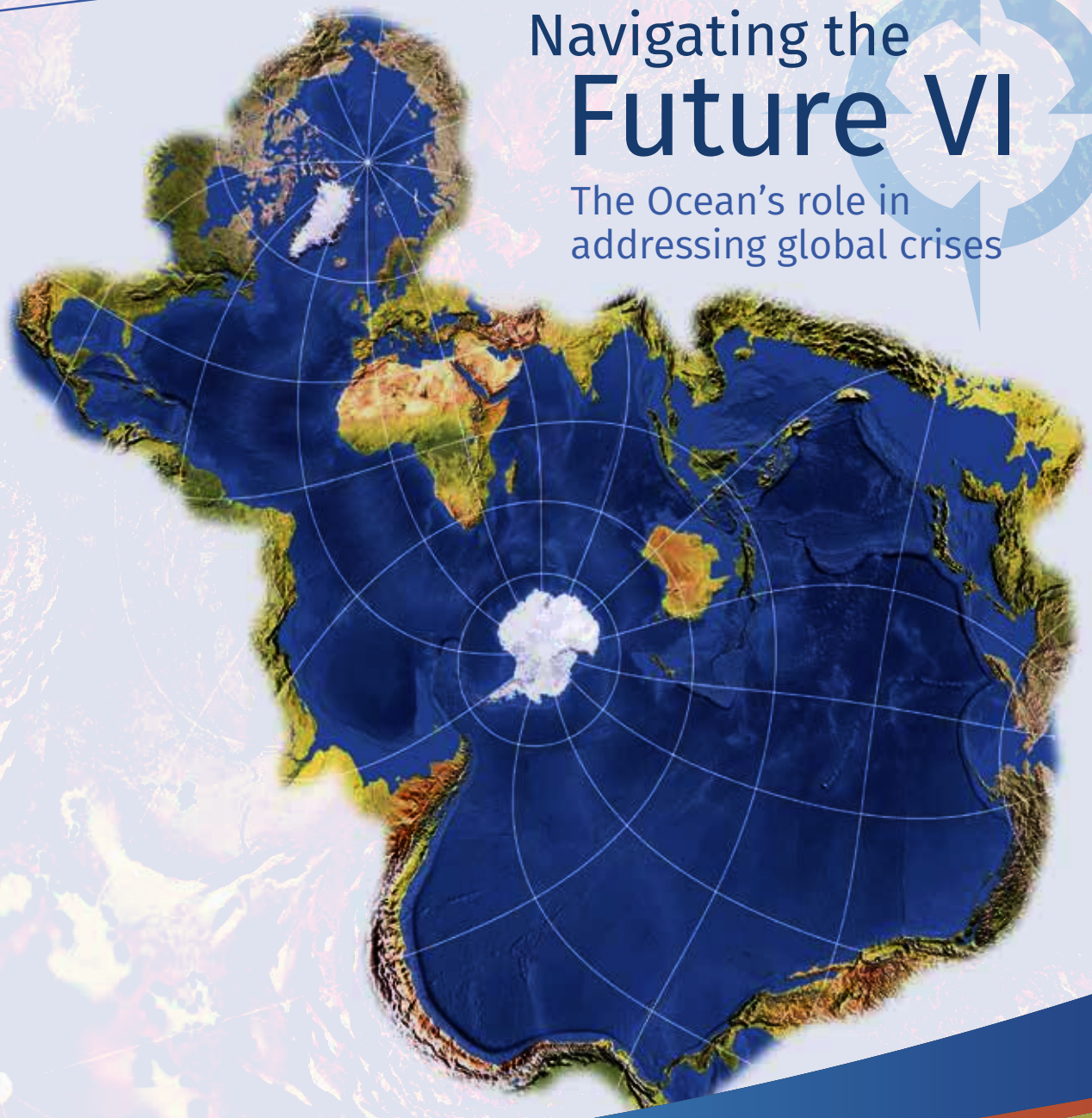
EMB POLICY BRIEF

N° 13 February 2025

Navigating the Future VI

The Ocean's role in addressing global crises



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European Marine Board IVZW

The European Marine Board provides a pan-European platform for its Member organisations to develop common priorities, advance marine research, and to bridge the gap between science and policy in order to meet future marine science challenges and opportunities.

