



Protecting the vulnerable Arctic biodiversity: an EU perspective

Larisa LORINCZI, Directorate-General for Research and Innovation, European Commission

Arctic biodiversity at a crossroads - Research directions along the land-coast-ocean continuum, 5th of September 2024, 14:30-16:00

2024 European Polar Science Week

3-6 September 2024 | The Black Diamond | Copenhagen, Denmark



European Green Deal

- EU Nature Restoration Law
- European Climate Law
- Biodiversity Strategy
- Zero Pollution Action Plan
- Marine Strategy Framework Directive (MSFD)
- Action plan on protecting and restoring marine ecosystems for sustainable and resilient fisheries
- EU Arctic Policy
- EU's International Ocean Governance agenda
- EU Common Fisheries Policy
- Circular Economy Action Plan and action on plastics
- Integrated Maritime Policy
- EU Waste legislation
- Water Framework Directive
- Habitats Directive

Global framework

- Convention on Biological Diversity (CBD)
- UN Convention on Climate Change
- Kunming-Montreal Global Biodiversity Framework (GBF)
- BBNJ Agreement - Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction
- Global Plastics Agreement
- Arctic Marine Protected Area in OSPAR
- Marine Protected Areas in East Antarctica and the Weddell Sea under CCAMLR
- Arctic Council and Arctic Science Ministerial
- Arctic: Agreement to prevent unregulated fishing
- SDG; UN Decades, G7, G20
- Science, environmental, climate, ocean diplomacy
- IPCC, IPBES, IRP, WOA, IPOS

The European Research & Innovation Policy and Framework Programmes

Support the **transformative European Green Deal agenda** with **transparent, comprehensive and balanced scientific evidence** and **innovative solutions**.

Promote high-quality research that is essential for policy-making and contributes significantly to **global scientific assessments**, support **key international processes** under the UNFCCC, as well as lead in **EU-science diplomacy**.

European Polar and Ocean research

[Polar and ocean research \(europa.eu\)](https://europa.eu)

The European research and innovation policy and framework programmes (Horizon 2020 and Horizon Europe) advance the **ocean-climate-biodiversity-cryosphere nexus science**.

Current Horizon support to Polar science:

- Arctic: 139 projects, €372 million (Horizon 2020 100 projects, €257 million; Horizon Europe 39 projects €115 million)
- Antarctic: 55 projects, €115 million (Horizon 2020 44 projects, €102 million; Horizon Europe 11 projects €14 million)
- Polar: 65 projects, €140 million (Horizon 2020 53 projects, €101 million; Horizon Europe 12 projects €37 million)



Horizon Europe Mission Restore our Ocean and Waters and its **Atlantic and Arctic basin lighthouse** will deliver **transformative solutions for protecting and restoring marine habitats**

and

help Atlantic and Arctic communities better understand, prepare for and manage climate risks and opportunities, in particular by adapting to extreme weather events in coastal areas and sea level rise and other climate change impacts.

Digital Twin Ocean

will **model the ocean's multiple components**, provide knowledge and understanding of the past and present and create trustable **predictions** of its future behavior.

All-Atlantic Ocean Research and Innovation Alliance (AAORIA)
science diplomacy





European Research Framework Programme

Zooming in on Arctic science I

Horizon 2020 (2014-2020)

100 projects, 257 mio EUR



(2021-2024)

39 projects, 115 mio EUR



The collage features logos for the following projects and networks:

- FACE-IT** (Arctic Biodiversity & Livelihoods)
- ECOTIP**
- CHARTER**
- EU-PolarNet**
- BioEcocean**
- DiverSea**
- One Blue**
- POMP**
- CLIMAREST**
- ARCTICHUBS**
- NUNATARYUK.org**
- Protect** (CRYOSPHERE & SEA LEVEL)
- ILLUQ** (PERMAFROST POLLUTION HEALTH)
- POLARIN** (POLAR RESEARCH INFRASTRUCTURE NETWORK)
- PHAROS**
- MARBEPES**
- INTER = ACT**
- ClimeFish**
- JUST NORTH**
- ARCTIC PASSION**
- BIRGEJUPMI**
- A-A AGORA** (Atlantic-Arctic Agora)
- ICEBERG**
- ARICE** (Arctic Research Icebreaker Consortium)
- BLUE ACTION**
- capardus**
- INTAROS**
- MARCO-BOLO** (STRENGTHENING BIODIVERSITY OBSERVATION IN SUPPORT OF DECISION MAKING)
- ArcSolution**
- HiA00S**
- ACCIBERG**
- BIOcean5D**
- MARINE SABRES**
- REDRESS**
- BioPROTECT**
- AL-ARC**
- APPLICATE.eu** (Advanced prediction in polar regions and beyond)
- FORCeS**
- PRIMAVERA**
- BLUEMISSION AA**
- Obs Sea 4 clim** (OCEAN OBSERVATIONS AND INDICATORS FOR CLIMATE AND ASSESSMENTS)
- C-FAARER**
- iAtlantic** (INTEGRATED ASSESSMENT OF ATLANTIC MARINE ECOSYSTEMS IN SPACE AND TIME)
- Future MARES** (Climate Change and Future Marine Ecosystem Services and Biodiversity)
- SEACLIM**
- epoc**
- ACTNOW**
- OBAMA - NEXT**



European Research Framework Programme

Zooming in on Arctic science II

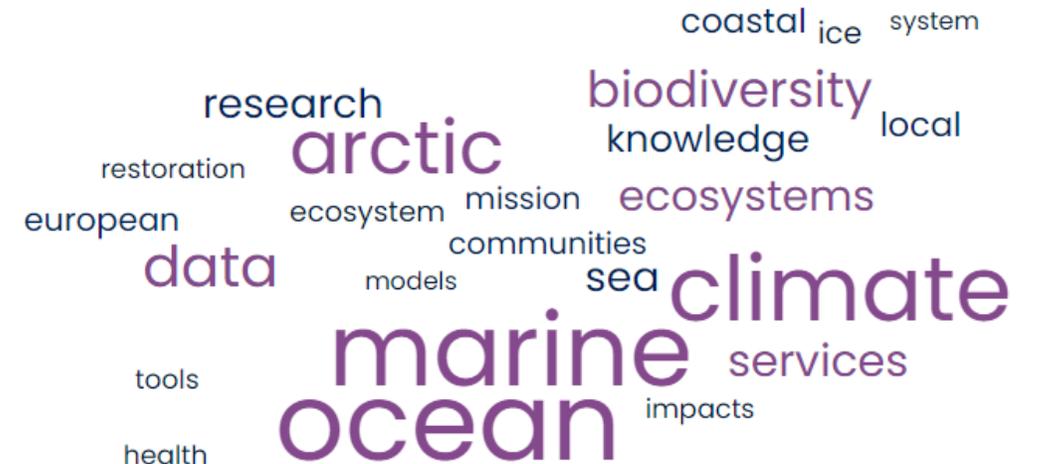
Horizon 2020 (2014-2020)

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European Research Framework Programme

Zooming in on Arctic science III

Arctic biodiversity project sites



Subpolar Mid-Atlantic Ridge



western Svalbard (Ny-Ålesund and Sørkapp Land), northern Iceland (Akureyri and Húsavík) and southern Greenland (Narsaq and Qaqortoq)



Norwegian Coast



Fram Strait eLTER



Svalbard



Baltic Sea



35 marine labs from the Mediterranean to Arctic seas



Norwegian coastal system



European marine biodiversity, from the Arctic to semi-tropical areas



Arctic Ocean



Southern Iceland



Troms Arctic Archipelago

Atlantic-Arctic Agora



Sub-polar and polar regions: Svalbard (CS1), Barents Sea (CS2), Norwegian coast (CS3) and Baltic Sea (CS4)

ArcSolution

Northern Finland, Svalbard, Northern Norway and Greenland



optimal locations for MPAs in European seas



Barents Sea, Qikiqtarjuaq, Svalbard, Greenland, King George Island, , Ryder Bay, , Baffin Bay, , E. Canada, Weddell Sea



European Commission



Greenland, Iceland, and Faroe Islands



European Research Framework Programme

Zooming in on Essential Ecosystem Variables ~ EUR160 mio



Optimising and Enhancing the Integrated Atlantic Ocean Observing Systems





The
European Biodiversity Partnership
supporting excellent biodiversity research with impact for society and policy.

