



REST-COAST

Large scale **REST**oration of **COAST**al ecosystems
through rivers to sea connectivity

The Route to Coastal Restoration: From the REST-COAST project to the Black Sea region



Co-Funded by the European Union



Co-funded by
the European Union

REST-COAST project receives funding from the European Union's Horizon 2020 Innovation Action under grant agreement No 101037097.

DISCLAIMER - This document was prepared by the International Centre for Black Sea Studies (ICBSS) jointly with the Permanent International Secretariat of the Organization of the Black Sea Economic Cooperation (BSEC PERMIS) and the Catalonia University of Technology UPC BarcelonaTech. It reflects the views only of the authors, and do not necessarily represent the views of the affiliated institutions or the European Commission. The European Commission cannot be held responsible for any use of the information contained herein.

Writing team (in alphabetical order):

Elpida Besi (ICBSS)

Georgia Chantzi (ICBSS)

Florian Grossmann (UPC)

Agustín Sánchez-Arcilla (UPC)

Rositsa Stoeva (BSEC PERMIS)

Design:

Fani Sampani (ICBSS)

© Organization of the Black Sea Economic Cooperation 2024
All rights reserved.



Permanent International Secretariat of the Organization of the Black Sea Economic Cooperation (BSEC PERMIS)

Darüşşafaka Cad. Seba Center İş Merkezi, No:45 Kat 3, Istinye 34460 Sarıyer-Istanbul, Türkiye

Phone: +90 212 229 63 30-35; Fax: +90 212 229 63 36

Email: info@bsec-organization.org

Website: www.bsec-organization.org



REST-COAST

Large scale **REST**oration of **COAST**al ecosystems
through rivers to sea connectivity

The Route to Coastal Restoration: From the **REST-COAST** project to the **Black Sea** region

Contents

| | |
|---|----|
| Preface | 7 |
| Introduction | 9 |
| 1. The REST-COAST Project | 11 |
| 1.1. Description of Work | 14 |
| The Mission | 14 |
| The Goals | 15 |
| Pilot Sites | 17 |
| 1.2. The Consortium | 20 |
| 2. The Black Sea basin | 22 |
| 2.1. The Environmental Challenges of the Black Sea | 24 |
| 2.2. Key Policies and Stakeholders in the Black Sea region | 25 |
| 2.2.1. Policy Frameworks and Initiatives | 26 |
| 2.2.2. Stakeholders and Main Actors | 30 |
| 2.2.3. Good Practices from the Black Sea | 35 |
| 3. Knowledge Transfer Pathways for Coastal Restoration Transferring REST-COAST's Knowledge Outputs to the Black Sea Communities | 37 |
| Knowledge Transfer Pathways for Coastal Restoration: From REST-COAST to the Black Sea | 38 |

Preface

The present booklet aims to spread coastal adaptation-through-restoration plans, aligning adaptation with climate mitigation. It was produced through the collaboration of scientists from 38 different institutions located in 11 different countries. Some of the authors focus on technical engineering aspects but others investigate social sciences, finance, and political topics – making our efforts truly interdisciplinary.

Within the REST-COAST (Large scale RESToration of COASTal ecosystems through rivers to sea connectivity) project, the Organization of the Black Sea Economic Cooperation (BSEC) is a partner focused on the Black Sea region, where the project has Foros Bay as a prominent Pilot Site. Nevertheless, the project features Pilot Sites across Europe spanning West Europe (Arcachon Bay, Rhone Delta and Ebro Delta), North Europe (Wadden Sea and Vistula Lagoon) and East-Central Europe (Venice lagoon, Sicily Lagoons and Nahal Dalia).

The project, as summarised in this booklet, investigates the technical, financial, planning, management, governance, and engagement aspects required for large scale coastal restoration. Which technical possibilities are there? What are the political and financial hurdles? How can they be overcome? To find answers, we combine field data, numerical tools and stakeholder requirements to enhance the application of coastal restoration in the nine project Pilots and beyond. The present booklet reports the application of project insights to the Black Sea region and discusses how some of REST-COASTs strategies can be efficiently transferred there.

The contents of this booklet were produced in the context of a workshop organised in collaboration between REST-COAST and BSEC Organization. Bringing together actors from various regions and fields, it has resulted in a fruitful inter-change of ideas tailored to the specific characteristics of the Black Sea region. As such, the booklet's content may be interesting to any practitioner working with coastal ecosystems (either in coastal management or ecosystem conservation), any economic actor within the value chain of coastal ecosystems and any stakeholder or group interested in coastal restoration for the benefit of present and future generations. This is particularly relevant for a unique region like the Black Sea, hosting valuable natural systems and socioeconomic assets for local inhabitants and visitors.

G. Chantzi, R. Stoeva, F. Grossmann and A. Sánchez-Arcilla

Introduction

Coastal regions are among the most biodiverse ecosystems on the planet, with a high potential for carbon storage. In addition to their natural richness, coastal regions have a rich cultural heritage. Rapidly developing and changing, these socially, economically, and environmentally important areas are experiencing progressive degradation and escalating risks, further exacerbated by climate change.

Coastal management is often based on single-sided use of resources proven unsustainable in the long term as the associated environmental pressures remain unresolved. Operating within a limited social and technical consensus and a fragmented policy framework, measures often favour short term interventions leading to poor investment decisions. This, combined with increasing climate and human pressures and decreasing natural capital, results in declining biodiversity and ecosystem services, leading to growing costs and a significant Carbon footprint.

In the context of a pressuring need for more resilient coastal ecosystem services worldwide, the H2020 co-funded project '**REST-COAST – Large scale RESToration of COASTal ecosystems through rivers to sea connectivity**' aims to provide the tools to address some of the key challenges to coastal ecosystems today, as a consequence of environmental degradation of rivers and coasts.

As part of the project's inclusive approach, nine Pilot Sites, representing coastal vulnerability hotspots across the main EU sea-basins, have been selected as focus areas, including the **Black Sea basin**, a unique body of water with distinctive characteristics.

The present booklet builds on the knowledge outputs of the project and proposes **six Knowledge Transfer Pathways**, from REST-COAST to the Black Sea, as a preliminary tool for better supporting coastal restoration in the region.

The booklet is divided into three sections; the first presents the REST-COAST project, the second focuses on the case of the Black Sea basin, and finally the third includes the six Knowledge Transfer Pathways.

CLARIFICATION OF TERMINOLOGY

For a better understanding of the topic, the following table provides a **clarification of the key elements and the terminology** that will be used throughout the booklet.

| | | |
|--|---|---|
|  | <p>Marine Ecosystem¹ :</p> | <p>The marine ecosystem (a unit of unique biological communities consisting of a variety of coexistent flora and fauna species) plays a major role in regulating atmospheric oxygen, carbon dioxide, and filtering the pollutants in the water. From: Tsunamis, 2011</p> |
|  | <p>Coastal Ecosystem² :</p> | <p>The CEC is defined as an ecosystem network linking organisms and habitats in coastal areas (Watanabe et al., 2018). From: Reference Module in Earth Systems and Environmental Sciences, 2023</p> |
|  | <p>Coastal Restoration³ :</p> | <p>Coastal restoration projects, especially wetland recreation or seagrass meadows, benefit marine and coastal species by restoring habitats that serve as important nursery grounds (Minello et al.) From: Reference Module in Earth Systems and Environmental Sciences, 2023</p> |
|  | <p>Climate Change Adaptation⁴ :</p> | <p>It means anticipating the adverse effects of climate change and taking appropriate action to prevent or minimise the damage they can cause, or taking advantage of opportunities that may arise. Examples of adaptation measures include large-scale infrastructure changes, such as building defences to protect against sea-level rise, as well behavioural shifts, such as individuals reducing their food waste. In essence, adaptation can be understood as the process of adjusting to the current and future effects of climate change.</p> |
|  | <p>Climate Change Mitigation⁵ :</p> | <p>It means preventing or reducing the emission of greenhouse gases (GHG) into the atmosphere to make the impacts of climate change less severe. Mitigation is achieved either by reducing the sources of these gases — e.g. by increasing the share of renewable energies, or establishing a cleaner mobility system — or by enhancing the storage of these gases or their associated carbon — e.g. by increasing the size of wetlands, seagrass meadows or forests. In short, mitigation is a human intervention that reduces the sources of GHG emissions and/or enhances the sinks.</p> |
|  | <p>Ecosystem Services⁶ :</p> | <p>Ecosystem services are those goods and services produced by the natural environment that are critical for sustaining life. Encompassing services such as flood prevention, natural pollination, habitat and ecotourism, ecosystem services are interdependent and are supported by one or more ecosystem functions. The impact of human activity on the natural environment has diminished the quality and quantity of ecosystem services. From: G.M. Parkhur.st, in Encyclopedia of Energy, Natural Resource, and Environmental Economics, 2013</p> |
|  | <p>Nature-based Solutions⁷(NBS) :</p> | <p>The International Union for Conservation of Nature, the European Commission, and the United Nations Environment Assembly provide three different definitions of Nature-based Solutions. All emphasise the importance of working with nature to tackle societal challenges by producing benefits for biodiversity and human well-being.</p> |

1 <https://www.sciencedirect.com/topics/earth-and-planetary-sciences/marine-ecosystem>
2 <https://www.sciencedirect.com/topics/earth-and-planetary-sciences/coastal-ecosystem>
3 <https://www.sciencedirect.com/topics/earth-and-planetary-sciences/coastal-restoration>
4 <https://www.eea.europa.eu/en/about/contact-us/faqs/what-is-the-difference-between-adaptation-and-mitigation>
5 <https://www.eea.europa.eu/en/about/contact-us/faqs/what-is-the-difference-between-adaptation-and-mitigation>
6 <https://www.sciencedirect.com/topics/economics-econometrics-and-finance/ecosystem-services>
7 <https://www.sciencedirect.com/science/article/pii/S2772411522000362>

1. The REST-COAST project

In response to the increasing vulnerability of coastal regions, the project '**REST-COAST – Large scale RESToration of COASTal ecosystems through rivers to sea connectivity**'⁸ aims to assess coastal ecosystem services, in order to mitigate the risk of further environmental degradation and enhance biodiversity. The project focuses on large-scale river-coast connectivity as a means to increase the resilience of coastal ecosystem services.

