



Territorial co-design of the transformative portfolio of missions and setting of TRAIN Labs

Deliverable 1.4.1

PROJECT DETAILS	
Project Acronym	BLUE ECOSYSTEM
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DELIVERABLE DETAILS	
Deliverable	D1.4.1
Description	This report explores the territorial co-design process for developing a transformative portfolio of missions, enabling the MED blue economy to strategically navigate future challenges. It also establishes the overarching framework for the territorial labs and acceleration process within the study area, as defined in Activity 1.4.
Activity 1.2 “Blue Transformation challenges at MED level and priority matrix” responsible partner	HCMR
Authors	C. Efstratiou, A. Giannakourou, M. Mpourmpouli, S. Valentini, J. Juarez, T. De Nittis
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Abstract

D1.4.1 presents a structured approach for advancing a sustainable Mediterranean Blue Economy through regionally tailored innovation and collaboration. The report synthesizes key insights from stakeholder workshops held across Spain, Italy, France, Cyprus, Greece, Croatia, and Albania, emphasizing territorial challenges, economic priorities, and transformative innovation actions. By aligning these insights with the European Mission: Restore Our Oceans and Waters and Smart Specialization Strategies (S3), the report establishes the groundwork for **Mediterranean TRAIN Labs**—territorial innovation hubs designed to accelerate the adoption and scaling of innovative solutions in the blue economy.

The **Transformative Portfolio of Missions** developed in this report outlines key intervention areas, including **sustainable marine food systems, renewable marine energy transition, eco-tourism and coastal development, smart and low-emission maritime transport, marine biodiversity conservation, the blue bioeconomy, and digitalization of marine resource management**. The portfolio outlines the essential **advanced technologies, governance reforms, financial mechanisms, and social engagement strategies** required to drive economic growth while safeguarding environmental sustainability.

Environmental issues

Each of the planned activities is:

- ✓ carried out reducing as much as possible the project carbon footprints (ex. limiting travels)
- ✓ wastepaper – all partners are limiting the hard copies of the project documents, as well as carrying hard copies of the working documents with them at the meetings
- ✓ making use of (green) public transports
- ✓ considering environmental issues as an added value in every activity the project will carry out.
- ✓ aligned with the Programme carbon footprint reduction initiative and counted into the calculator to be compensated.

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1. INTRODUCTION

Blue Ecosystem project aims to foster **innovation** and **sustainability** in the **Mediterranean blue economy** by testing methodologies that support **territorial decision-making processes**. The project builds upon existing knowledge and research outcomes to enhance regionally embedded research and innovation capacities in participating Mediterranean territories, including the Balearic Islands, Emilia-Romagna, Sud PACA-Occitanie, Zadar County, Alentejo, Greece, and Albania.

Activity 1.4 established a structured approach to align **territorial economic growth** with the objectives of the **European Mission: Restore Our Oceans and Waters**. This approach was built on the **Transformative Innovation Policy (TIP)** principles, emphasizing **collaborative, impact-driven transformations** needed to address systemic challenges in the Mediterranean economy.

Seven stakeholder workshops have been organized across participating countries to **identify locally tailored interventions** that **adapt and scale innovation** within the **Blue Economy** activities, ensuring a **balance between sustainable economic development and ecological resilience**. **More specifically**, the workshops **established a collaborative and inclusive framework** by fostering **multidisciplinary stakeholder engagement** to:

- **Identify territorial challenges and priority actions**, using the **Blue Transformative Challenges and Priorities Matrix (D1.2.1)**, and **align them** with **Smart Specialization Strategies (S3)**.
- **Identify mission-oriented intervention areas** to adapt and scale innovation within the Blue Economy, taking into consideration **territorial capacities, gaps, and enabling conditions**.

The insights gathered from these workshops, have been presented using a standardized template (Annex I). They have been categorized and synthesized into a **Transformative Portfolio of Missions** aimed at strengthening the innovation ecosystem of the **Mediterranean Blue Economy**. This portfolio establishes the groundwork for launching the **Mediterranean TRAIN Labs**- the **territorial innovation hubs** to accelerate the adoption and scaling of transformative solutions across the Mediterranean blue economy.