Biodiversa+ has been funding a number of research projects in recent years dealing with different aspects of

Arctic biodiversity (~6 Mio EUR)



Identifying effective management strategies for enhancing transnational metapopulation protection of the Arctic Fox in Europe

- ACCES**
De-icing of Arctic Coasts: Critical or new opportunities for marine biodiversity and Ecosystem Services?
- ARCTIC-BIODIVER**
Scenarios of freshwater biodiversity and ecosystem services in a changing Arctic
- FutureArcticLives**
Future Arctic livelihoods and biodiversity in a changing climate
- CLIMARCTIC**
Climate change impacts on Arctic soil and lake microbiomes

In **September 2024**, Biodiversa+ will launch a **new research call** focused on Biodiversity & Transformative Change: [Next Call – Biodiversa +](#)

FROM POLE TO POLE

a shared commitment

by the European Union, Argentina, Brazil, Canada, Cabo Verde, Iceland, Morocco, Norway, South Africa, the United Kingdom and the United States

to advance marine and polar research and innovation, with a pole-to-pole dimension, on shared priorities

Priorities:

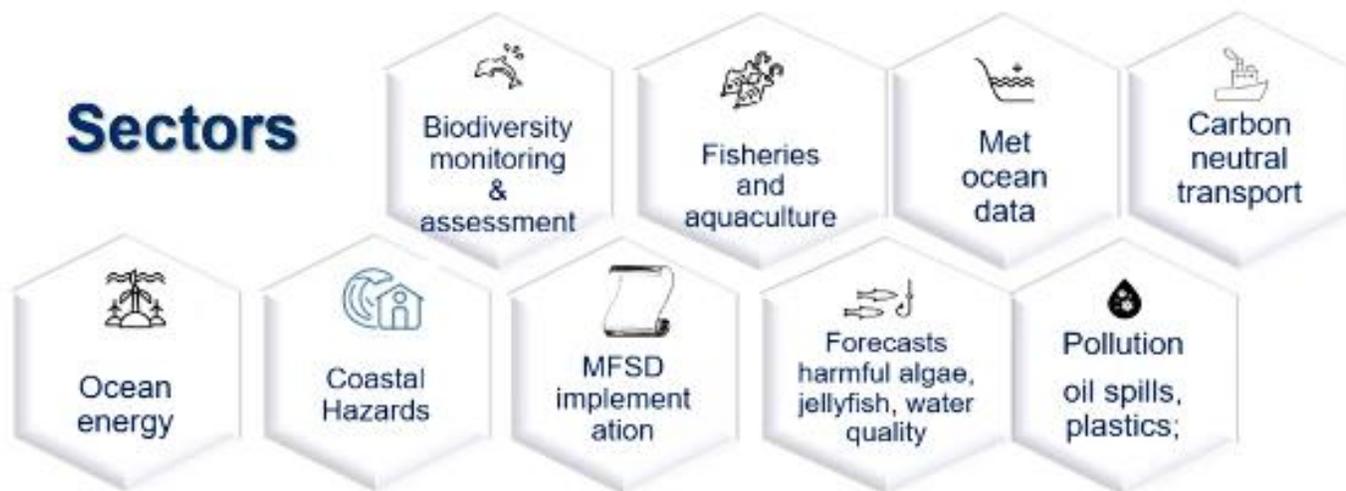
- Understand of the **relationship between the ocean and climate**, developing outcome-oriented **science for mitigation and adaptation**
- Monitor, protect and restore **marine ecosystems and biodiversity**
- Tackling the impacts of **marine pollution**
- Promote **ocean literacy and citizens engagement**





The European Digital Twin of The Ocean

- Europe: unrivalled infrastructures on marine observations, data, modelling and forecasting *but* not sufficiently interconnected, nor fit for digital age
- Need for user-driven powerful tools to strengthen ocean knowledge and ocean management - implementation of the marine Green Deal objectives



The DIGITAL TWIN OCEAN

An interactive replica of the ocean for better decision-making

What is it?

A digital space providing access to vast amounts of data, models, artificial intelligence and other tools, which will allow the replication of the properties and behaviours of marine systems, including ocean currents and waves, marine life and human activities, and their interactions, in and near the sea.

Real Ocean

Digital Twin Ocean

Satellite data

Marine data

Advanced models

Artificial intelligence

Citizen science

Better decision-making

By connecting data and models through tailor-made applications, scientists, marine experts, policymakers, entrepreneurs and user-driven applications can test different specific scenarios.

This allows us to:



Testing scenarios

We can test what happens if...

