



A TLANTIC R CTIC GORA

BLUEPRINT FOR ATLANTIC-ARCTIC AGORA

ON CROSS-SECTORAL COOPERATION FOR RESTORATION OF
MARINE AND COASTAL ECOSYSTEMS AND INCREASED CLIMATE
RESILIENCE THROUGH TRANSFORMATIVE INNOVATION



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A-AAGORA objective

A-AAGORA will be a beacon to protect and restore ecosystems and biodiversity in Arctic and Atlantic coastal areas. We will demonstrate how innovation, ecosystem-based management and nature-based solutions can contribute to sustainable transformation in three coastal areas:

- 1.The Arctic Archipelago, Norway
- 2.County Cork, Ireland
- 3.Centro Region, Portugal

Based on the results and experiences in these three case areas, we will create a blueprint, that is, a plan or a recipe for protecting and restoring ecosystems and biodiversity that can be used by other coastal areas in the Arctic-Atlantic area.

The EU wants these lighthouse projects to be defined to the greatest extent possible by the coastal communities and is therefore planning for a large degree of local involvement in the demonstration cases.



The EU's societal mission to Restore Our Ocean and Waters by 2030

The project is part of the EU's social mission "Restore Our Ocean and Waters by 2030". A social mission involves setting ambitious, measurable and time-bound goals that must be achieved through joint efforts from research actors, authorities, the public sector, businesses, organizations and citizens.

The purpose of this social mission is to:

1. Protect and restore ecosystems and biodiversity
2. Reduce pollution in river systems and sea basins
3. Making the blue economy circular and carbon neutral

We have been commissioned to create a lighthouse project which is primarily related to objective 1 of the mission, but which in an overall plan must also be connected to other objectives in the community discovery. For example, it is desirable that we also consider the circular and carbon-neutral solutions related to fisheries and aquaculture. In addition, we will also connect our lighthouse to the EU's societal mission of adapting to climate change by building resilience and climate-robust coastal communities to meet challenges such as extreme weather, ocean acidification, sea level rise and storm surges, and changes in harvestable species.

Nature-based solutions and ecosystem-based management are expected to contribute to increased climate resilience.



Mission 'Restore our Ocean and Waters' Goals. © European Union, 2021. All rights reserved.

Nature-based solutions

Nature-based solutions are conservation, sustainable use, or restoration of ecosystems to solve societal challenges. Sustainable management of seagrass meadows can, for example, contribute to meeting several sustainability goals, including carbon uptake, conservation of biological diversity and climate adaptation. At the same time, these habitats are important nursery areas for fish and shellfish, including to commercial and recreational fishery species, and restoration of the seagrass is therefore expected to provide socio-ecological benefits.

Nature-based solutions are expected to become an important part of the UN's nature agreement.



Ecosystem-based management

Ecosystem-based approaches for managing climate adaptation and disaster preparedness in order to reduce the risk of climate change are also part of nature-based solutions.



In A-AAGORA, we will contribute to creating a comprehensive plan for the conservation, sustainable use, restoration and monitoring of sand beach and sand dune ecosystems.

Living laboratory as a method

We use a living lab approach framed at Ria the Aveiro region, where we jointly identify solutions and measures together with business, administration, organizations and citizens. Research and development in the Ria de Aveiro will be based on a procedure where we design, test, monitor and validate the solutions that are proposed to manage this coastal region. An important part of this work is to build capacity for local monitoring and citizen engagement. Furthermore, the solutions must be able to be scaled up to the entire demonstrator area, the Centro Region coastal area (Demo-PT), as well as to other coastal areas.

Demo-PT

Map of the National Network of Protected Areas, the Natura 2000 network and Classified Areas under other international commitments regarding Portugal mainland.

Living lab approach
Ria de Aveiro coastal lagoon

Scaling up to the Demo-PT
Centro Region
(NUT II Centro, code PT16)

Demo-PT includes coastal wetlands classified under the Ramsar Convention and Natura 2000 network, supporting economic, cultural, and recreational activities, including related to tourism, fisheries, and maritime activities (e.g., 3 small/medium sized ports).