The **active engagement** of diverse stakeholders—including **industry leaders, policymakers, service providers, regulatory bodies, researchers, and civil society**—ensured that **regional strengths and socio-economic contexts** were **fully integrated** into the **Transformative Portfolio of Missions**, supporting the development of **tailored, impactful, and regionally relevant solutions** for the Mediterranean Blue Economy.

2. OVERVIEW OF TERRITORIAL CHALLENGES AND PRIORITY ACTIONS

- **Spain (Balearic Islands): Innovation in Bioeconomy, Energy, and Tourism**

The **priority actions in Spain** have been regionally focused, targeting **three key economic domains: Bioeconomy – Agrofood, Energy, Cultural and Creative**

Industries. i.) The **Bioeconomy – Agrofood** sector prioritizes biodiversity conservation, carbon neutrality, and the sustainable management of fisheries through Marine Protected Areas (MPAs), low-impact fishing practices, and economic incentives such as promoting high-quality local seafood. ii.) the **Energy sector** is focused on achieving carbon neutrality by expanding offshore wind and solar farms, developing green fuels like hydrogen and wave energy, and fostering stakeholder collaboration to streamline implementation. iii.) the **Cultural and Creative Industries** sector seeks to balance economic growth and conservation by promoting eco-friendly tourism, digital transformation in hospitality, and community-based sustainability initiatives. Across all domains, Spain's strategy emphasizes collaboration, innovation, and regulatory improvements to enhance environmental resilience and economic performance. Key interventions include public-private partnerships, cross-sectoral coordination, and leveraging EU funding programmes to drive sustainable development.

- **Italy (Emilia Romagna): Sustainable Blue Bioeconomy, Manufacturing, and Renewable Energy, Tourism**

The priority activities in Italy have focused on three key economic domains: **Bioeconomy – Agrifood, Energy and Shipbuilding, Cultural and Creative Industries**, with a strong emphasis on sustainability, circular economy, and transformative innovation. i.) the **Bioeconomy – Agrifood** sector aims to protect biodiversity and promote circular economy practices by enhancing sustainable aquaculture, fostering regenerative practices, and creating Marine Protected Areas (MPAs). Challenges include the lack of standardized guidelines and the need for improved utilization of local resources. Key actions involve supporting marine biotechnologies, collaboration between fishermen and research institutions, and regulatory improvements. ii.) the **Energy and Shipbuilding** sector seeks to the marine renewable energy transition encourage offshore wind and solar energy adoption, and promote sustainable shipbuilding. However, high implementation costs and fragmented supply chains remain challenges. Italy plans to integrate floating photovoltaics, develop supply chains for marine energy infrastructure, and leverage decommissioned offshore platforms for renewable energy projects. iii.) the **Cultural and Creative Industries** sector prioritizes eco-tourism and marine conservation, aiming to enhance stakeholder collaboration, digital transformation, and risk management in coastal areas. Key interventions include digital platforms for monitoring, community-based eco-tourism models, and financial incentives for sustainable tourism projects. Across all domains, the Italian approach emphasizes regional collaboration, advanced monitoring systems, and cross-sectoral synergies, integrating research and policy efforts to strengthen its blue economy and coastal sustainability.

- **France (Sud PACA and Occitanie): Decarbonizing Maritime Transport**

The priority activities in the Sud PACA-Occitanie regions has focused on **sustainable transport and logistics** as a key economic domain within the blue economy, prioritizing carbon neutrality, pollution reduction, and digital transformation in maritime activities. The strategy seeks to minimize the environmental impact of ports and shipping, improve energy efficiency, and support CO₂ sequestration and transport. However, challenges include the slow adoption of low-carbon technologies, insufficient digital monitoring tools, and resistance to upgrading port infrastructure for sustainable solutions. Transformative actions involve the promotion of alternative

fuels, smart logistics systems, and green shipbuilding, supported by subsidies for electrification and alternative fuels, as well as stricter emissions standards for maritime transport. The French **regional S3 priorities** emphasize **smart and sustainable mobility, innovative materials, and the transition to renewable maritime energy**. Key intervention areas focus on digital transformation for environmental monitoring, modernization of port infrastructure for circular economy integration, and enhanced R&D collaboration to upskill the workforce. Potential synergies include partnerships with regional R&D initiatives, EU-funded programs, and international maritime sustainability projects, positioning France as a leader in sustainable port management and low-emission maritime transport within the Mediterranean region.