... the frequency of extreme events increases under climate change?

How would people living on the Mediterranean coast be affected?

... we decide to strictly protect 30% of the European marine waters?

How would European fisheries be impacted?

... we decided to combine wind energy and aquaculture?

How would a specific offshore marine area be affected?

... the average sea temperature increases?

What would happen to seagrass meadows?

Who benefits?



Test the effectiveness of planned infrastructures



Assess the impact of human activities and climate change



Ensure sustainability by reducing environmental pressures



Contribute to science and empower citizens

Our goal: a vibrant ocean ecosystem

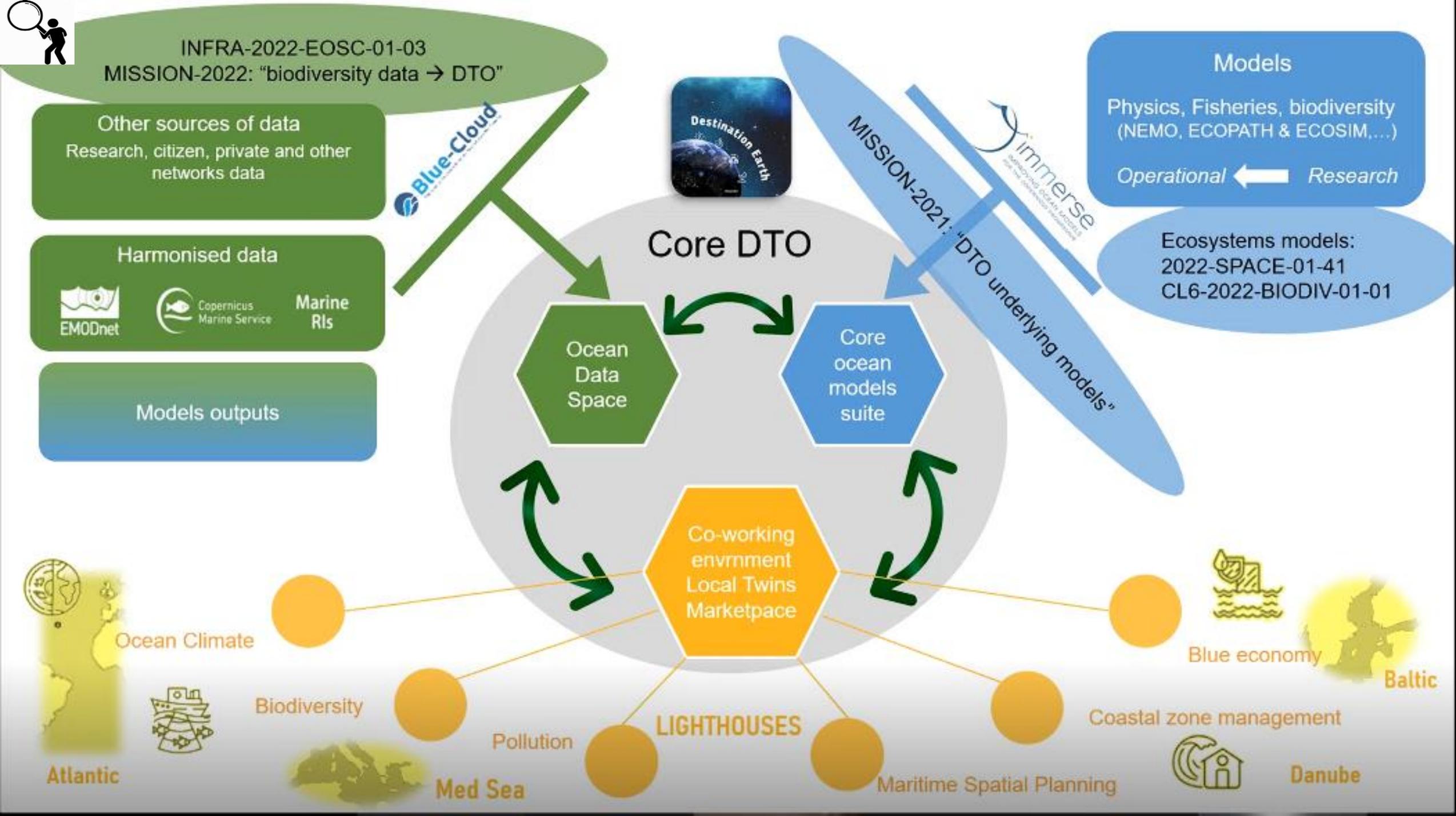
This knowledge will help us design the most effective ways to restore marine and coastal habitats, support a sustainable blue economy and adapt to a changing climate.