REST – COAST provides pertinent tools to address some of the key challenges that coastal ecosystems must overcome nowadays. The project demonstrates the extent to which **upscaled coastal restoration can provide a low-carbon adaptation, reducing risks and providing gains in biodiversity for vulnerable coastal ecosystems**, such as wetlands or sea grass beds. It addresses the present technical, economic, governance and social barriers to restoration upscaling to develop large-scale river-coast connectivity and promote the resilience of coastal ecosystem services (ESS). For a more inclusive and targeted approach, **nine Pilot Sites** representing coastal vulnerability hotspots across the main EU sea-basins have been selected as focus areas, with a view to engaging a wide range of stakeholders, including scientists, policymakers, citizens, and industries.

POLICY CONTEXT

As coastal environmental degradation accelerates, a number of **international and European policies and frameworks** have been adopted to address effectively this challenge. REST – COAST activities build on existing policies with a view to facilitating their implementation in the target areas.

1. UN Decade on Ecosystem Restoration⁹: The UN Decade on Ecosystem Restoration represents a call to action for the protection and revival of ecosystems worldwide, given the accelerating rate of environmental degradation. Underscoring the interconnectivity between human well-being and ecosystem health, the UN Decade runs from 2021 through 2030 and is led by the United Nations Environment Programme and the Food and Agriculture Organization of the United Nations.

⁸ For more information about the REST-COAST project, visit: <https://rest-coast.eu/>

⁹ <https://www.decadeonrestoration.org/>

2. European Green Deal¹⁰: The European Green Deal is a policy package that focuses on the green transition of the European Union. Its primary goal is to achieve climate neutrality by 2050. Adopting a holistic approach, it encompasses initiatives that are interlinked and cover a range of areas, including the climate, the environment, energy, transport, industry, agriculture, and sustainable finance. The European Green Deal was launched by the European Commission in 2019.



Table: The European Green Deal. Source: European Commission¹¹

3. European Climate Pact¹²: The Pact, launched by the European Commission as part of the European Green Deal, is designed to assist the EU in achieving its objective of becoming the first climate-neutral continent in the world by 2050. To this end, it promotes active cooperation between different stakeholders, including citizens, communities and organisations.

¹⁰ <https://www.consilium.europa.eu/en/policies/green-deal/>

¹¹ <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52019DC0640>

¹² https://climate-pact.europa.eu/index_en

4. **2030 EU Biodiversity Strategy**¹³: The 2030 EU Biodiversity Strategy has the objective of protecting nature and halting the environmental degradation of ecosystems. The strategy places particular emphasis on the biodiversity of Europe, with the intention of supporting a green recovery by 2030 that will benefit people, the climate and the planet.

5. **Nature Restoration Law**¹⁴: The European Commission's proposal for a Nature Restoration Law is the first continent-wide law of its kind, forming a pivotal component of the EU Biodiversity Strategy. Given that over 80% of habitats are currently in a state of decline, the restoration of ecosystems will serve to safeguard biodiversity and enhance Europe's resilience to climate change.

6. **United Nations Decade of Ocean Science for Sustainable Development (2021-2030)**¹⁵: This UN initiative spans the 2021-2030 decade and its overarching vision is "The science we need for the ocean we want". This concerted effort towards a better understanding of the ocean system offers a framework for scientists and stakeholders, where research and innovation projects like Rest-Coast provide support and demonstration cases. The UN General Assembly established that the UNESCO's Intergovernmental Oceanographic Commission would coordinate the implementation of all activities related to the decade, promoting partnerships like the one here pursued to develop science-based solutions for ocean waters.

¹³ https://environment.ec.europa.eu/strategy/biodiversity-strategy-2030_en

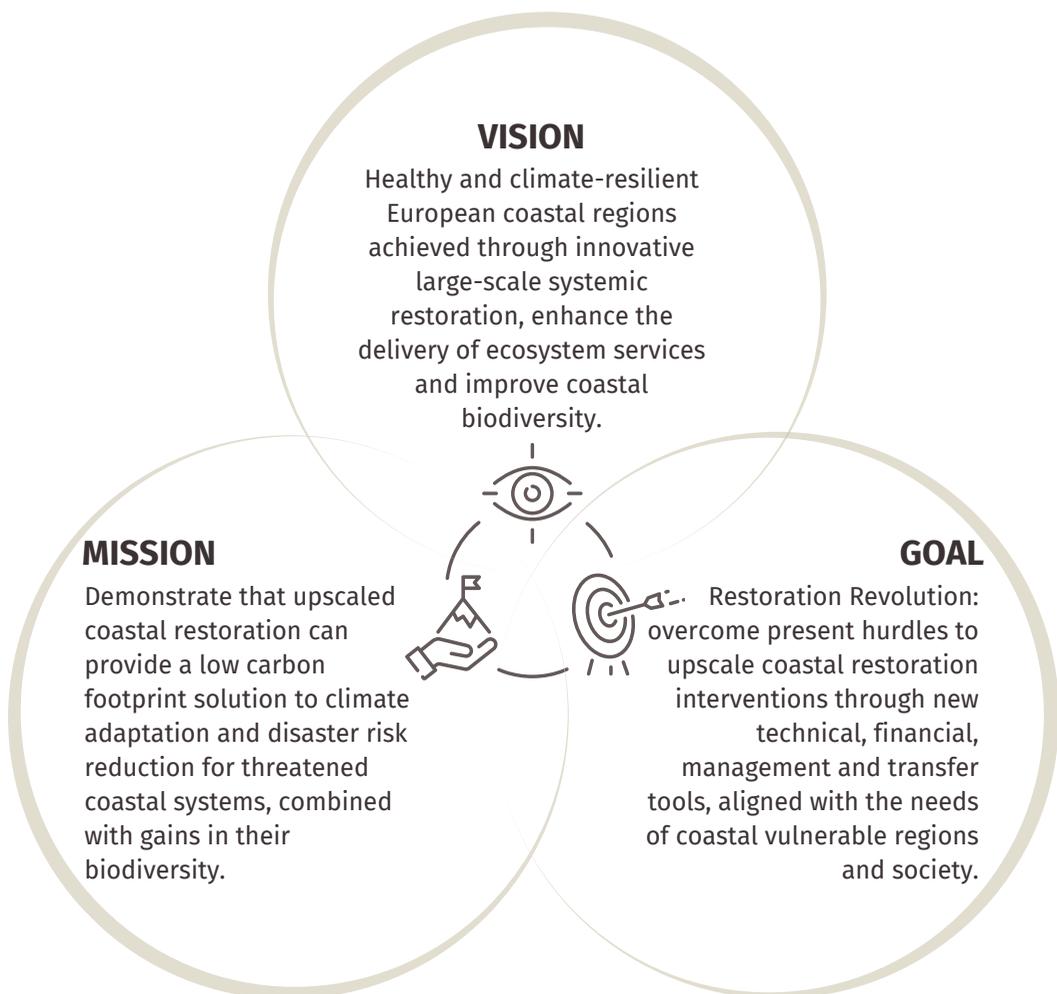
¹⁴ https://environment.ec.europa.eu/topics/nature-and-biodiversity/nature-restoration-law_en

¹⁵ <https://www.unesco.org/en/decades/ocean-decade>

1.1. Description of Work

THE MISSION

REST-COAST builds on three key elements, i.e. **the Vision, the Mission, the Goal**, representing the fundamental pillars upon which the methodology and the designated Work Packages of the project were designed.



THE GOALS

To achieve upscaled coastal restoration and enhance the resilience of coastal ecosystem services, the project has identified several specific goals which are the primary focus of attention throughout its duration.

- ✓ **Improve coastal restoration practice and techniques** through new hands-on restoration projects within the REST-COAST Pilots, supported by Restoration Platforms to demonstrate and scale-up measures for wider use.
- ✓ **Generate new tools and data to assess risk reduction** at different climate change levels to provide consistent risk estimates across time scales and lower financial, social and political barriers to large scale restoration.
- ✓ **Design innovative financial arrangements and bankable business plans** that support restoration upscaling by introducing co-financing options and long-term plans based on strategic investment pathways.
- ✓ **Develop a scalable plan for coastal adaptation** through large scale restoration based on trade-offs and synergies between biodiversity and socio-economic development, aiming for financially viable solutions incorporating climate-resilient ecosystem services.
- ✓ **Co-design innovative governance arrangements and policies** to overcome present barriers to large scale restoration and promote transformative changes in governance at all levels: from local to national and EU.
- ✓ **Support the Green Deal social transformation and engagement** through a new Digital Platform dashboard, a Carbon Footprint Counter and a new App and Video game focusing on decarbonisation of coastal adaptation.
- ✓ **Engage** with project stakeholders, EU Green Deal officers and international organisations **to transfer REST-COAST restoration tools, data and expertise and demo material** and ensure their uptake and exploitation.

To achieve the implementation of the goals, **eight work packages** have been established.

WP1. Hands-on restoration of coastal ecosystems and upscaling potential technical aspects

Led by EURECAT, WP1 identifies and implements the most suitable techniques for the restoration of coastal biodiversity and ecosystem services and applies them in a set of Pilots, defining an approach for upscaling.

