European Ocean Act – Call for evidence

The French National Centre for Scientific Research (CNRS) is Europe's leading research-performing organisation, recognised for its excellence in fundamental and applied science and for its commitment to advancing knowledge and innovation for the benefit of society. As a major actor in marine and coastal research, and a long-standing partner in European and international ocean observation and sustainability initiatives, the CNRS contributes to building a robust scientific foundation for ocean governance and environmental policy.

The CNRS warmly welcomes the European Commission's consultation on the forthcoming Ocean Act, which represents a decisive step toward a coherent, science-based, and forward-looking European framework for sustainable ocean management. This initiative aligns with Europe's strategic vision for a stronger blue economy, resilient marine ecosystems, and integrated ocean observation and planning systems.

The CNRS strongly supports the ambition to place ocean knowledge, observation, and governance at the heart of EU environmental and climate policy, ensuring that decision-making at sea-basin and global levels is guided by robust evidence and long-term scientific monitoring.

CNRS Contribution

The forthcoming Ocean Act offers a timely opportunity to move beyond fragmented, sector-focused approaches and adopt a more integrated, science-informed, and climate-aware framework for European ocean governance. By enabling long-term, sea-basin level perspectives, it can help address cumulative pressures, land–sea interactions, and growing spatial competition between uses, while supporting resilient coastal communities and a sustainable blue economy.

Current frameworks remain constrained by several structural limitations: a mainly two-dimensional approach to maritime spatial planning, insufficient articulation between spatial planning and environmental legislation, fragmented sea-basin governance, and a lack of tools to anticipate and manage cumulative environmental, social and economic impacts under climate change. At the same time, Europe can build on strong assets, including high-quality ocean observation networks, emerging Digital Twin of the Ocean capabilities and a rich landscape of research infrastructures and expertise supporting ecosystem-based management.

As a major actor in marine and coastal research, and co-leader of national and european observation initiatives, the CNRS has helped to develop tools and approaches that directly respond to the challenges identified by the Commission: systemic assessment frameworks for socio-ecological impacts, indices for evaluating maritime spatial plans, equity metrics for ocean policies, and innovative observation technologies, observing systems and data infrastructures. The Ocean Act is an opportunity to embed these approaches in EU legislation, by placing socio-ecosystems at its core, strengthening climate-smart maritime spatial planning and establishing a robust governance framework for the European Ocean Observation System and open, traceable data infrastructures.

Building on these strengths and addressing the obstacles identified above, the CNRS puts forward six key recommendations aimed at contributing to the development and effective implementation of the Ocean Act.

Recommendations

1. Place socio-ecosystems at the core of the Ocean Act

The CNRS recommends that the Ocean Act explicitly place marine and coastal socio-ecosystems at its foundation, recognising land–sea continuities and feedbacks between human activities, biodiversity, ecosystem functioning and climate. This includes fluxes from land to sea (for example pollutant inputs)

and from sea to land (for example salinisation of coastal agricultural land, shoreline change and marine flooding), as well as the broader biodiversity–climate–society nexus.

In this perspective, maritime spatial planning should be firmly grounded in a systemic socio-ecological approach. This requires the use of integrative scientific tools capable of capturing interactions between environmental, social and economic dimensions. Scientific tools developed by CNRS and partners, in particular the Marine Spatial Planning Index (MSP Index) and the Ocean Equity Index, provide such frameworks. The Ocean Equity Index complements environmental assessments by explicitly addressing distributive and procedural fairness in ocean governance. It can help ensure that EU maritime public policies are equitable across sectors, regions and communities, and socially robust over the long term.

2. Harmonise planning and environmental assessment frameworks

The Ocean Act should reinforce the articulation between Maritime Spatial Planning (MSP) and the Marine Strategy Framework Directive (MSFD), explicitly integrating climate dimensions and moving towards a genuinely strategic three-dimensional planning framework (vertical, horizontal and temporal). The current EU framework remains largely based on a two-dimensional vision of planning, which constrains its ability to address water-column processes, deep-sea dynamics and long-term temporal evolution. In addition, legal gaps and inconsistencies continue to hinder effective and coherent implementation.

