

Policy Brief: Marine and Coastal Environments

The PROTECT Project

PROTECT supports urgent action for **climate adaptation, mitigation, and resilience**. It enables public authorities to use state-of-the-art public procurement approaches in order to identify solutions – **Climate Services (CS) based on Earth Observation** – that best fit the specific and systemic needs of the public demand. The focus is on five application domains, namely: Energy & Utilities, Sustainable Urban Communities, Agriculture, Forestry and other Land use, Marine and Coastal Environments and Civil Security and Protection. PROTECT will source and assess existing and high-potential CS solutions and technologies that use Earth Observation data. It will engage with an extensive and varied community of procurers, facilitate the definition and aggregation of their needs and functional requirements for climate services, explaining, fostering and supporting a 'buying with impact' approach. PROTECT will **prepare the operational ground for one or more joint, cross border or coordinated pre-commercial procurement (PCP) processes**. At policy level, it will provide decision-makers for procurement, climate and policy, at EU, national, regional and local levels, with practical recommendations and guidelines to boost the use of innovation procurement for climate action.

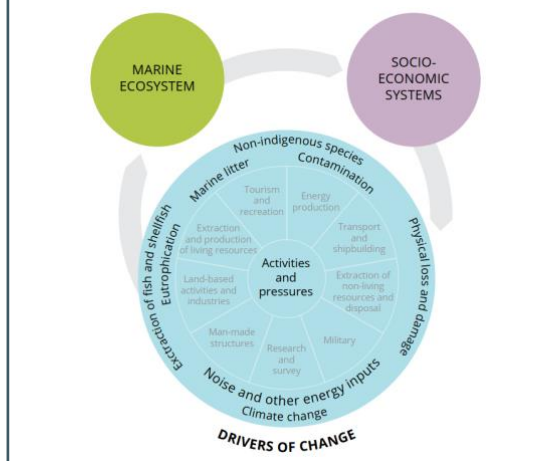
Summary

- Climate changes **exposes the Marine and Coastal Environments to several challenges**, including coastal erosion and degradation, flooding, rising water temperatures, extreme weather events, and inland intrusion of saltwater, all of which can affect freshwater supply as well as **fishing and aquaculture**.
- These challenges are reflected in EU policies, which **approach coastal management in a systematic way** [1], enabling the Marine and Coastal Environments to become more resilient to climate change and other pressures (Fig. 1).
- Climate Services using Earth Observation data can **support sustainable coastal development** and the monitoring of extreme events and weather patterns.

Recommendations

- To meet the EU's ambitious zero pollution, biodiversity, and fishing targets for Marine and Coastal Environments, **innovative solutions are required**.
- Climate Services utilising Earth Observation data can support the coastal management **in predicting extreme events** as well as increase the resilience of coasts to the multifaceted risks posed by climate change.
- A PCP call enables stakeholders to trigger the development of innovative solutions that can **address the main challenges** Coastal and Marine Environments are exposed to.

Fig 1. Pressures on Europe's seas [2].



Box 1: Pre-commercial procurement

Pre-commercial Procurement (PCP) is a specific approach to procure R&D services that involves competitive development in phases, risk-benefit sharing under market conditions, and where there is a clear separation between the PCP and the deployment of commercial volumes of end-products (potential follow-up **Public Procurement of Innovative solutions - PPI**). PCP identifies the best possible solutions the market can develop, by comparing alternative solution approaches from different technology vendors in parallel. By steering the development of innovative solutions towards concrete public sector needs, PCP may trigger industry to initiate R&D that was previously unthought-of. In PCP, procurers are thus demanding customers, who are articulating advanced solution requirements as potential future early adopters of the developed solutions (which will be selected in a separate PPI procurement that follows the completion of the PCP).

Introduction

The **risks and challenges posed by climate change for Marine and Coastal Environments are complex**, including extreme temperatures and flooding, which can lead to eutrophication, affecting water quality and causing loss of marine life [2]. Additionally, extreme rainfall and storms can cause coastal erosion, which can affect inland freshwater resources, coastal stability, and habitats [2].

In the EU, **46% of coastal waters are exposed to eutrophication** [3] and the average sea surface temperature has been steadily increasing since 1981 [4]. With about 50% of Europe's population living within 50km of coastal environments, the urgency of **protecting these vulnerable environments calls for research and innovation** [5].

Climate Services (Box 2), especially those utilising Earth Observation (EO) data (Box 3), are increasingly used to support coastal management, as well as for precise forecasting of weather patterns. **Pre-commercial procurement of these services is a key driver** in the development of innovative Climate Services that aim to address the risks and challenges posed by climate change.

Box 2: Climate Services

Climate services describe the transformation of **climate-related data** — together with other relevant information — into customized products such as projections, forecasts, information, trends, economic analysis, assessments (including technology assessment), counselling on best practices, development and evaluation of solutions and any other service in relation to climate that may be of use for the society at large. As such, these services include data, information and knowledge that support adaptation, mitigation, and disaster risk management (DRM) [1].

Policy developments

The EU's moved to an **integrated coastal management approach** with the introduction of the Marine Strategy Framework Directive (MSFD) in 2008, which itself is supported by key policies such as the Zero Pollution Action Plan, the EU Drinking Water Directive, and the Common Fisheries Policy, among others [4]. The MSFD calls for an **ecosystem-based approach for managing the EU's entire marine environment** [3].

The EU Drinking Water Directive, for example, which came into force in 2022, set strict standards for water quality, access to freshwater, and increase resource efficiency of the sector [6]. The policy further calls for requirements for **frequent risk assessments and water quality reporting** [6].

Furthermore, the **EU Mission to restore our Oceans and Waters by 2030** aims to eliminate pollution and make the “blue” economy carbon-neutral and circular, with **marine and aquatic innovation as a key component** of its strategy [5].

Opportunities

Marine and Coastal Environments **face risks and challenges** from climate change as well as other pressures (Fig. 1), which necessitates **innovative solutions**.

Climate Services procured through a PCP call offer such solutions that **support the prosperity and health** of the EU's oceans, increase coastal resilience to climate impacts, and facilitate the elimination of aquatic pollution, in line with policy targets, all **tailored to specific stakeholder needs**.

Box 3: Earth Observation

Environmental observation involves collecting and monitoring information and data regarding changes and trends in industrial, economic, and global environments. These pieces of data help researchers understand changing environments to inform potential changes in things like climate change policies and disaster relief plans [2]. **Earth Observation (EO)** is defined as the process of acquiring observations of the Earth's surface and atmosphere via remote sensing instruments. The acquired data is usually in the form of digital imagery [3]. EO satellites have been essential to identifying and monitoring climate change and it supports mitigation and adaption measures by providing vast amount of EO data.

Conclusions

To meet policy targets, employing an ecosystem-based approach, and maintain sustainable fisheries and aquaculture, Marine and Coastal Environments **must commit to the transition to a zero pollution and climate resilient sector**.

Innovative and sustainable Climate Services, procured through a PCP call, can **provide key insights to support this transition** and make Marine and Coastal environments resilient to the impacts of climate change and extreme events.

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References:

- [1] [European Environment Agency](#) (2020)
- [2] [European Environment Agency](#) (2015)
- [3] [European Commission](#) (n.d.)
- [4] [European Environment Agency](#) (2023)
- [5] [European Commission](#) (n.d.)
- [6] [European Commission](#) (2023)