WP2. Climate risk reduction through innovative restoration

Led by the Catalonia University of Technology UPC-BarcelonaTech, WP2 prepares a risk assessment suite based on hydro-morpho-eco coupled models with ecosystem services parameterised as a function of restoration scale and climatic conditions.

WP3. Financial arrangements and business plans for restoration upscaling

Led by the Global Climate Forum (GCF), WP3 upscales coastal ecosystem restoration by overcoming economic and financial barriers through innovative and sustainable financial arrangements.

WP4. Adaptation management for restoration and upscaling

Led by Deltares, WP4 integrates and coordinates the application of WP1/2/3 results to coastal adaptation-through-restoration management by developing coastal systemic adaptation pathways.

WP5. Transformative governance for restoration upscaling

Led by the International Union for Conservation of Nature (IUCN), WP5 builds upon existing knowledge and results from previous WPs, to create an enabling socioeconomic environment for transformative and restoration-supportive governance that better integrates policies and mechanisms for large scale coastal restoration.

WP6. Dissemination, exploitation and social transformation tools

Led by Pensoft, WP6 develops all dissemination and exploitation tools to ensure that society and relevant public and private parties receive the necessary inputs to be engaged in the Restoration Revolution.

WP7. Management and cooperation at EU and International levels

Led by the Catalonia University of Technology UPC-BarcelonaTech, WP7 manages the project development to ensure a convincing demonstration of the feasibility and limits for large scale coastal restoration, generating added value with other EU and international initiatives.

WP8. Ethics requirements

Led by the Catalonia University of Technology UPC-BarcelonaTech, this Work Package sets out the ethics requirements that the project must comply with.

PILOT SITES

The project places particular emphasis on nine Pilot Sites, which represent coastal vulnerability hotspots for the main EU regional seas, i.e. **the Baltic, the Black, the North Atlantic and the Mediterranean Seas**. Restoration activities and further research in these regions will provide feedback for present and future climate scenarios. At a second stage, the results, encompassing data, tools, and best practices, to be collected throughout the lifespan of the project, will be transferred to other coasts within these sea-basins and beyond.



Quick Facts about the Pilot Sites

| Pilot Site | Characteristics | Goals | Quick Facts |
|---|--|--|--|
| Wadden Sea, North Sea | The site comprises of 300,000 ha with intertidal seagrass and the German Jade, Weser, Elbe Ems-Dollard estuaries with 23,800 ha of saltmarshes and polders. | Triple saltmarsh and summer polder area in natural state. | <p>Scale: Cross-border</p> <p>Countries: The Netherlands, Denmark, Germany</p> <p>Coastal elements: Estuary, lagoon</p> <p>Species: Sea grass, migratory and breeding wetland birds, migratory fish.</p> |
| Venice Lagoon, Central Mediterranean | The total area of the site covers 55.000 ha, of which 6.000 ha of seagrass, about 6.800 ha of natural saltmarshes and mudflats and 1.600 ha of morphological structures, i.e. artificial saltmarshes and mudflats. | Restoration intervention on artificial saltmarshes already existing aimed at accelerating the naturalisation processes for increasing priority habitats and biodiversity. | <p>Scale: Regional</p> <p>Countries: Italy</p> <p>Coastal elements: Lagoon, wetlands, islands</p> <p>Species: Three marine seagrasses, four fish species, twelve birds of Community interest.</p> |
| Foros Bay, Black Sea | This site consists of 226,35 ha, of which 58 ha are of seagrass meadows. | Restore 17 ha of seagrasses and more than 5 ha of Habitat 1170 Reefs (brown, red and green algae communities), with a community of <i>Ericaria</i> sp., which is currently lost. | <p>Scale: Regional</p> <p>Countries: Bulgaria</p> <p>Coastal elements: Bay</p> <p>Species: Macroalgae and seagrass species.</p> |
| Sicily Lagoon, Mediterranean Island | This site covers a total area of 3559 ha, of which 2250 ha consist of salt marshes coastal fringe, with 250 ha already restored. | Restoration of additional 320 ha. | <p>Scale: Regional</p> <p>Countries: Italy</p> <p>Coastal elements: Lagoon, wetland</p> <p>Species: Migrating birds, fish, saltmarsh vegetation.</p> |
| Nahal Dalia, East Mediterranean | This site includes coastal marshland and islands for nesting birds. | Restoration of 32 ha. | <p>Scale: Regional</p> <p>Countries: Israel</p> <p>Coastal elements: Estuary, lagoon</p> <p>Species: Endangered waterbird species, plants, turtle species, fish species.</p> |

| Pilot Site | Charasteristics | Goals | Quick Facts |
|--|---|---|--|
| <p>Catalan Coast Ebro Delta, West Mediterranean</p> | <p>This Pilot Site takes over 32.000 ha, 250 ha of which is consisted of wetlands, beaches and dunes.</p> | <p>Restore coastal and river-to-coast connectivity, with emphasis of wetlands, beaches, dunes and seagrass meadows in the Ebro Delta, with areas of about 2000 ha.</p> | <p>Scale: Regional Countries: Spain Coastal elements: Delta, bay, open, coast, lagoon Species: Birds, plants (<i>Salicornia</i> sp., <i>Limonium</i> sp.), toothcarps., European pond turtle</p> |
| <p>Vistula Lagoon, Baltic sea</p> | <p>This Pilot has constructed favourable habitats for endangered birds, by an artificial island (180 ha) and designated as a Natura 2000 site.</p> | <p>Create new islands in the protected area.</p> | <p>Scale: Regional Countries: Poland, Russian Federation Coastal elements: Island, lagoon Species: Macroalgae and seagrass species.</p> |
| <p>Rhone Delta, Central Mediterranean</p> | <p>This site presents 6527 ha, of which 1200 ha is covered by coastal wetlands (key habitats for migratory birds and fish), with 550 ha of coastal lagoons and 290 ha of Mediterranean halophytic scrub/<i>Salicornia</i> sp. and other annual plants colonising restored mud/sand.</p> | <p>Additional 300 ha of coastal lagoons, and 60 ha of Mediterranean halophilous scrubs/<i>Salicornia</i> and other annuals colonising restored mud and sand areas, plus the creation of new beach areas (short term). Restore as many as possible areas of the 4600 ha buffer zone (long term).</p> | <p>Scale: Regional Countries: France Coastal elements: Delta, lagoon Species: Migratory and breeding wetland birds, migratory fish species, Mediterranean halophilous scrubs, <i>Salicornia</i> and other annuals, seagrass.</p> |
| <p>Arcachon Bay, Atlantic Bay</p> | <p>This site covers 17.400 ha, where a part of this area is covered by <i>Zostera</i> sp. beds (a seagrass species that has lost approximately 50% cover in the last thirty years).</p> | <p>Replication over Arcachon Bay (7000 ha) and other sites.</p> | <p>Scale: Regional Countries: France Coastal elements: Bay, coast Species: Seagrass (<i>Zostera noltii</i> and all associated species living, feeding, hiding, spawning in the seagrass bed).</p> |

1.2 The Consortium

REST-COAST comprises 37 Project Partners from 11 countries, under the coordination of the Maritime Engineering Laboratory (LIM) of the Catalonia University of Technology UPC-BarcelonaTech (UPC). It was launched on 1 October 2021 and it will conclude on 31 March 2026. The project is co-funded by the European Union under the Horizon 2020 programme.



Institute of Oceanology (IO-BAS)
Pensoft Publishers



Egis Group
INRAE Microbial Ecology Centre of Lyon-Villeurbanne (LEM)
Network of Marine Protected Areas (MPA) Managers in the Mediterranean (MedPAN)
Mediterranean Wetlands Initiative (MedWet)
Tour du Valat (TDV)



Global Climate Forum (GCF)
HEREON
German Marine Research Consortium (KDM)
NLWKN - Forschungsstelle Küste



Israel Nature and Parks Authority (INPA)
School of Sustainability - Interdisciplinary Center (IDC) Herzliya



Centro Euro-Mediterraneo sui Cambiamenti Climatici (CMCC)
CORILA
Mediterranean Sea and Coast Foundation (MEDSEA)
Umberto PERNICE
University of Catania



Deltares
EcoShape
Global Center on Adaptation (GCA)
Province of Groningen
Wageningen University (WU)
Wageningen Marine Research (WMR)



Institute of Hydro-Engineering of the Polish Academy of Sciences (IBW PAN)



Albirem Sustainability, S.L.
Maritime Engineering Laboratory (LIM) of the Catalonia University of Technology UPC-BarcelonaTech (UPC)
International Centre for Coastal Resources Research (CIIRC)
Directorate General for the Coast and the Sea (DGCM) of the Spanish Ministry for the Ecological Transition and Demographic Challenge (MITECO)
Technology Centre of Catalonia (EURECAT)
Government of Catalonia (GENCAT)
Polytechnic University of Madrid
Spanish Ornithological Society (SEO/BirdLife)



International Union for Conservation of Nature (IUCN)



Organization of the Black Sea Economic Cooperation (BSEC)



University of East Anglia (UEA)
University of Lincoln (UoL)

PARTICIPATING COUNTRIES

 Republic of Bulgaria

 State of Israel

 Republic of Poland

 Republic of Türkiye

 French Republic

 Republic of Italy

 Kingdom of Spain

 United Kingdom
of Great Britain
and Northern Ireland

 Federal Republic of
Germany

 Kingdom of
the Netherlands

 Swiss Confederation



2. The Black Sea basin

The **Black Sea** is a semi-enclosed sea-basin with a rich natural and cultural heritage, spanning two continents, Europe and Asia, while connecting them to the Middle East. It is bounded by six riparian countries, i.e. the Republic of Bulgaria, Georgia, Romania, the Russian Federation, the Republic of Türkiye, and Ukraine, and is connected to countless others via rivers and tributaries.