To address these shortcomings, the Act should:

- pursue a holistic and integrated approach to monitoring and planning under the MSFD, ensuring continuity of existing long-term time-series and supporting the development of new series based on emerging tools;
- promote the recognition and adoption of international standards relevant for planning and monitoring;
- support the development of integrated sea-basin plans that bring together all binding EU targets, for example through macro-regional plans and harmonised methodologies;
- encourage more integrated planning that also covers coastal and near-coastal zones; and
- extend the revised framework to the outermost regions and overseas territories, while fully reflecting their specificities.

From a methodological viewpoint, the CNRS recommends an approach based on systemic socio-ecological assessment: measuring cumulative impacts, both positive and negative, of environmental, economic and social drivers. Moving from a purely spatial to a strategic planning instrument requires scenario-based planning that integrates climate change, anticipates cumulative impacts, tracks progress towards objectives over time and allows for adaptation of policies where needed. The MSP Index can be used to assess the quality and maturity of such strategic planning processes.

The CNRS also notes several strengths in current implementation that should be preserved and strengthened: the dialogue between stakeholders, and the interactions between planning authorities and the research community. France, in particular, benefits from an excellent ocean observation network, deployed from the coastal zone to the global ocean. Consolidating this network and developing closer links between observation systems and planning policies would help maintain planning systems firmly grounded in science.

3. Develop climate-smart and forward-looking maritime planning

The CNRS recommends that the Ocean Act establish truly “climate-smart” maritime spatial planning as a central tool for implementing national and EU policies. Planning should be scenario-based, holistic and adaptive, integrating climate change, new climate-related uses (such as marine renewable energies, adaptation measures and the relocation of activities) and emerging pressures on marine space.

This implies:

- introducing MSP that explicitly integrates all ocean-related objectives on climate, biodiversity and pollution;
- adding binding criteria for the identification, protection and management of ecologically sensitive areas;
- requiring systematic assessment of cumulative impacts of activities (energy, fisheries, transport) on biodiversity, in line with the MSFD while developing new indicators to anticipate emerging pressures;
- promoting a "multi-use by design" approach to maritime planning, including explicit ecological compatibility criteria for co-located activities (e.g., aquaculture + marine renewable energies), supported by cumulative impact studies (covering combined effects of noise, pollutants, and changes in biogeochemical and biological parameters) and coupled biogeochemistry/omics modelling;
- ensuring that MSP and MSFD are harmonised, with climate aspects integrated and sea-basin-level management pursued.

The European Marine Board has highlighted that management at sea-basin level is critical for sustainable marine use, while MSP remains a national competence. National plans should be developed in consultation with regional partners to ensure optimal outcomes for the blue economy, the environment, and coastal communities.

In terms of implementation, the CNRS recommends consolidating existing observing systems (throughout the network of marine reserach infrastructures) and establishing innovative monitoring systems that can react to new scientific findings and anticipate changes in socio-ecosystems with provisions for regular updates of spatial plans. In particular, innovative observation systems are essential to identify, monitor and evaluate specific technologies and their application (e.g., potential marine Carbon Dioxide Removal techniques). This innovative observation systems will also enable the integration of new knowledge, emerging marine sectors and uses and ongoing climate-driven changes. The mesopelagic zone (100–1 000 m), which is central to the biological carbon pump and to marine resources, should be explicitly recognised as a sensitive zone within this framework.

4. Establish robust governance for the European Ocean Observation System (EOOS)

The CNRS strongly supports the creation of a strong legal framework for the governance of the European Ocean Observation System. The Ocean Act should establish a formal European Commission–Member State forum for EOOS, supported by an operational European coordination structure and well-organised national coordination structures.

This forum should:

- set priorities for ocean observations, research and innovation activities;
- analyse gaps in current ocean observing activities, review the costs and performance of the system and map its economic and environmental benefits;
- ensure structured stakeholder involvement, including Regional Sea Conventions; and
- establish close links with EU digital ocean and information services (EU Digital Twin of the Ocean, Copernicus Marine and EMODnet) to design and regularly review EOOS performance.