The European Marine Board (EMB) is an independent and self-sustaining science policy interface organisation that currently represents 38 Member organisations from 19 European countries. It was established in 1995 to facilitate enhanced cooperation between European marine science organisations towards the development of a common vision on the strategic research priorities for marine science in Europe. The EMB promotes and supports knowledge transfer for improved leadership in European marine research. Its membership includes major national marine or oceanographic institutes, research funding agencies and national consortia of universities with a strong marine research focus. Adopting a strategic role, the European Marine Board serves its Member organisations by providing a forum within which marine research policy advice is developed and conveyed to national agencies and to the European Commission, with the objective of promoting the need for, and quality of, European marine research.

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European Marine Board Member Organisations

This Policy Brief is based on Position Paper N°. 28[1]. of the European Marine Board, drafted by an interdisciplinary working group (WG NFVI, October 2022 - October 2024) consisting of 33 experts, nominated by the European Marine Board Member organisations.

[1] European Marine Board (2024) Navigating the Future VI: Placing the Ocean within the wider Earth system. Position Paper 28 of the European Marine Board, Ostend, Belgium. 116pp. ISSN: 0167-9309 ISBN: 9789464206265. DOI: 10.5281/zenodo.13329469 https://www.marineboard.eu/publications/nfvi

Navigating the Future Series

The Navigating the Future foresight series provides periodic reviews of the current state of knowledge in marine science and gives strategic direction regarding the upcoming challenges and needs in marine science and policy.

The first edition of the Navigating the Future series (NFI, 2001) highlighted the importance of a marine European Research Area at a time where European collaboration was still in its infancy. The concept of integrated marine science in Europe was further developed in Navigating the Future II (NFII) published in 2003. Today, collaboration at sea-basin, European and international level is the key foundation upon which modern marine science and policy are built.

Navigating the Future III (NFIII, 2006) showcased trends, opportunities and challenges in marine science and policy. Although NFIII was focused solely on marine natural sciences, the topics covered, including climate change, marine biodiversity and resource management, are still relevant today.

Navigating the Future IV (NFIV, 2013) was published during preparation for the Europe Commission's Horizon 2020 Framework Programme. The importance of marine science in addressing grand societal challenges (e.g. sustainably harvesting food from the Ocean, producing energy) was highlighted, as were critical enablers (e.g. Ocean observing, marine training). NFVI also called for fora to bring together marine scientists, policymakers, industry, and coastal stakeholders to engage in periodic dialogues to ensure these challenges were addressed effectively. The European Blue Forum and the Sustainable Blue Economy Partnership, both launched in 2023, are examples of this call being put into practice.

Navigating the Future V (NFV, 2019) considered the role of marine science in addressing global challenges to 2030 and beyond, and urged the marine science and policy communities to break out of their silos and move towards closer collaboration to address global challenges. These calls have been taken up in key Ocean initiatives including the EU Mission: Restore our Ocean and Waters (Mission Ocean) and the UN Decade of Ocean Science for Sustainable Development (Ocean Decade), as well as in numerous Horizon Europe Framework Programme calls.

Navigating the Future VI: Placing the Ocean within the wider Earth system

Navigating the Future VI (NFVI) builds on the messages of the previous editions, and prominently includes social sciences alongside the natural sciences. NFVI takes the next step for the Navigating the Future series by considering the natural and social marine science needed to help us address the global challenges and the collaborations needed to co-construct solutions. It focuses on four themes: Ocean and People, Ocean and Climate, Ocean and Fresh Water, and Ocean and Biodiversity. These reach beyond the Ocean, showcasing it's importance and role in the wider Earth system, and highlighting our values and relationships associated with the Ocean. It demonstrates the importance of societal aspects in understanding these marine systems, the impact of climate, fresh water, and biodiversity crises on the Ocean and human communities, and the Ocean's role in addressing these.

NFVI closes by outlining the overarching requirements needed across these four themes to ensure effective research and policies to support Ocean sustainability and governance.