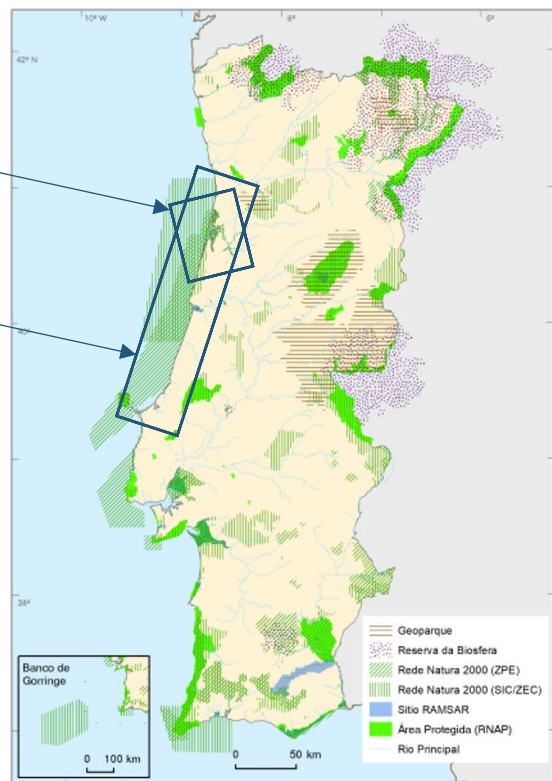


image source: ICNF 2022 at
<https://rea.apambiente.pt/content/sistema-nacional-de-areas-classificadas>

Demo-PT activities to be implemented

Decarbonization

Decarbonization via partially replacement of fossil fuels by advanced waste-based fuels can contribute to sustainable tourism activities and how small port areas might reduce GHG emissions.



Coastal erosion real-time services

To mitigate coastal erosion is challenging, as there are many different options of intervention, involving complex processes and impacting various interests of the coastal communities. Therefore, to discuss coastal erosion mitigation scenarios with local communities, by the development of participatory approaches allows to direct in consensual scenarios, the numerical modelling future projection efforts. For the simulated scenarios, a cost and benefits assessment should be performed, supporting the final coastal management decisions.



Demo-PT activities to be implemented

Sand dune protection and restoration

Ongoing sand dune conservation, protection and restoration measures can be enhanced combining citizen science with nature literacy, enabling to raise awareness on coastal vulnerability to climate change and to develop literacy skills on the need for promoting coastal resilience through nature-based solutions.



Scaling up seagrass restoration

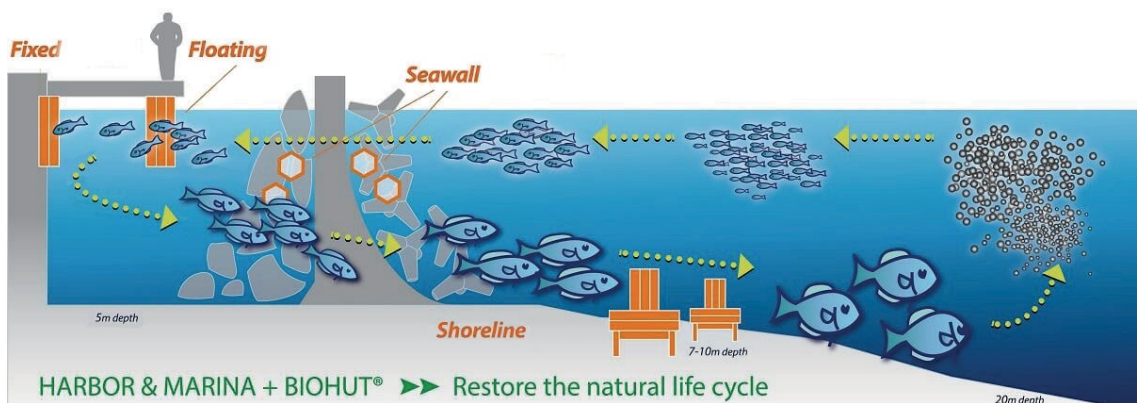
Nature-based solutions such as ongoing seagrass restoration actions can be facilitated and scaled up combining citizen science with automated coverage estimation and monitoring via supervised machine learning.