The wider Black Sea region has a significant potential for growth, despite the socio-economic, environmental and geopolitical challenges it faces. Its geostrategic location has established the region internationally as a pivotal energy and trade hub. The Black Sea region covers an area of nearly 20 million square kilometres, home to approximately 350 million people¹⁶. The Black Sea countries, with a combined GDP of USD 2.95 trillion (as of 2020), represent 4% of the global economy and generate 14% of Europe's GDP¹⁷.

Blue Economy (BE) has always been acknowledged as a key driver for economic development for the countries of the region. Coastal and maritime tourism, shipbuilding, fisheries and maritime transport are the most developed BE sectors, mainly due to the existing infrastructure, countries' long experience, and high profit that feeds further development¹⁸. In particular, the littoral countries are able to target a large number of commercial service exports in the region. With 57 commercial ports, the merchant fleet of the Black Sea countries represents 4% of the world total¹⁹. Another important economic activity is small-scale fisheries which accounts for 84.1% of the vessel units operating in the Black Sea and plays an essential role in generating livelihoods in the region²⁰.

Concerning tourism, the region welcomed 143 million international tourists in 2018, with an estimated EUR 62 billion in international tourism receipts, representing 10% of the world's arrivals²¹. In the post-pandemic era, the countries of the region managed to bounce back while in addition, started exploring alternative models of tourism development in response to environmental challenges and needs for sustainable management of resources.

¹⁶ https://icbss.org/wp-content/uploads/2021/11/Food-for-thought-paper_Regional-Cooperation-on-Tourism_ICBSS_Nov-2021.pdf

¹⁷ https://icbss.org/wp-content/uploads/2021/11/Food-for-thought-paper_Regional-Cooperation-on-Tourism_ICBSS_Nov-2021.pdf

¹⁸ Report of the ICBSS, not yet published, in the framework of the BRIDGE-BS project

¹⁹ https://icbss.org/wp-content/uploads/2024/04/2024_ICBSS-Paper-for-EIR.pdf

²⁰ <https://doi.org/10.4060/cc3370en>

²¹ <http://core.bsec-organization.org/UploadedFiles/OtherFiles/20191217-bsec-unwto-brochure-november-2019-1e23vd5m.pdf>

THE UNIQUENESS OF THE BLACK SEA²²



10 large rivers flowing to the sea, with a total river input exceeding **350 km³/year**



5 ratio of the Black Sea catchment area to the sea's area



421,638 km² total Area



30 to 8 reduction in the number of fish species with economical significance



4869 km coastline



90% of oxygen free H₂S-rich volume



18 Mayor Sea Ports



Rich in **energy sources**, such as waves, currents, offshore wind, H₂S, gas hydrates



160 million population of Black Sea coasts and catchment



Deep Black Sea as the paleoclimate archive of the past **5 million years**



A **semi-enclosed** sea-basin and the **most isolated** from the World Ocean.



The **largest meromictic basin** in the world; a minimal exchange of water between the upper and lower layers.



Home to **many small islands** with unique ecosystems.



Approximately 20% of the surface area of the Mediterranean.



Approximately **three times fewer species** of fauna than the Mediterranean.

²² <http://connect2blacksea.org/>, <http://www.blacksea-commission.org/>

2.1. The Environmental Challenges of the Black Sea

Until the end of the 1960s, the Black Sea was one of the most productive in the world, with a rich pelagic fauna. In the 1970s, the Black Sea underwent a significant change due to the combined impact of multistressors (see Graph No. 5), including human-induced factors, which led to the deterioration of its marine ecosystem. Climate change is also a contributing factor. Today, many coastal regions are experiencing water quality issues, including high turbidity, high nutrient levels, and the frequent occurrence of harmful algae blooms, hypoxia, and mass deaths of benthic organisms. The Danube, Dniepr and Dniestr rivers discharge into the north-western coastal waters, bringing a variety of products resulting from the activities of more than 170 million people, who live in some of the most populated areas of the 17 different countries along the river banks. The majority of fish stocks have been overexploited to the extent that some are nearly depleted. Since 1950, the number of economically significant fish species has decreased from 30 to 8²³.



²³ <https://brideblacksea.org/>

2.2 Key Policies and Stakeholders in the Black Sea region

This part provides an overview of the **key regional and European policy frameworks and initiatives** that are instrumental in driving Black Sea growth. The existing policies and frameworks place particular emphasis on environmental issues, the restoration of natural resources and the protection of waters, while including sector-based recommendations for a sustainable Blue Economy. At regional level, the implementation of policies is supported by **regional stakeholders**, fostering an inclusive and collaborative operational framework for the region.

In general, there is significant progress in addressing environmental issues in the wider Black Sea region, both at national and regional levels. Most recently, in 2019, the establishment of new regional frameworks like the **Common Maritime Agenda for the Black Sea (CMA)** and the **Black Sea Strategic Research and Innovation Agenda (SRIA)**, affirm the countries' readiness to tackle environmental challenges in a targeted way.

The diversity of stakeholders involved in the processes, such as policymakers, scientists, industry, and civil society, illustrates the potential of the Black Sea communities to fill in the gaps through a holistic and multilevel approach. In addition, the examples of good practices, implemented in recent years, demonstrate the positive impact of stakeholders' collaboration. In the third part of this section, several **good practices** from the Black Sea region are included to highlight the increasing participation and commitment of stakeholders.

More decisive measures, however, are necessary to successfully address the identified needs. The adoption and implementation of policies focused on specific topics, including coastal restoration in the Black Sea, and the stakeholders' commitment to collaborate are two pivotal factors which must be further supported. This becomes even more important when considering the transboundary character of river-coast connectivity, a key element for achieving coastal restoration.

2.2.1. Policy Frameworks and Initiatives

1. The Convention on the Protection of the Black Sea Against Pollution (Bucharest Convention)²⁴

- The Bucharest Convention's objective is to prevent, reduce and control pollution in the Black Sea in order to protect and preserve the marine environment and to provide a legal framework for cooperation and concerted action to fulfil this obligation.
- It focuses on issues, such as the control of land-based sources of pollution, the dumping of waste and joint action in the case of emergencies (e.g. oil spills).
- Its Contracting Parties are the Republic of Bulgaria, Georgia, Romania, the Russian Federation, the Republic of Türkiye, and Ukraine.

2. Common Maritime Agenda for the Black Sea (CMA)²⁵

- The Common Maritime Agenda (CMA) for the Black Sea is a sea-basin initiative designed to enhance regional cooperation with the objective of achieving a sustainable Blue Economy in the Black Sea.
- The CMA was endorsed in 2019, by the Republic of Bulgaria, Georgia, the Republic of Moldova, Romania, the Russian Federation, the Republic of Türkiye and Ukraine, with the support of the European Commission.
- The CMA has established the following **Goals** to contribute to sustainable growth in coastal regions:
 - 🎯 **Healthy marine and coastal ecosystems**
 - 🎯 **A competitive, innovative and sustainable blue economy for the Black Sea**
 - 🎯 **Fostering Investment in the Black Sea blue economy**
- Through the CMA, the Black Sea region has aligned itself with two other EU sea-basin initiatives, the Atlantic Strategy and the WestMED Blue Economy Initiative, in order to establish a basin-wide initiative for blue growth based on the sustainable use of maritime and marine sectors.

²⁴ http://www.blacksea-commission.org/_convention.asp

²⁵ <https://black-sea-maritime-agenda.ec.europa.eu/>

3. Black Sea Strategic Research and Innovation Agenda (SRIA)²⁶

- The Black Sea Strategic Research and Innovation Agenda (SRIA) is the scientific pillar of the CMA. Adopted in 2019, to facilitate collaboration between stakeholders from various sectors, including academia, policy, industry, and society. One of the SRIA's primary objective is to assist in the identification of national-level priorities that can be incorporated into the development of national Blue Economy agendas.
- The SRIA has four main **Pillars** on which a new set of research and innovation initiatives can be constructed:



Addressing Fundamental Black Sea Research Challenges



**Developing Innovation, Solutions and Clusters
Underpinning Black Sea Blue Economy**



**Building of Critical Support Systems and Research
Infrastructures for the Benefit of Black Sea Communities**



Education and Capacity Building

- The **Black Sea Strategic Research and Innovation Agenda (SRIA) Implementation Plan**²⁷ translates the SRIA Goals into concrete actions, targeting key stakeholders, delineating specific timeframes for initiating joint activities and addressing scientific issues, identifying policies, funding frameworks and research opportunities. In doing so, the Implementation Plan has established enduring guidelines to consolidate science-based results within the Black Sea community and beyond with other relevant stakeholders and regions.

²⁶ <http://connect2blacksea.org/the-sria/>, http://connect2blacksea.org/wp-content/uploads/2024/01/Black-Sea-SRIA_2023.pdf

²⁷ <http://connect2blacksea.org/wp-content/uploads/2023/08/23062023-Black-Sea-SRIA-Implementation-Plan.pdf>

4. EU Mission: Mission Restore our Ocean and Waters²⁸ & the Danube and Black Sea Lighthouse²⁹.

- The EU Mission "Restore our Ocean and Waters" has set a 2030 target with the objective of protecting and restoring the health of the ocean and waters through research and innovation, citizen engagement and blue investments. The Mission's new approach addresses the ocean and waters as one entity, playing a pivotal role in achieving climate neutrality and restoring nature.
- The Mission facilitates regional collaboration through the establishment of area-based "lighthouses" in major sea and river basins, including the Atlantic-Arctic, Mediterranean Sea, Baltic-North Sea, and Danube-Black Sea. Mission lighthouses serve as pilot, demonstration, development, and deployment sites for the Mission's activities across EU seas and river basins.
- In this context, the Danube and Black Sea Lighthouse aims to streamline governance structures along the Danube river basin and foster a more robust innovation ecosystem to enhance ecological restoration, protection and preservation.