Credit: Dzintra Grinbergs

Gulf of Morbihan, France

The Science behind these four themes is described in the Position Paper

Here we highlight the research and policy recommendations by thematic chapter.

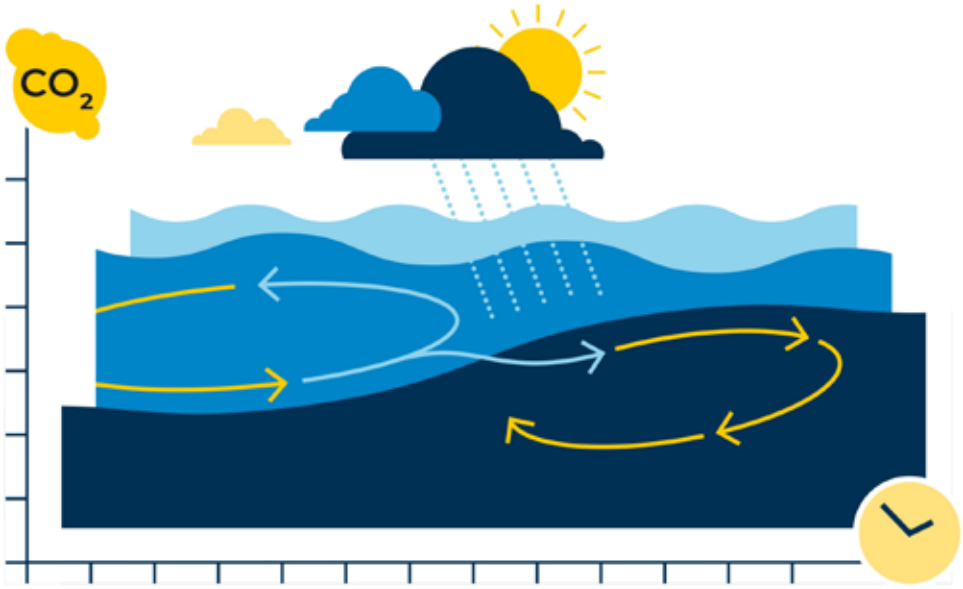
Ocean & People

Working together to manage our Ocean interactions

- Strengthen our understanding of the Blue Economy and the potential for future developments
- Explore the many different Ocean values, and better understand the interconnections between humans and the Ocean
- Reform Ocean governance to ensure equitable community participation and consideration of values and knowledge
- Recognise the need for structural change in Ocean policy, research and management
- Use appropriate criteria to monitor engagement in citizen science projects
- Increase capacity in and appreciation of all forms of collaboration

Ocean & Climate

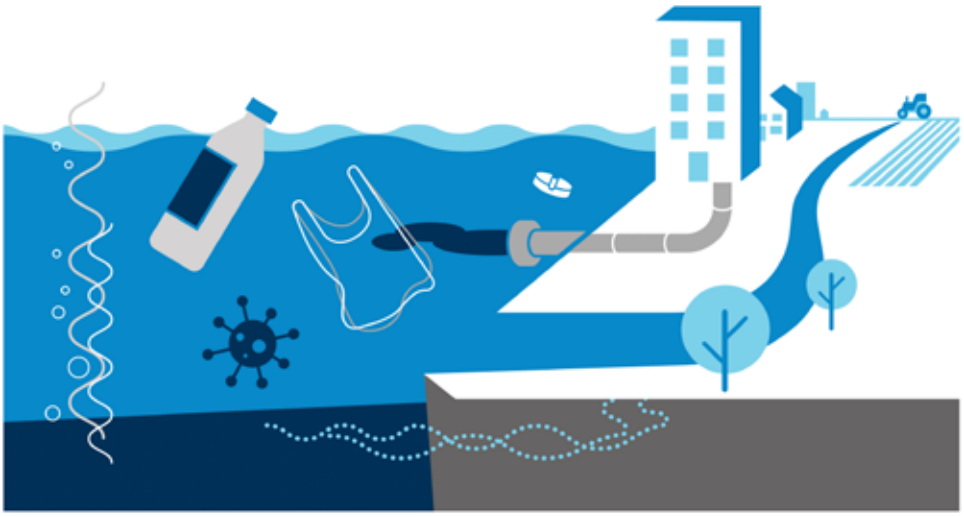
An Ocean that is no longer impacted by climate change