Demo-PT activities to be implemented

Transform harbours and marinas into nurseries

Apply ecosystem-based management as a principle for managing and building climate resilience and the wealth of biodiversity, and to mitigate anthropogenic pressures having nature-based artificial substrate units for biodiversity restoration. We will foster active recruitment through acoustic enrichment and promote passive recruitment with fixed passive nature-based infrastructures made of shells from oyster farms, targeting seagrasses and seaweeds with calcareous skeletons.

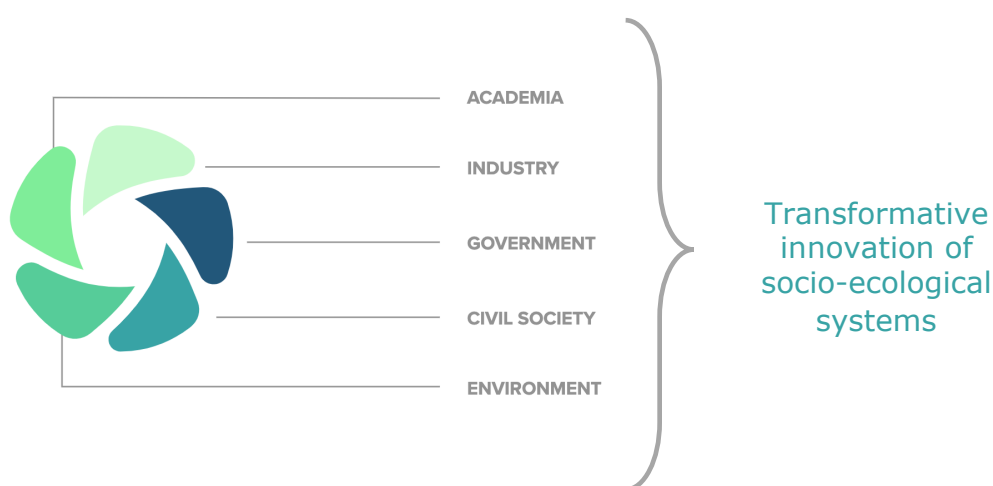


Living labs underpinning co-creation and co-implementation

A living lab approach means that the measures to be tested and monitored can also be changed during the project period as we learn what is best for the demonstration area.

The measures that are proposed should contribute to protection and restoration of marine ecosystems, but they must also be socially and economically sustainable.

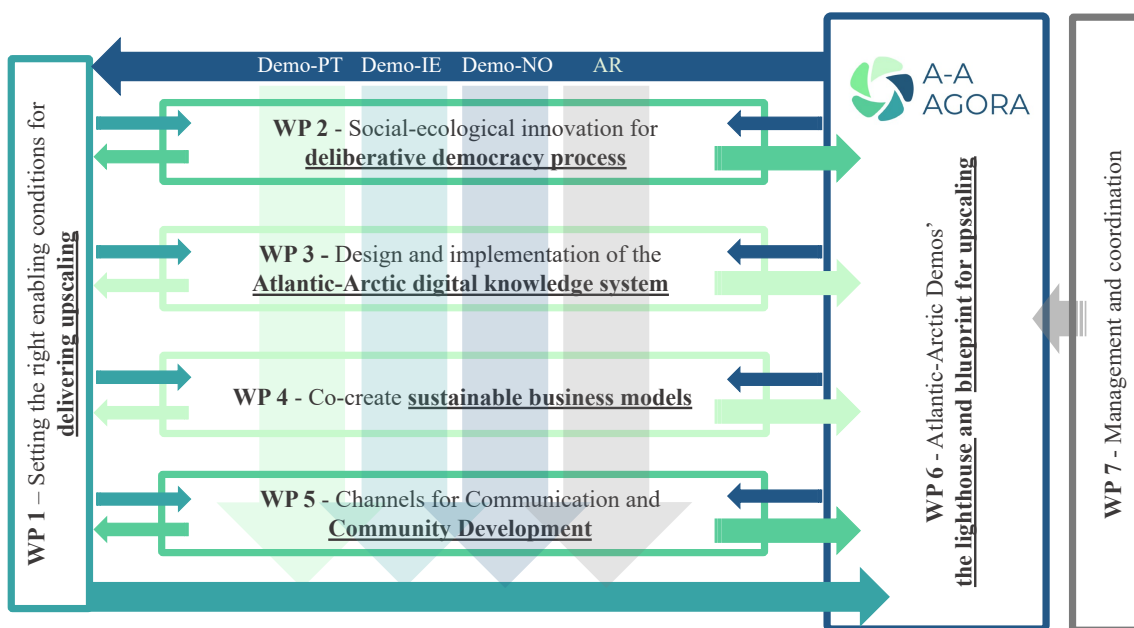
We therefore use a quintuple helix model which highlights the importance of understanding innovation and sustainable development as an interaction between research, authority, industry, local communities and the ecosystem (here defined as a socio-ecological system).