5. EU Marine Strategy Framework Directive (MSFD)³⁰

- In 2008, the European Union adopted the Marine Strategy Framework Directive (MSFD) with the objective of maintaining clean, healthy, productive and resilient marine ecosystems while securing a more sustainable use of marine resources.
- The primary objective of the Marine Directive was to achieve Good Environmental Status (GES) of EU marine waters by 2020. The Directive defines GES as "the environmental status of marine waters where these provide ecologically diverse and dynamic oceans and seas which are clean, healthy and productive".
- The Directive is a direct contribution to the European Green Deal, namely the EU's Biodiversity Strategy for 2030 and the Zero Pollution Action Plan.

²⁸ https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/eu-missions-horizon-europe/restore-our-ocean-and-waters_en

²⁹ https://oceans-and-fisheries.ec.europa.eu/news/eu-mission-restore-our-ocean-and-waters-launch-danube-black-sea-lighthouse-2023-05-03_en

³⁰ https://research-and-innovation.ec.europa.eu/research-area/environment/oceans-and-seas/eu-marine-strategy-framework-directive_en
https://environment.ec.europa.eu/topics/marine-environment_en

6. EU Directive on Maritime Spatial Planning (MSP)³¹

- In 2014, the European Union adopted the Directive on Maritime Spatial Planning (MSP). The Directive defines MSP as “a process by which the relevant Member State’s authorities analyse and organise human activities in marine areas to achieve ecological, economic and social objectives”. MSP is characterised by its functional character, which entails the integration of various sectors, societal needs, values, and goals.
- By establishing a framework for MSP, the EU Directive “aimed at promoting the sustainable growth of maritime economies, the sustainable development of marine areas and the sustainable use of marine resources”.

³¹ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32014L0089>, <https://maritime-spatial-planning.ec.europa.eu/>

2.2.2. Stakeholders and Main Actors

1. Commission on the Protection of the Black Sea Against Pollution (Black Sea Commission)³²

- The Black Sea Commission is an intergovernmental organisation responsible for the implementation of the Convention on the Protection of the Black Sea Against Pollution, which was signed by the six littoral countries in 1992. It provides the legal framework for regional cooperation and the activities necessary to reduce pollution and improve the protection of the marine environment.

2. Organization of the Black Sea Economic Cooperation (BSEC)³³

- The Organization of the Black Sea Economic Cooperation (BSEC) is a full-fledged intergovernmental, regional economic organisation, which was established in 1992. Its aim is to ensure peace, stability and prosperity in the Black Sea region.
- The BSEC is comprised of thirteen Member States: the Republic of Albania, the Republic of Armenia, the Republic of Azerbaijan, the Republic of Bulgaria, Georgia, the Hellenic Republic, the Republic of Moldova, the Republic of North Macedonia, Romania, the Russian Federation, the Republic of Serbia, the Republic of Türkiye, and Ukraine.
- The BSEC has established over 25 areas of cooperation, including agriculture and agro-industry, banking and finance, combating organised crime, culture, education, emergency assistance, energy, environmental protection, healthcare and pharmaceuticals, ICT, institutional renewal and good governance, science and technology, SMEs, tourism, trade and transport.

3. Parliamentary Assembly of the Black Sea Economic Cooperation (PABSEC)³⁴

- The Parliamentary Assembly of the Black Sea Economic Cooperation (PABSEC) is composed of 77 parliamentarians representing the thirteen Member States of the BSEC.
- Established in 1993 as an inter-parliamentary consultative body, the PABSEC provides legislative support for the implementation of the decisions taken by the Heads of State or Government or by the Ministers of Foreign Affairs.

³² <http://www.blacksea-commission.org/>

³³ <https://www.bsec-organization.org/>

³⁴ <https://www.pabsec.org/>

4. Black Sea Trade and Development Bank (BSTDB)³⁵

- The Black Sea Trade and Development Bank (BSTDB) is an international financial institution. It was established by the Republic of Albania, the Republic of Armenia, the Republic of Azerbaijan, the Republic of Bulgaria, Georgia, the Hellenic Republic, the Republic of Moldova, Romania, the Russian Federation, the Republic of Türkiye, and Ukraine, and commenced operations in 1999.
- The Bank's activities are designed to facilitate economic development and regional cooperation in the Black Sea region. This is achieved through the provision of trade and project finance lending, guarantees, and equity participation in private enterprises and public entities in the member countries.

5. BSEC Business Council (BSECBC)³⁶

- The BSEC Business Council (BSECBC) is an international, non-governmental and non-profit organisation established in 1992. Its objective is to lobby for and act in the interest of the continuous improvement of the business environment throughout the Black Sea region, with the intention of benefiting local businesses and attracting foreign investment.

6. International Centre for Black Sea Studies (ICBSS)³⁷

- The International Centre for Black Sea Studies (ICBSS) was founded in 1998 as a non-profit organisation. It has since fulfilled a dual function: a) as an independent research and training institution focusing on the wider Black Sea region, and b) as a related body of the Organization of the Black Sea Economic Cooperation (BSEC) and its think-tank.
- The ICBSS capitalizes on its dual role to advance effective synergies between scientific and advocacy work, at both regional and international levels.

³⁵ <https://www.bstdb.org/>

³⁶ <https://www.bsecbc.com/>

³⁷ <https://icbss.org/>

7. CMA Steering Group³⁸

- The operational coordination of the Common Maritime Agenda for the Black Sea (CMA) is ensured by the Steering Group, which is comprised of senior officials of the participating countries. The Steering Group provides guidance and necessary support to ensure the expected results are achieved and monitors their implementation.
- National Coordinators, appointed by the participating countries, as well as the Directorate General for Maritime Affairs and Fisheries of the EU Commission (DG MARE), are full members of the CMA Steering Group. Regional and international organisations active in the Black Sea, including the Black Sea Commission (BSC), the Organization of the Black Sea Economic Cooperation (BSEC), the Conference of Peripheral Maritime Regions (CPMR), the Managing Authority Interreg NEXT Black Sea Basin Programme, the World Bank, and the General Fisheries Commission for the Mediterranean (GFCM), act as consultative and observer bodies, complementing and mutually reinforcing the work of the Steering Group.
- The Steering Group may be assisted by technical working groups comprising representatives with technical expertise, as designated by the participating countries.

8. Black Sea Assistance Mechanism (BSAM)³⁹

- The Black Sea Assistance Mechanism (BSAM) offers participating countries practical support to assist them in achieving the Blue Economy goals set out in the Common Maritime Agenda for the Black Sea (CMA). The focus of the mechanism is on facilitating awareness and capacity among local and regional stakeholders by providing the Black Sea community with expertise on the Blue Economy, a network across borders on both shores to help project leaders find the right partners, as well as support with project idea development and sharing funding opportunities.
- Since November 2022, the BSAM has become a part of a joint Assistance Mechanism together with the Atlantic Action Plan and the WestMed initiative. This has further strengthened cross-sea basin synergies and enabled more coordinated policy feedback.

³⁸ <https://black-sea-maritime-agenda.ec.europa.eu/about/our-mission>

³⁹ <https://black-sea-maritime-agenda.ec.europa.eu/about/bsam>

9. Balkan & Black Sea Commission of the Conference of Peripheral Maritime Regions (CPMR BBSC)⁴⁰

- The Balkan & Black Sea Commission of the Conference of Peripheral Maritime Regions (CPMR BBSC) is a lasting institutional framework to support the integration of the Balkan and Black Sea regions and to improve their relations with the EU in the context of enlargement. It promotes regionalisation at local, regional, national and European institutional levels.
- The CPMR BBSC serves as a conduit between EU programmes and strategies and activities developed by other networks and institutions in the region, such as the BSEC.

10. Black Sea Universities Network (BSUN)⁴¹

- The Black Sea Universities Network (BSUN) was established in 1998 as an ad-hoc international organisation with the objective of fostering educational, scientific and cultural cooperation and exchange among universities of the BSEC Member States and other institutions with similar interests. The Network carries out a number of activities based on a bottom-up approach, with the aim of involving the professors and students of the member universities in cooperative activities.

11. Black Sea NGO Network (BSNN)⁴²

- The Black Sea NGO Network (BSNN) is a regional, non-political, non-governmental, non-profit, voluntary association of NGOs from all Black Sea countries. Its objective is to contribute to the protection and restoration of the Black Sea and to the sustainable development of the Black Sea countries through increased participation of NGOs, governments, businesses and other institutions, as well as the general public.

⁴⁰ <https://cpmr-balkan-blacksea.org/>

⁴¹ <https://bsun.org/>

⁴² <https://bsnn.org/>

12. Black Sea NGO Forum⁴³

- The Black Sea NGO Forum is an initiative launched in 2008 by the Romanian NGDO Platform – FOND. Its objective is to enhance the level of dialogue and collaboration among NGOs in the wider Black Sea region, thereby strengthening the capacity of NGOs to influence regional and national policies. Additionally, the Forum aims to expand the number and quality of regional partnerships and projects.

