Blue Tech Europe 2026

Policy Recommendations for Scaling Blue Technologies for Ocean Observation in Europe

EMBRC EUROPEAN MARINE BIOLOGICAL RESOURCE CENTRE

MARCO-BOLO STRENGTHENING BIODIVERSITY OBSERVATION IN SUPPORT OF DECISION MAKING

SOOP

TRICUSO SOUTHERN OCEAN CARBON OBSERVATION

BIOGEOSEA Ocean Insights for the Future

OBAMA-NEXT

European Commission

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Acronym List

- **AI** – Artificial Intelligence
- **AUV** – Autonomous Underwater Vehicle
- **EU** – European Union
- **eDNA** – Environmental DNA
- **ML** – Machine Learning
- **NGO** – Non-Governmental Organisation
- **ROV** – Remotely Operated Vehicle
- **SME** – Small and Medium-sized Enterprise

Introduction

The ocean is essential for climate regulation, biodiversity, economic resilience, and environmental governance, and a strategic asset for Europe. As pressures on marine ecosystems intensify and geopolitical dynamics evolve, the ability to observe, understand, and act upon ocean data has become a matter of both sustainability and sovereignty.

Europe holds a strong position in marine science and ocean observation technologies. However, this leadership is not fully translated into operational systems, scalable markets, or technological autonomy. Fragmentation across Member States, weak market pull, limited industrial scale-up, and persistent gaps between research and application continue to hinder impact.

At the same time, rapid advances in digital technologies, artificial intelligence, autonomous systems, and biological monitoring are creating new opportunities to transform ocean observation. Realising this potential requires more than innovation; it demands a coordinated European approach that aligns science, industry, policy, finance, and society.

Europe's challenge is not only to develop new technologies, but to ensure that proven technologies can be deployed, maintained, and integrated into sustained observing systems. Many observation tools remain dependent on project-based funding, which limits continuity, comparability, and long-term impact. A stronger emphasis on operational readiness, lifecycle support, and institutional ownership would help bridge the gap between innovation and sustained ocean monitoring.

The Horizon Europe projects MARCO-BOLO, TRICUSO, OBAMA-NEXT, BioGeoSea, together with the European Marine Biological Resource Centre (EMBRC-ERIC) and the German initiative Shaping an Ocean of Opportunity (SOOP), organised the Blue Tech Europe conference, gathering marine industry, researchers, marine observation experts, research infrastructures, and policy makers to address these challenges.

This document outlines five key recommendations to address these challenges identify by the Blue Tech Europe conference. Together, they aim to:

- **Strengthen European technological sovereignty**
- **Bridge the gap between research and market deployment**
- **Unlock the value of ocean data**
- **Stimulate demand and investment**
- **Strengthen system enablers of translation: skills, incentives, and intermediaries**

The transition ahead is systemic. Europe must move from **fragmented, project-based approaches** to **integrated, long-term, and operational ocean observation systems**, capable of supporting policy, driving economic value, and reinforcing Europe's global leadership.

Recommendation 1. Build European technological sovereignty through coordinated and strategic procurement

To secure Europe's autonomy in ocean observation, **technological sovereignty must be treated as a strategic obligation**, aligned with regulatory frameworks (such as the Marine Strategy Framework Directive (MSFD). Current dependencies and fragmentation expose Europe to geopolitical, economic, and operational risks.