- Gain full understanding of marine ice sheet instability and impacts of melting
- Build holistic coastal management plans to ensure adaptation and liveability
- Address knowledge gaps highlighted by IPCC as 'low' or 'very low' confidence
- Conduct research to identify Ocean signals for coastal adaptation tipping points
- Measure and map naturally occurring CO_2 and methane to address uncertainties related to potential release
- Research the 'triple threat' synergistic effects of warming, deoxygenation and acidification

Ocean & Fresh Water

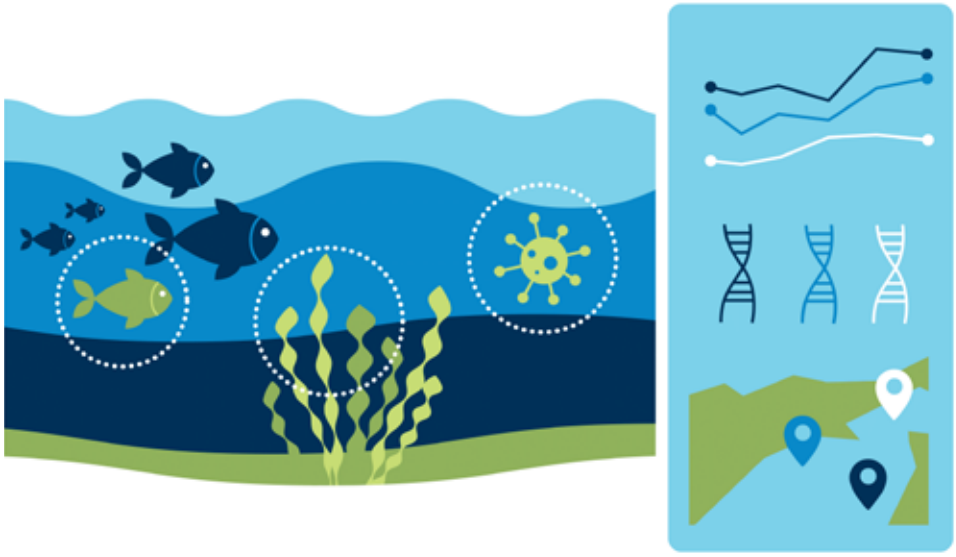
Clean and safe waters available to all communities



- Include all contaminants and discharge pathways in risk assessments and EU Directives
- Monitor deteriorating coastal freshwater reserves and submarine discharges
- Broaden monitored parameters to understand salination impacts
- Create nature-based cost-effective technologies for emerging and legacy pollutants
- Monitor biochemical and genetic markers to prevent the spread of diseases
- Harmonise monitoring and reporting methods between freshwater and marine systems

Ocean & Biodiversity

A biodiverse Ocean that continues to provide ecosystem services



- Study and effectively manage the impacts of emerging and expanding human activities on marine biodiversity
- Assess the impact of human activities on ecosystems using cost-benefit analysis of their conservation or restoration
- Study and monitor the spatial-temporal distribution and adaptive potential of marine organisms
- Evaluate the epidemiological, genetic, and ecological consequences of invasive species
- Study the distribution of marine microorganisms to predict future epidemic risks from invasive microbes or resistance to antibiotics
- Promote all initiatives to increase biodiversity knowledge and capacity building, including the European Digital Twin, citizen science, recovering lost knowledge, and using traditional and new tools