13. General Fisheries Commission for the Mediterranean (GFCM)⁴⁴

- The General Fisheries Commission for the Mediterranean (GFCM) is a regional fisheries management organisation. With 22 member countries and the EU, its primary objective is to ensure the conservation and sustainable use of living marine resources, as well as the sustainable development of aquaculture in the Mediterranean and the Black Sea.
- The organisation plays a pivotal role in fisheries governance, with the authority to make binding recommendations for fisheries conservation and management, as well as for aquaculture development.

14. Union for the Mediterranean (UfM)⁴⁵

- The Union for the Mediterranean (UfM) is an intergovernmental organisation comprising 43 countries. Its objective is to strengthen regional cooperation and dialogue through the implementation of specific projects and initiatives that address inclusive and sustainable development, stability and integration in the Euro-Mediterranean area.
- The primary focus of the organisation is on women's rights, job creation, cross-country connectivity efforts, and addressing environmental and climate emergencies.

⁴³ <https://blackseango.org/>

⁴⁴ <https://www.fao.org/gfcm/en/>

⁴⁵ <https://ufmsecretariat.org/>

2.2.3. Good Practices from the Black Sea

An indicative selection of good practices from the region have been identified to highlight the region’s potential and joint efforts in tackling environmental challenges. These regional examples could provide a useful basis for building on further initiatives based on the REST-COAST Knowledge Outputs.

| | |
|--------------------|---|
| SOCIETY | Saving our Sea: New ways to reduce Marine Pollution in the Black Sea - A collective edition of students’ essays, by BSEC PERMIS and ICBS (Black Sea React!) ⁴⁶ |
| | Virtual Blue Career Center (BRIDGE-BS) ⁴⁷ |
| | Ocean Literacy Network (BRIDGE-BS) ⁴⁸ |
| | BlueJoy (Black Sea CONNECT) ⁴⁹ |
| | Black Sea in Winter - Photography Showcase (DOORS) ⁵⁰ |
| | Black Sea Documentary (DOORS) ⁵¹ |
| | #BlackSeaMAS Campaign (DOORS) ⁵² |
| | #BlackSeaLitterFree Campaign (DOORS) ⁵³ |
| SCIENCE & SOCIETY | Black Sea Young Ambassador Programme (Black Sea CONNECT and BRIDGE-BS) ⁵⁴ |
| SCIENCE | Observation Mapping Tool (DOORS) ⁵⁵ |
| | Summer School (BRIDGE-BS) ⁵⁶ |
| SCIENCE & INDUSTRY | High-Tech Summit for the Black Sea (BRIDGE BS) ⁵⁷ |
| INDUSTRY | Black Sea Accelerator (DOORS and BRIDGE-BS) ⁵⁸ |

⁴⁶ <https://icbss.org/new-publication-saving-our-sea-a-collective-edition-of-students-essays-published-by-bsec-permis-and-icbs-for-black-sea-react/>

⁴⁷ <https://bridgeblacksea.org/index.php/virtual-blue-career-center/>

⁴⁸ <https://bridgeblacksea.org/index.php/ocean-literacy-network/>

⁴⁹ <https://bluejoy.bsun.org/>

⁵⁰ <https://www.doorsblacksea.eu/snapshots>

⁵¹ <https://www.doorsblacksea.eu/documentary>

⁵² <https://www.doorsblacksea.eu/blackseamas>

⁵³ <https://www.doorsblacksea.eu/blacksealitterfree>

⁵⁴ <https://bridgeblacksea.org/index.php/young-ambassadors/>

⁵⁵ <https://www.doorsblacksea.eu/observationtool>

⁵⁶ <https://bridgeblacksea.org/index.php/2024/04/30/bridge-bs-2nd-summer-school-is-now-open-for-applications/>

⁵⁷ <https://bridgeblacksea.org/index.php/2024/04/02/save-the-date-the-2nd-high-tech-summit-for-the-black-sea-on-16-october-2024-in-sofia-bulgaria/>

⁵⁸ <https://bridgeblacksea.org/index.php/black-sea-accelerator/>

3. Knowledge Transfer Pathways for Coastal Restoration

Transferring REST-COAST's Knowledge Outputs to the Black Sea Communities

The concept of **Knowledge Transfer (KT)** is the process of sharing information and experience, from one entity to another, for optimum efficiency. For the purposes of the present booklet, Knowledge Transfer was used **for the scaling-out of REST-COAST knowledge results to the Black Sea communities.**

The identification of the **Knowledge Transfer Pathways (KTP)** was based on the **COLUMBUS project methodology**⁵⁹. The process included the identification of existing and forthcoming REST-COAST knowledge outputs, such as scientific reports, databases, innovative tools, training programmes. In parallel, desk-research identified the needs of the Black Sea basin with regards to coastal restoration. Building on these initial findings, each KT Pathway was elaborated based on **five steps** to ensure an effective transfer and adaptation of REST-COAST's outputs to the Black Sea, as follows:

1. Identification of the **Knowledge Need (KN)** to support coastal restoration in the Black Sea region.
2. Identification of the REST-COAST **Knowledge Output (KO)** to address the KN.
3. Development of the **Knowledge Transfer Pathway (KTP)** based on how the KO could address the KN.
4. Identification of the relevant **Target Users** to be involved in the process.
5. Identification of the **Expected Impact** from the development of the KT Pathway.

Based on the primary needs for coastal restoration in the Black Sea, the process identified **six Knowledge Transfer Pathways** in the following areas: Governance and Policy Frameworks; Financing and Funding; Environmental Impact Assessments; Data Access and Sharing; Public Awareness and Engagement; Multistakeholder Collaboration and Knowledge Exchange.

The Knowledge Transfer Pathways serve as a bridge between the REST-COAST project and the Black Sea, and a **starting point for the support of coastal restoration in the Black Sea region.** To achieve this objective at operational level, it is important to foster a participatory (bottom-up) and interdisciplinary approach, bringing on board all involved stakeholders.

⁵⁹ <https://www.columbusproject.eu/>

Knowledge Transfer Pathways for Coastal Restoration: From REST-COAST to the Black Sea

Governance & Policy Frameworks

1 Knowledge Need

The lack of sufficient governance and policy frameworks to achieve top-down support for coastal restoration in the Black Sea.

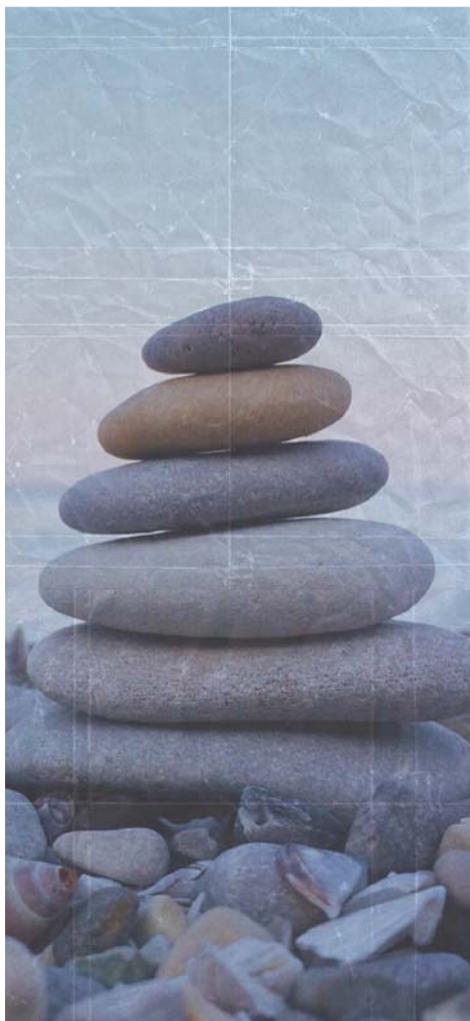
Although the Black Sea countries have developed environmental policies and strategies, their effective implementation often remains on paper. One of the most significant obstacles is the inadequate coordination between ministries within the Black Sea countries, but also, between the countries themselves. Moreover, as non-EU Member States⁶⁰ are not required to transpose existing EU Directives, the integration of updated, science-based measures into their national, regional and local policies is weak.

2 Knowledge Output

The Knowledge Output that has been identified as a priority within the context of REST-COAST is:

- REST-COAST Deliverable 5.6
“Policy recommendations for a transformation in governance/policies at EU and international levels”

This Knowledge Output is related to the project’s WP5, “Transformative governance for restoration upscaling”.



⁶⁰ Black Sea EU Member States: Republic of Bulgaria and Romania, Black Sea non-EU Member States: Georgia, Russian Federation, Republic of Türkiye, Ukraine

3 Knowledge Transfer Pathway

REST-COAST aims to create an enabling socioeconomic environment for transformative and restoration-supportive governance that better integrates policies and mechanisms for large-scale coastal restoration, and then to transfer it to coastal systems worldwide. In this regard, the **report** comprising the Knowledge Output includes **policy recommendations and a strategic plan to promote transformation in governance and policies in support of coastal restoration at EU and international levels**. Consequently, the Black Sea countries can also utilise this tool to facilitate ecosystem-based coastal adaptation and the application of Nature-Based Solutions.

4 Target Users

Achieving the Knowledge Transfer Pathway requires a **participatory and interdisciplinary approach** with a wide range of Target Users. In addition, **collaboration with the REST-COAST team** is essential. The following list presents the Target Users that have been identified as the most important ones. It should be noted, however, that this is not an exhaustive list.

Main Target Users

- National, Regional & Local Authorities, Related Ministries & Governmental Agencies, Municipalities, National Statistical Institutes
- Academia & Research Institutions (areas such as Public Administration, International Environmental Law & Economics, Climate Change, etc.)
- Chambers of Commerce and Industry, Port Authorities, Private Sector, Business Associations, SMEs, Start-ups, Risk Management Agencies
- Local Communities, specifically those located in coastal and riverine areas, Civil Society, NGOs
- Mass & Social Media
- Related International, Intergovernmental & Regional Organisations (Chapter 2.2.2.)