The European Commission and Member States should:

- **Establish coordinated European governance**
  Accelerate the implementation of a unified ocean observation framework (e.g. Ocean Pact / Ocean Eye) and assess the creation of a central coordination body (e.g. European Ocean Agency) to align investments, priorities, and standards.
- **Develop joint procurement alliances across Member States**
  Pool demand at the European level to overcome market fragmentation, create scale, and provide clear demand signals for European technologies and services.
- Ensure that procurement frameworks cover the full lifecycle of ocean observation technologies, including deployment, maintenance, calibration, data integration, training, and long-term operational support.
- **Reform procurement to support innovation and SMEs**
  Expand the use of pre-commercial procurement and mission-oriented contracts, enabling SMEs to access markets despite limited deployment track records and supporting the scale-up of European solutions.
- **Strengthen European industrial capacity and supply chains**
  Prioritise investment in manufacturing, deployment capabilities, and critical components to reduce reliance on non-European technologies.
- **Align regulation, innovation, and industrial policy**
  Ensure that regulatory obligations (e.g. environmental monitoring requirements) are systematically linked to European technological solutions through public procurement and funding instruments.
- **Support long-term observatory sustainability** through dedicated funding mechanisms for maintenance, calibration, technology refresh, and operational continuity.

Recommendation 2. Bridge the translation gap between academia, industry, and markets

To unlock the full value of Europe's scientific excellence, **closing the translation gap must become a strategic priority**. The core challenge is not generating knowledge, but **converting it into scalable, investable, and market-ready solutions**.

The European Commission and Member States should:

- **Strengthen structured academia–industry collaboration frameworks**
  Develop long-term partnerships that align incentives, timelines, and outcomes between research organisations and industry, moving beyond ad hoc project-based cooperation. Favorise knowledge and technology transfer between academia and industry.
- **Leverage European Research Infrastructures as scaling platforms**
  Position Research Infrastructures as innovation testbeds and deployment environments, supporting both technology validation and spatio-temporal scaling of observation systems.
- Develop structured pathways from prototype testing to operational deployment, including technology readiness assessment, long-term field validation, and clear criteria for integration into sustained observing systems.
- **Ensure structured and early access for SMEs**
  Replicate and scale models such as SmartBay, across Europe, embedding SME access into infrastructures from the outset to accelerate innovation uptake and commercialisation. Ensure academic inventors are well-networked with SMEs for ocean instrumentation, through participation in this same infrastructure.
- **Embed industry involvement early in the innovation cycle**
  Promote co-design and interdisciplinary approaches where industry participates from the research phase, ensuring technologies respond to real market needs and reducing downstream adoption risks. Promote the development of transformative technologies that will have broad uptake in the ocean observing community.
- **Stimulate markets by supporting science discovery with high-TRL instrumentation**
  Scientists are the technologies' best advertisers, and markets grow when peers see new capabilities are available and accepted through peer review.
- **Accelerate patenting and market assessment through simplified contracts and reporting**
  Create simplified funding mechanisms for small-scale academic contracts to support inventors' 1) patenting, 2) subcontracted market assessments, 3) patent development and 4) filing. Ensure identified businesses from market assessments are connected directly with the inventor and technology transfer office.
- **Protect and retain European innovation value**
  Strengthen mechanisms to ensure that publicly funded research leads to European-based scaling and industrialisation, reducing the risk of early-stage innovations being captured by non-European actors.

Recommendation 3. Unlock the value of ocean data through integration and user-oriented systems

To fully realise the strategic, environmental, and economic value of ocean observation, Europe must **prioritise observational data as the core asset**, moving beyond technology deployment to deliver **actionable, decision-ready intelligence**.

The European Commission and Member States should:

- **Integrate ocean monitoring as core infrastructure**
  Ensure that essential ocean variables (EOVs) and essential biodiversity variables (EBVs) are systematically embedded in ocean observation systems, recognising their critical role as early indicators of ocean state.
- **Accelerate the development of machine-interoperable data infrastructures**
  Expand and connect existing European data platforms to ensure standardisation, interoperability, and seamless data exchange across countries, systems, and technologies.
- **Invest in real-time data processing and advanced analytics**
  Support the deployment of AI, machine learning, and digital tools to transform raw data into usable insights, forecasts, and decision-support services.
- **Prioritise long-term continuity, comparability, and quality assurance of ocean observation data**, as these are essential for detecting trends, assessing ecosystem change, and supporting policy-relevant indicators.
- **Strengthen data quality, metadata, and trust frameworks**
  Establish robust standards for data validation, documentation, and traceability to ensure reliability, comparability, and user confidence.
- **Develop user-driven data services and feedback mechanisms**
  Shift from technology-centric approaches to **user-oriented outputs**, ensuring that data products respond to the needs of policymakers, industry, and society, with clear evidence of impact and value.
- **Ensure that emerging data streams, including autonomous platforms, imaging systems, eDNA, and sensor networks, are integrated into existing European data infrastructures using common metadata, calibration, and quality-control standards.**
- **Promote data gathering from alternative platforms through governance systems e.g. shipping industry, accessibility e.g. sailing and watersports**
- **Promote FAIR (Findable, Accessible, Interoperable, Reusable) data principles and open standards across all European ocean observation systems.**

Recommendation 4. Stimulate market creation and strengthen demand signals to enable scaling

To scale ocean observation technologies and services, Europe must address the structural lack of market pull. While funding for research and innovation exists, weak demand signals, fragmented markets, and a risk-averse investment environment continue to limit growth and deployment.

The European Commission and Member States should:

- **Create stronger and more predictable market demand**
  Use public procurement and mission-driven programmes to provide clear, long-term demand signals for ocean observation technologies and data services.
- **Develop European-scale markets through coordinated demand**
  Foster collaboration and alliances among Member States to overcome fragmentation and build larger, more integrated markets for marine technologies.
- **Promote diversified and blended funding models**
  Combine public funding with private investment and philanthropic capital to support the full innovation cycle, particularly early-stage and scale-up phases.
- **Distinguish clearly between research funding, innovation funding, and operational funding. Scaling requires dedicated mechanisms that support the transition from project-based development to sustained service provision**.
- **Strengthen the structuring and visibility of the ocean enterprise sector**
  Support initiatives such as *Ocean Enterprise* to better organise ocean observation as an economic sector, clearly defining the roles of decision-makers, public research organisations, and private companies. Prioritise the measurement and valuation of the ocean economy in Europe to improve market visibility, attract investment, and inform policy.
- **Improve visibility and economic positioning of the ocean sector**
  Reinforce tools such as the EU Blue Economy Report to provide clearer data on market size, opportunities, and impact.
- **Ensure accessibility and usability of technologies**
  Support the development of affordable, robust, and user-friendly solutions, enabling wider adoption across sectors, including smaller actors and non-scientific users.

Recommendation 5. Strengthen system enablers of translation: skills, incentives, and intermediaries

To effectively translate innovation into impact, Europe must address **systemic misalignments in skills, incentives, and roles** across research, operational ocean observing, and innovation/industry. Without targeted action, promising technologies will continue to stall before reaching operational deployment.

The European Commission and Member States should:

- **Embed translation skills and hybrid profiles in research careers**
  Integrate entrepreneurship, market understanding, and innovation management into PhD and postdoctoral programmes, fostering profiles capable of operating across science, industry, and policy.
- **Support structured roles for intermediaries (“bridgebuilders”)**
  Establish and fund knowledge brokers, innovation managers, and business developers as essential actors in the ocean observing system, rather than ad hoc or project-based roles. Recognise and support technical, operational, and data-stewardship roles as essential components of the ocean observing system. Career structures and funding mechanisms should value field technicians, sensor specialists, data managers, and infrastructure operators alongside researchers and entrepreneurs.

- **Promote and normalise career mobility across sectors**
  Encourage and incentivise movement between academia, industry, and policy, including recognising industry experience as a valuable scientific career pathway.
- **Align incentives with impact and operational outcomes**
  Adapt funding, evaluation, career progression systems and reward to inventors schemes to reward collaboration, technology transfer, and real-world deployment, not only academic outputs.

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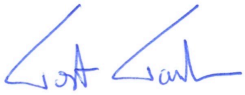

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