Mitigating and adapting to climate change

Restoring marine and coastal habitats

Supporting a sustainable blue economy

Boosting biodiversity





The European DTO: a multiple, joint and long-term endeavour, in an international context

- UN Decade of Ocean Science for Sustainable Development
 - ❖ DITTO Programme
 - ❖ Decade Collaborative Centre for Ocean Prediction
 - ❖ UN Data Coordination Platform
 - Data Coordination Group & Data Technical Implementation Coordination Group
- One Ocean Summit (9-11 Feb), Digital Ocean Forum (Toulouse, March/April), DITTO summit (4-5 May)
- G7 – Future of the Seas and Oceans Initiative
 - ❖ Digital Twin Ocean, a priority area

**Highly necessary to align and ensure complementarities between EU initiatives
Present a unified approach on the international stage**



Atlantic and Arctic lighthouse

Portfolio of projects

2021

Restoration of marine and coastal ecosystems and increased climate resilience
IA - 17M€

CLIMAREST - Coastal Climate Resilience and Marine Restoration Tools for the Arctic Atlantic basin

A-Agora - Blueprint for Atlantic-Arctic Agora on cross-sectoral cooperation for restoration of marine and coastal ecosystems and increased climate resilience through transformative innovation

2022

Lighthouse CSA - 3M€

BlueMissionAA - Building a coordination hub to support the mission implementation in the Atlantic and Arctic basin

(With Mission Climate): demonstration for coastal resilience, IA - 20M€

2023

Addressing climate change and human activities threats to marine biodiversity
IA - 16M€

PHAROS- Lighthouse for Atlantic and Arctic Basin

BioProtect-Advancing area-based management tools to accelerate the protection and restoration of marine biodiversity across the European sea basins



Portfolio analysis

16 EU programmes – 1000 projects, 4.4bn EUR
interactive Dashboard and expert report published 1 June 2023

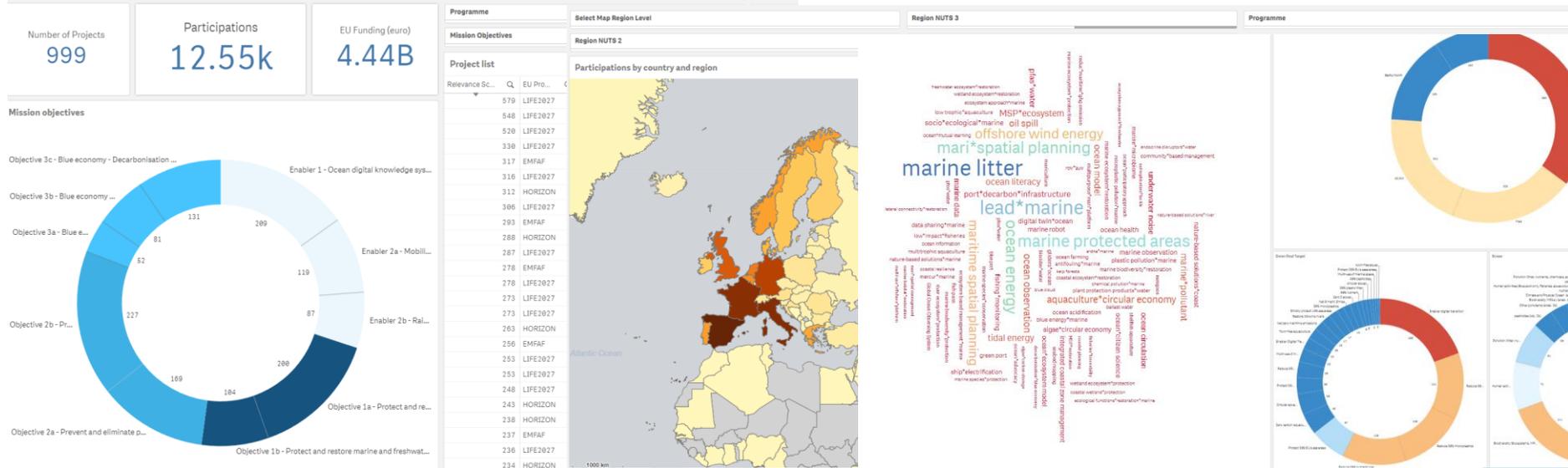
Portfolio Analysis EU Mission “Restore our Ocean and Waters by 2030”