Within this governance framework, the Ocean Act should ensure that EOOS supports an integrated, ecosystem-based and policy-relevant approach to ocean management.
To this end, EOOS governance should promote observation principles that:

- support comprehensive monitoring of marine biodiversity, covering key components of ecosystem functioning (benthic and pelagic) and contributing to a shared and operational understanding of ecosystem health, in line with the One Health perspective, including through structured long-term biodiversity observatories such as CNRS-labelled SEE-Life schemes;

- facilitate the progressive integration of information on major human activities at sea, in order to better assess cumulative socio-ecological pressures and support climate-smart maritime spatial planning at sea-basin level;
- encourage the use of innovative and non-invasive observation technologies to improve the spatial and temporal coverage of observations, while remaining coherent with future dedicated EU initiatives on ocean observation.

The CNRS recommends that EOOS be funded jointly by Member States and the European Commission, with the Commission co-funding global and pan-European observation networks and supporting European coordination and research and innovation activities. Coastal observing systems should remain primarily the responsibility of Member States, while the Commission supports research, innovation and harmonisation.

In addition, the Act should:

- ensure coherence and synergies between the Ocean Act and the EU ocean observation initiative;
- support better coordination and funding of national oceanographic fleets, including stronger support for EuroFleet;
- accompany national fleets in their transition to low-carbon operations, in line with recent fleet foresight exercises;
- define a legal framework for integrating private initiatives into national fleet systems, addressing ethical aspects, compliance with scientific protocols and data use and valorisation;
- promote observation and management in parallel for coastal and offshore zones, as well as their interactions and interconnections, which are expected to intensify with the development of offshore wind and other offshore activities;
- take into account both sea-basin and biogeographical/ecosystem logics, to reflect intra-basin specificities; and
- pay particular attention to polar regions and the deep sea, which require specific governance frameworks.

5. Build an open, traceable and harmonised European data infrastructure

The CNRS recommends that the Ocean Act establish legal and technical standards to ensure that all data of scientific interest, including potentially valuable data, are collected and centralised in publicly controlled data centres. Drawing inspiration from the space sector, where even private satellite data are integrated into major public databases, all relevant ocean data should feed into shared, open infrastructures.

The Act should:

- rationalise monitoring and reporting obligations through standardised and digital data formats;
- ensure that reporting enables full data traceability, building on initiatives such as EMODnet, NCBI and the European Nucleotide Archive for genomic data;
- promote harmonisation of monitoring, observation and data-sharing at sea-basin scale, recognising that terrestrial borders are often not meaningful for marine ecosystems (for example for ecological connectivity, the spread of invasive species or fish stock assessment);
- establish a legal framework for automatic data collection (e.g. via satellites or Argo floats), ensuring that freely accessible data are not captured and exploited without safeguards by large digital companies;
- promote and develop formats for socio-economic data and ensure that such data are integrated on an equal footing with biophysical data, while recognising that they require specific and stringent legal provisions; and
- include a dedicated training component for scientists, managers and industry on the climate and technology dimensions of observation and data management.

Interoperability with EMODnet, Copernicus and the Digital Twin of the Ocean should be a central design principle of this European data infrastructure.

6. Reaffirm the structuring role of research in ocean governance

Finally, the CNRS recommends that the Ocean Act explicitly reaffirm the structuring role of research organisations in European ocean governance. Research institutions should be recognised as central actors in prioritising observations, developing and defining indicators and ensuring scientific interpretation of data, as well as in prospective modelling and scenario analysis.

The Act should build on existing strengths, such as the dialogue between stakeholders and the strong links between planning and research communities in several Member States. The EU's ocean observation initiative is inherently based on pooling research operations, both for large one-off campaigns and for the implementation and strengthening of European research infrastructures in ocean observation, all of which are run on a multinational basis. By formally embedding research organisations in the governance of the Ocean Act, the EU can ensure that maritime planning and decision-making remain firmly grounded in scientific knowledge and continuous evaluation.

➔ The CNRS views the European Ocean Act as a pivotal opportunity to integrate observation systems, planning and governance into a coherent legislative framework, addressing MSP fragmentation and MSFD synergies head-on. By embedding systemic tools, climate foresight, and sea-basin coordination, it can transform current constraints into actionable resilience for Europe's oceans. The CNRS stands ready to bring its research expertise and networks to this process, confident that an Ocean Act built on these foundations will prove equal to tomorrow's challenges.