Supporting requirements

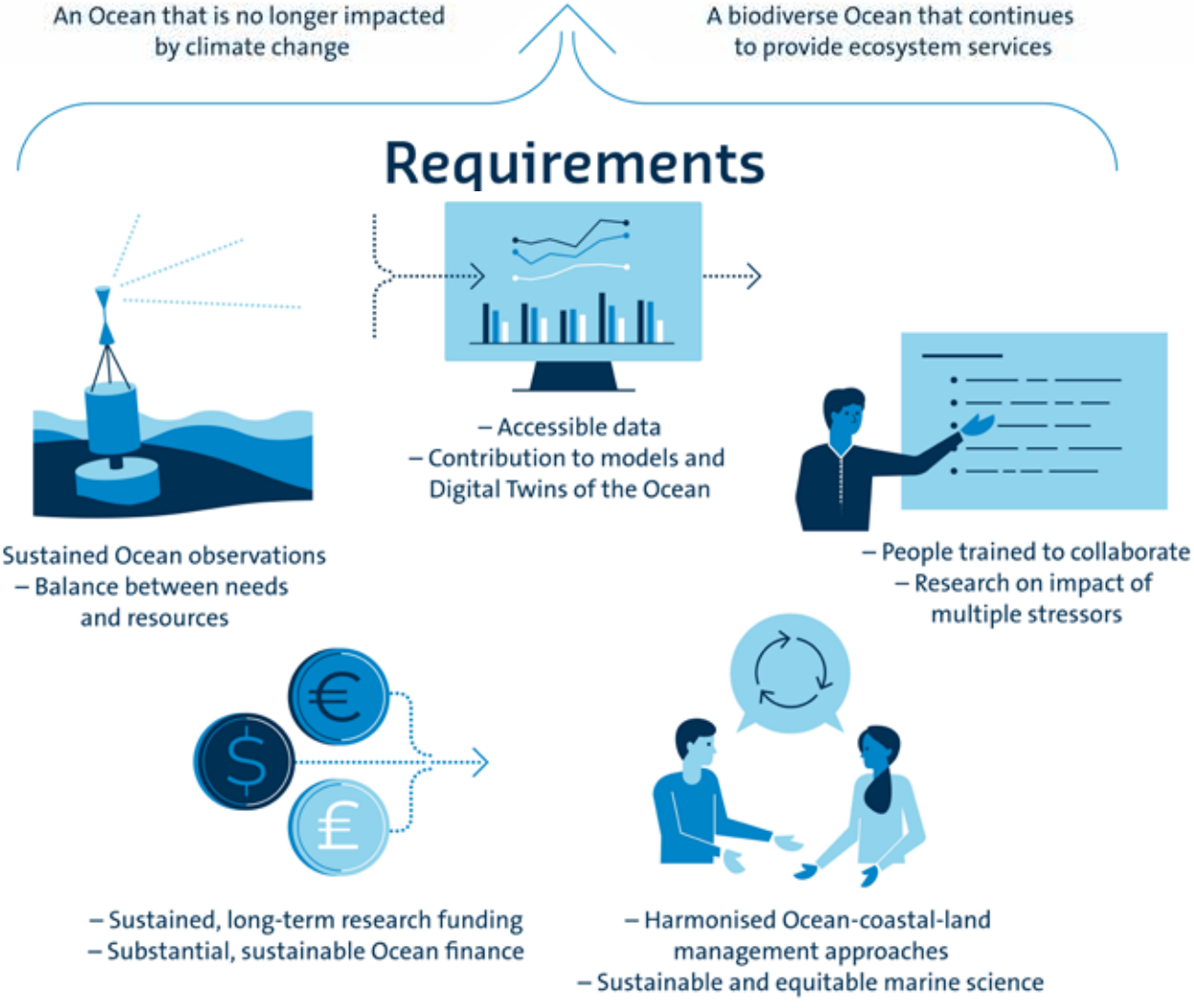
The research and policy recommendations proposed in NFVI cannot be achieved without the support of the cross-cutting requirements presented below:

Working together to manage our Ocean interactions

Clean and safe waters available to all communities

An Ocean that is no longer impacted by climate change

A biodiverse Ocean that continues to provide ecosystem services



2021 2030 United Nations Decade of Ocean Science for Sustainable Development

This Policy Brief and its recommendations support the UN Decade of Ocean Science for Sustainable Development and the EU Mission: Restore our Ocean and Waters. For more details, please read Position Paper 28 of the European Marine Board.

References and suggested further reading

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EMB Policy Briefs provide a high-level summary of the key research needs and priorities on topics of strategic and emerging importance in seas and ocean science from a European perspective. Policy Briefs are usually summary versions of full EMB Position Papers, produced by EMB expert Working Groups.

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