It is important that from the start we make a good plan for how we can achieve innovative solutions in collaboration between the Regional authorities, the Inter-municipal Community of the Region, voluntary organisations, the industry, the port authorities, research institutes and the university. It is also desirable to establish a university camp with MSc students who carry out smaller tasks that the administration or the industry can benefit from.

Work plan for A-AAGORA

In A-AAGORA, we have the demonstration areas where innovative measures will be implemented, while the work packages will contribute to comparisons between the cases and scaling up to Atlantic and Arctic coastal areas.



WP1 - assess a wide range of political commitments and strategies on different scales (national, EU and international) as well as contribute to scaling up nature-based solutions in the Arctic and Atlantic action plans (EU Atlantic 2.0 action Plan and Arctic Action Plan).

WP2 - develop innovations for cooperation and participation in each demonstrator, and to contribute to the scaling up of games as a tool for participation in the Arctic and Atlantic coastal areas.

WP3 - implement the Atlantic-Arctic digital knowledge system to enable new partnerships and work towards the vision of sustainable ocean and coastal observations.

Work plan for A-AAGORA

WP4 - improve public decision-making by engaging a community of citizens, local stakeholders and coastal communities to develop socially and economically sustainable management strategies.

WP5 - contribute to communication internally in the project, to external dissemination and involvement of the general public in A-AAGORA.

WP6 - develop the lighthouse and contribute to scaling it up to the entire Arctic- Atlantic coastal area.

WP7 - management and coordination of A-AAGORA.



Demo-PT



Supported by the University of Aveiro team, the DEMO-PT includes CCDR-C - the Centro Regional Coordination and Development Commission, which has the responsibility to promote an integrated and sustainable development of Portugal's Centro region (NUT II) acting as the overall coordinator of Demo-PT. The demo includes as end users the APA/ARHC - Portuguese Environment Agency, responsible for implementing the Water Framework Directive, for defining and executing the national policy on water resources, planning and ordering these resources and the associated territory, licensing their use and respective supervision, and by strategic and integrated planning of the coastal zone, including coastal erosion risks; IPMA, the Portuguese Institute for Sea and Atmosphere, involved in the modelling and forecasting extreme events; CIRA – Inter-municipal Community of the Aveiro Region gathering eleven municipalities in the coastal area, where small scale fisheries, nautical tourism and recreation activities are very important; APA, the Port of Aveiro, and APFF, the Port of Figueira da Foz, are important players in the maritime sector aiming for greening their activity by reducing GHG emissions. The demo also includes the company PRIO with interest in carbon storage restoration actions (blue carbon) and on decarbonization by enhancing the users of greener fuel formulations, and STRIX, a SME specialized in nature-based solutions for restoration of aquatic biological diversity.

Demo-PT team

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