Analysis of a portfolio of projects financed by sixteen EU programmes contributing to the objectives of the Mission Ocean and Waters

Independent
Expert
Report



Portfolio Dashboard - EU Mission Restore our Ocean and Waters by 2030 portfolio

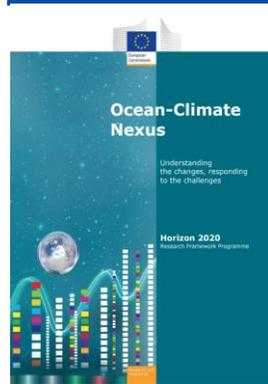


[EU Mission Restore our Ocean and Waters Portfolio \(public\) - Portfolio Dashboard - EU Mission Restore our Ocean and Waters by 2030 portfolio | Sheet - Qlik Sense \(europa.eu\)](#)

[Portfolio analysis, EU mission “Restore our Ocean and Waters by 2030” - Publications Office of the EU \(europa.eu\)](#)

Further resources

Recent PUBLICATIONS



[Ocean-climate nexus H2020 research](#)



[EU research contribution to IPCC working group I](#)



[Understanding impacts of climate change on Earth's vulnerable polar regions](#)



[Blue carbon for biodiversity and climate action](#)



[Environmental observations for the EU Green Deal](#)



[Diving deeper: Propelling ocean knowledge and its sustainable management](#)



[Reducing and preventing drivers of marine biodiversity loss](#)



[Ocean plastic pollution](#)



Understanding impacts of climate change on Earth's vulnerable polar regions

a CORDIS Results Pack (July 2024)

EU-funded projects studying polar regions, climate change and the **ocean-climate-cryosphere nexus**, closing important gaps linked to **understanding, modelling and predicting** the vulnerable components of Earth's climate system and the biosphere.

A multifaceted and multidisciplinary approach...

- ...investigating **key processes** for more accurate and precise climate models, identification of climate and ecological **tipping** points, and a deeper understanding of the **coupling between drivers and responses** in the ocean-climate-cryosphere system...
- ...with findings contributing to policy, legal and regulatory pathway **recommendations**...
- ...placing the needs of the **Arctic's inhabitants** at the center of their research, [ArcticHubs](#), [CHARTER](#) and [JUSTNORTH](#) have developed models, solutions and policymaking guidance in **co-creation with residents**...
- ... [FACE-IT](#), [SO-CHIC](#) and [Beyond EPICA](#) better understanding the **dynamics linking ocean, atmosphere, ice and climate**, supporting the development of improved climate models
- ...[PROTECT](#) examining the threat of **sea level rise**
- ...supporting enhanced research in the region, [EU-PolarNet 2](#), [CAPARDUS](#) and [Arctic PASSION](#) have developed **new frameworks** for knowledge sharing, best practices and data access...
- ...[TiPACCs](#), [ECOTIP](#) and [COMFORT](#) have explored the risk of environmental **tipping** points, and the dramatic **cascading impacts** they could have if exceeded.



Protecting and restoring Europe's blue carbon ecosystems

a CORDIS Info Pack (July 2024)

EU-funded projects studying the carbon cycle and carbon-rich ecosystems and the potential effectiveness, benefits and risks of boosting blue carbon stores, as a nature-based solution for mitigating and adapting to climate change.

Closing critical research gaps in observing, valuing, estimating, managing and rolling out blue carbon solutions

- ...exploring **how carbon moves through ocean ecosystems**, and the **impacts** that **human activity** and **climate change** are having on these processes
- ...exploring **new solutions, tools and techniques**, from robotic sampling vehicles to environmental DNA analysis
- ...examining how to value **blue carbon ecosystem services**, placing them at the heart of socioeconomic and environmental policymaking

Next R&I funding opportunities

Horizon Europe 2025, 2026, 2027; FP10

EU Funding & Tenders Portal

HE WP24 Calls deadline: 18 Sep 2024

Biodiversa+ Next Call Sep 2024

HE WP25 Calls deadline: 24 Sep 2025