5 Expected Impact

The Expected Impact of this Knowledge Transfer Pathway is to provide the Black Sea countries with appropriate and informative guidance on how to overcome governance and policy barriers to achieve coastal restoration.



1 Knowledge Need

The lack of sufficient financing and funding mechanisms and tools to support coastal restoration in the Black Sea countries.

Despite the overall increase in climate change investing, neither public authorities nor the private sector have shown a preference for investing in related initiatives, as they prioritise other, seemingly more profitable areas. Consequently, the financing and funding of coastal restoration projects is a complex issue, characterised by numerous barriers.

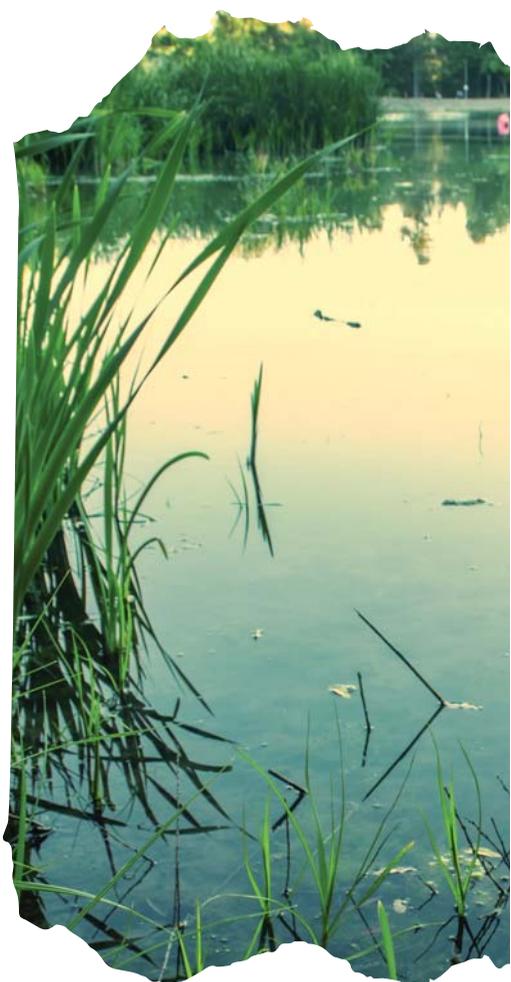
2 Knowledge Output

The Knowledge Outputs that have been identified as a priority within the context of REST-COAST are as follows:

- REST-COAST Deliverable 3.1
“Framework for developing funding and finance arrangements for coastal restoration”
- REST-COAST Deliverable 3.2
“Review of innovative public funding, finance and provisioning arrangements”
- REST-COAST Deliverable 3.3
“Tailored finance arrangements, market analysis, bankable business plans and financial scalability plans for coastal restoration at the Pilots and beyond”
- REST-COAST Deliverable 3.4
“Typology of financial arrangements, guidelines and policy recommendations for replicating large-scale restoration funding and finance”
- REST-COAST Publication
“Key Innovations in Financing Nature-Based Solutions for Coastal Adaptation”

The four Deliverables are related to the project’s WP3⁶¹, “Financial arrangements/business plans for restoration upscaling”. The article has been published in the MDPI journal.

& Financing & Funding



⁶¹ Work Package 3

3 Knowledge Transfer Pathway

REST-COAST aims to make the data collected throughout the lifespan of the project easily transferable to other coasts worldwide. In this context, the **four reports and one article** comprising the Knowledge Outputs can be considered a **comprehensive package of guidelines and policy recommendations to overcome economic and financial barriers supporting coastal restoration in the Black Sea**. Tailor-made, innovative and sustainable funding and financing arrangements, including market analysis, bankable business plans, financial scalability plans, etc., can be developed to facilitate the adoption of Nature-Based Solutions for coastal adaptation in the Black Sea region.

4 Target Users

Achieving the Knowledge Transfer Pathway requires a **participatory and interdisciplinary approach** with a wide range of Target Users. In addition, **collaboration with the REST-COAST team** is essential. The following list presents the Target Users that have been identified as the most important ones. It should be noted, however, that this is not an exhaustive list.

Main Target Users

- National, Regional & Local Authorities, Related Ministries & Governmental Agencies, Municipalities, National Statistical Institutes
- Academia & Research Institutions (areas such as Environmental Economics, Business Management, Climate Change, etc.)
- Chambers of Commerce and Industry, Port Authorities, Private Sector, Business Associations, SMEs⁶², Risk Management Agencies
- Local Communities, specifically those located in coastal and riverine areas, Civil Society, NGOs
- Related International, Intergovernmental & Regional Organisations (Chapter 2.2.2.)

5 Expected Impact

The Expected Impact of this Knowledge Transfer Pathway is to provide the Black Sea countries with structured and synthesised information and tools on the development of large-scale funding and financing solutions for coastal restoration.





Environmental Impact Assessments

1 Knowledge Need

The lack of environmental impact assessments to support coastal restoration in the Black Sea.

Despite the continued deterioration of the environment, coastal management in the Black Sea countries is frequently based on the unsustainable exploitation of resources, with a tendency towards short-term interventions that result in suboptimal decision-making. One of the main reasons for this situation is the lack of environmental assessments to identify and evaluate the potential for coastal adaptation through new, innovative hands-on restoration initiatives.

2 Knowledge Output

The Knowledge Outputs that have been identified as a priority within the context of REST-COAST are as follows:

- REST-COAST Deliverable 1.4

“Catalogue of restoration with criteria for assessing BDV and ESS gains for coastal restoration”

This Knowledge Output is related to the project’s WP1, “Hands-on restoration of coastal ecosystems and upscaling potential: technical aspects”.

- REST-COAST Deliverable 2.1

“Good practice criteria for multi-hazard forecasting”.

- REST-COAST Deliverable 2.4

“Global assessment of risk reduction through restoration”

These Knowledge Outputs are related to the project’s WP2, “Climate risk reduction through innovative restoration (warning indicators)”.

- REST-COAST Deliverable 4.4

“Scalable plan for adaptation-through restoration to close the implementation gap”

This Knowledge Output is related to the project’s WP4, “Adaptation management for restoration and upscaling”.



3 Knowledge Transfer Pathway

REST-COAST aims to scale-up coastal restoration interventions by developing a holistic approach, including the analysis of environmental factors, capable of achieving coastal adaptation. In this context, the **four reports** comprising the Knowledge Outputs can be considered a **comprehensive package of environmental guidelines and measures for large-scale restoration of coastal biodiversity and ecosystem services**.

Specifically, special attention is paid to:

- biodiversity and ecosystem services gains as metrics for coastal restoration success;
- a risk assessment suite based on hydro-morpho-eco coupled models with ecosystem services parameterised as a function of restoration scale and climatic conditions;
- a scalable adaptation-through-restoration plan and a step-by-step methodology to deliver ecosystem services and biodiversity gains by the implementation of Nature-Based Solutions.

As all these tools are developed for large-scale restoration, both within and beyond the Pilot Sites, the Black Sea countries can also utilise them for their coastal regions.



4 Target Users

Achieving the Knowledge Transfer Pathway requires a **participatory and interdisciplinary approach** with a wide range of Target Users. In addition, **collaboration with the REST-COAST team** is essential. The following list presents the Target Users that have been identified as the most important ones. It should be noted, however, that this is not an exhaustive list.

Main Target Users

- National, Regional & Local Authorities, Related Ministries & Governmental Agencies, Municipalities, Environmental Emergencies Centres
- Academia & Research Institutions (areas such as Environment, Climate Change, Coastal Management, Decarbonisation, etc.), Environmental Data & Forecasting Services, Space Agencies
- Port Authorities, Maritime Clusters, Private Sector, Business Associations, SMEs, Start-ups, Innovation Parks
- Local Communities, specifically those located in coastal and riverine areas, Civil Society, NGOs
- Mass & Social Media
- Related International, Intergovernmental & Regional Organisations (Chapter 2.2.2.)

5 Expected Impact

The Expected Impact of this Knowledge Transfer Pathway is to provide the Black Sea countries with the appropriate guidance to develop effective environmental impact assessments, thereby improving restoration practices for their coastal vulnerable regions.

1 Knowledge Need

The lack of data access and sharing to support coastal restoration in the Black Sea.

Despite recent advancements, data limitations continue to present a significant obstacle in the region. Some Black Sea countries have made more progress in terms of data availability for the restoration of coastal ecosystem services and biodiversity. However, this issue remains one of the most critical challenges, as the lack of data hinders the formulation of effective, science-based policies.

Data Access & Sharing

2 Knowledge Output

The Knowledge Outputs that have been identified as a priority within the context of **REST-COAST** are as follows:

- REST-COAST Deliverable 1.1

“Database on coastal restoration projects and performance”

This Knowledge Output is related to the project’s WP1, “Hands-on restoration of coastal ecosystems and upscaling potential: technical aspects”.

- REST-COAST Deliverable 4.5

“Quick scan tool for potential of systemic restoration, NBS packages, resulting ESS and BDV gains”

This Knowledge Output is related to the project’s WP4, “Adaptation management for restoration and upscaling”.

- REST-COAST Deliverable 6.3 - 6.11

“Restoration Demo at each Pilot Site⁶³”

- REST-COAST Deliverable 6.13

“Digital Platform including dashboard”

These Knowledge Outputs are related to the project’s WP6, “Dissemination/exploitation and social transformation tools”.



⁶³ Pilot Sites: Wadden Sea, Ebro Delta, Venice, Vistula Lagoon, Foros Bay, Rhone Delta, Sicily Lagoon, Arcachon Bay, Nahal Dalia

3 Knowledge Transfer Pathway

One of the primary objectives of REST-COAST is to generate **new and innovative tools to facilitate technical transfer and exploitation for policy/decision makers and ecosystem managers**. By introducing these tools, access to and sharing of data on coastal restoration will be readily available to all relevant stakeholders.

In particular:

- a) the **database** collects data on coastal restoration projects that support the **hands-on restoration at the Pilot Sites** and also include some reference projects at a global level, making the information available through the project website;
- b) the **scan tool** enables the rapid assessment of ecosystem services and biodiversity at landscape scales and for various future scenarios (in terms of climate and management) to determine the potential for systemic restoration;
- c) the **restoration demos** produced at each Pilot Site, consisting of technical reports, data, metadata, and videos, include information on the benefits of coastal restoration and upscaling;
- d) the **digital platform** brings together data on key coastal variables⁶⁴ from across the nine Pilots into a GIS environment⁶⁵. A colour-coded **dashboard** displays warning signals depending on how close or far these sites are to observed socio-economic and environmental tipping points.

As all these tools are designed to be not only easily accessible, but also easily replicable and transferable to other coasts worldwide, the Black Sea countries can also benefit from them by filling their data gaps.



4 Target Users

Achieving the Knowledge Transfer Pathway requires a **participatory and interdisciplinary approach** with a wide range of Target Users. In addition, **collaboration with the REST-COAST team** is essential. The following list presents the Target Users that have been identified as the most important ones. It should be noted, however, that this is not an exhaustive list.

Main Target Users

- National, Regional & Local Authorities, Related Ministries & Governmental Agencies, Municipalities, Environmental Emergencies Centres
- Academia & Research Institutions (areas such as Technology, Data Analysis, Coastal Management, etc.), Environmental Data & Forecasting Services, Space Agencies
- Port Authorities, Maritime Clusters, Private Sector, Business Associations, Technology Companies, SMEs, Start-ups, Innovation Parks
- Local Communities, specifically those located in coastal and riverine areas, Civil Society, NGOs
- Mass & Social Media
- Related International, Intergovernmental & Regional Organisations (Chapter 2.2.2.)

5 Expected Impact

The Expected Impact of this Knowledge Transfer Pathway is to provide the Black Sea countries with novel material to address data issues on coastal restoration in the region.

⁶⁴ Key coastal variables: Biodiversity, ecosystem services delivery, blue Carbon, hydro-morpho-eco interactions, etc.)

⁶⁵ GIS: Geographic Information Systems, computer-based systems that are used to capture, store, analyze, and display geographic information
From: International Encyclopedia of the Social & Behavioral Sciences, 2001,
<https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/geographic-information-system>

1 Knowledge Need

The lack of public awareness and engagement to achieve bottom-up support for coastal restoration in the Black Sea countries.

In spite of the launch of many awareness-raising campaigns and other related activities in recent years, citizens still lack the appropriate tools to shape a better understanding of coastal restoration. As a result, they are not mobilised to actively contribute to the issue. In addition, coastal and riverine communities, which are typically more affected by the degradation of coasts and rivers, are often less aware of this environmental challenge.

2 Knowledge Output

The Knowledge Outputs that have been identified as a priority within the context of REST-COAST are as follows:

- REST-COAST Deliverable 6.14
“Final version of videogame”
- REST-COAST Deliverable 6.15
“Final version of mobile C footprint application”
- REST-COAST Milestone 24
“Collection of videos at each Pilot Site showing BDV and ESS improvements by hands-on restoration actions. (Oriented towards: civil society and schools)”

All these Knowledge Outputs are related to the project’s WP6, “Dissemination/exploitation and social transformation tools”.

Public Awareness & Engagement



3 Knowledge Transfer Pathway

One of the primary objectives of REST-COAST is to facilitate engagement between society and policy by **providing citizens with innovative engagement tools and digital information**, which can then be easily exported globally. In this regard, public awareness and engagement on coastal restoration in the Black Sea can be increased through the introduction of **a new videogame and a new mobile application focusing on the decarbonisation of coastal adaptation**. The videogame will encompass a variety of environments, such as deltas and islands, which are subject to sea level rise, flooding, etc., and users will be able to simulate a range of solutions. As for the mobile application, it will utilise a rating system applied to a number of beaches in Europe to distinguish Carbon footprint levels and to inform users of their environmental footprint when selecting a beach. The app will be linked to touristic information programmes and travel operators, adding an environmental quality label to their products. Furthermore, the dissemination of **tailored videos from each Pilot Site demonstrating the efficacy of hands-on restoration actions** can facilitate proactive communication with the civil society and education community of the Black Sea region.

4 Target Users

Achieving the Knowledge Transfer Pathway requires a **participatory and interdisciplinary approach** with a wide range of Target Users. In addition, **collaboration with the REST-COAST team** is essential. The following list presents the Target Users that have been identified as the most important ones. It should be noted, however, that this is not an exhaustive list.

Main Target Users

- National, Regional & Local Authorities, Related Ministries & Governmental Agencies, Municipalities
- Academia & Research Institutions (areas such as Decarbonisation, Sustainability Management, Technology, Marketing, etc.)
- Private Sector, Business Associations, Technology Companies, Tour Operators & Travel Agencies, SMEs, Start-ups, Innovation Parks
- Mass & Social Media, Communication Experts & Related Companies, Marketing Agencies, Opinion Makers (Influencers)
- Local Communities, specifically those located in coastal and riverine areas, Tourists, Civil Society, NGOs, Education Community, Parents & Consumers Associations
- Related International, Intergovernmental & Regional Organisations (Chapter 2.2.2.)

5 Expected Impact

The Expected Impact of this Knowledge Transfer Pathway is to provide societies in the Black Sea countries with appropriate, innovative and easily accessible material to enhance public awareness and engagement in coastal restoration.



1 Knowledge Need

The **lack of effective collaboration and knowledge exchange between multiple stakeholders** (Public Sector, Academia, Business, Civil Society) to support coastal restoration in the Black Sea.

In recent decades, a common understanding has emerged that multistakeholder collaboration is essential to address the urgent needs arising from environmental degradation and climate change. However, there is still a significant gap in the Black Sea countries in terms of multistakeholder cooperation, collaboration and knowledge exchange on coastal adaptation through restoration.

2 Knowledge Output

The Knowledge Outputs that have been identified as a priority within the context of **REST-COAST** are as follows:

- REST-COAST Deliverable 6.16
“Plan for project clustering and joint production with other Green Deal projects”
- REST-COAST Deliverable 6.17
“Training programmes and capacity building hands-on demonstrations at the Pilots”

These Knowledge Outputs are related to the project’s WP6, “Dissemination/exploitation and social transformation tools”.

- REST-COAST Deliverables 7.2 - 7.5
“Position Papers 1 - 4”
- REST-COAST Deliverable 7.6
“Restoration Contract”

These Knowledge Outputs are related to the project’s WP7, “Management and cooperation at EU/International levels”.

Multistakeholder Collaboration & Knowledge Exchange



3 Knowledge Transfer Pathway

REST-COAST aims to create a **comprehensive package of new tools and demonstration material to transfer its restoration expertise not only within the Pilot Sites but also beyond, ensuring the active participation and engagement of a wide range of stakeholders**, including the Public Sector, Academia, Business, and Civil Society, on a global scale. In this context, the Black Sea countries can also benefit from utilising all this information. In particular, the **clustering plan** and the **set of regional/cross-border training programmes and capacity-building hands-on demonstrations** place emphasis on the potential for multistakeholder cooperation opportunities with other Green Deal projects, with the aim of achieving added value results. In the context of joint production with other Green Deal projects, **four high-impact policy papers** will be prepared addressing topics, such as risk reduction, restoration and adaptation interactions for river-delta-coast continuums, ecosystem services for river-coast interacting systems, and biodiversity. As for the **Restoration Contract**, it will be a common structure for long-term commitment to the Green Deal coastal dimension, involving public administrations, private companies, finance groups and conservation organisations. The participatory approach that has been adopted for the preparation of this contract is designed to facilitate an enduring compromise that will restore ecosystem services for coastal biodiversity and decarbonised adaptation. Its final structure will be submitted by 2026.

4 Target Users

Achieving the Knowledge Transfer Pathway requires a **participatory and interdisciplinary approach** with a wide range of Target Users. In addition, **collaboration with the REST-COAST team** is essential. The following list presents the Target Users that have been identified as the most important ones. It should be noted, however, that this is not an exhaustive list.

Main Target Users

- National, Regional & Local Authorities, Related Ministries & Governmental Agencies, Municipalities, National Statistical Institutes
- Academia & Research Institutions (areas such as International Relations, European Law, Environment, Sustainability Management, etc.), Environmental Data & Forecasting Services
- Chambers of Commerce and Industry, Port Authorities, Maritime Clusters, Private Sector, Business Associations, Technology Companies, SMEs, Start-ups, Innovation Parks
- Local Communities, specifically those located in coastal and riverine areas, Civil Society, NGOs
- Mass & Social Media
- Related International, Intergovernmental & Regional Organisations (Chapter 2.2.2.)

5 Expected Impact

The Expected Impact of this Knowledge Transfer Pathway is to provide the Black Sea countries with the appropriate tools and material to facilitate connections between various stakeholder communities, thereby empowering their science-based decision-making, and enhancing their long-term commitment to coastal adaptation through restoration.





REST-COAST

Large scale RESToration of COASTal ecosystems
through rivers to sea connectivity

Co-Funded by the European Union



© Organization of the Black Sea Economic Cooperation 2024
All rights reserved