- **Cyprus: Digitalization and Alternative Practices for Sustainable Resource Management**

The priority activity in Cyprus have focused on five key domains within the Blue Economy: **Transport and Logistics, Bioeconomy – Agrofood, Cultural and Creative Industry – Social Innovation, Energy, and Public Health**. The country prioritizes carbon neutrality, sustainable resource management, and digital transformation across these sectors to enhance efficiency, biodiversity conservation, and economic resilience. In **Transport and Logistics**, Cyprus aims to achieve carbon-neutral shipping and port operations through alternative fuels, smart logistics, and digitalization, while addressing challenges in infrastructure and regulatory frameworks. **Bioeconomy – Agrofood** initiatives target **sustainable aquaculture and fisheries**, with a focus on biodegradable gear, waste valorization, and ecosystem restoration. The **Cultural and Creative Industry** domain promotes eco-tourism, sustainable visitor management, and digital transformation in hospitality, overcoming infrastructure gaps and low public awareness. In **Energy**, Cyprus seeks to **expand marine renewable energy and desalination technologies**, addressing high investment costs and coordination challenges through pilot projects and EU funding opportunities. Lastly, the **Public Health sector** integrates marine-derived pharmaceuticals and biotechnologies into the circular economy, despite challenges in funding and regulatory alignment. **Transformative innovation actions** across sectors include **digitalization, stakeholder collaboration, targeted financing, and regulatory reforms**, positioning Cyprus as a leader in sustainable blue economy innovation. Potential synergies exist with EU-funded programs, regional collaborations, and cross-sector integration of digital technologies, biotechnology, and renewable energy solutions.

- **Greece: Ecosystem Restoration and Blue Economy Innovation**

The priority activities in Greece have focused on **Bioeconomy – Agrofood, Environment – Sustainable Innovation, ICT-Digital Transformation, Public Health, and Energy**, emphasizing sustainability, biodiversity protection, and digital innovation to enhance the Mediterranean Blue Economy. In **Bioeconomy – Agrofood**, efforts are directed at **enhancing biodiversity and carbon neutrality in aquaculture**, promoting **sustainable marine food systems**, and fostering **Integrated Multi-Trophic Aquaculture (IMTA)** to manage nutrient overload. In **environmental sustainability**, Greece aims to **restore marine biodiversity and tackle pollution** by deploying advanced waste collection technologies and engaging communities in habitat restoration. **ICT-Digital Transformation** focuses on AI-based monitoring and

IoT systems to enhance marine resource management, addressing data-sharing limitations. **Public Health initiatives** target **marine biotechnology for pharmaceuticals and nutraceuticals, R&D and regulatory improvements. Energy initiatives** centre on reducing emissions, enhancing efficiency, and integrating marine renewable energy through wave and wind energy development and cold ironing. **Transformative innovation actions** in Greece include **regulatory alignment, investment in R&D, and fostering public-private collaboration**. Potential synergies exist with **EU-funded programs, regional initiatives, and digital infrastructure advancements** to accelerate the transition towards a sustainable blue economy.

- **Croatia: Low-Impact Marine and Maritime Activities and Community-Driven Innovation**

The priority activities in Croatia have focused on **Bioeconomy – Agrofood, Transport and Logistics, ICT-Digital Transformation, Environment – Sustainable Innovation, and Social Innovation**, with an emphasis on biodiversity conservation, carbon neutrality, and digital transformation to advance the Mediterranean Blue Economy. In **Bioeconomy – Agrofood**, Croatia seeks to enhance sustainable aquaculture, reduce waste, and develop biodegradable gear to minimize environmental impact, addressing Illegal, Unreported, and Unregulated (IUU) fishing through regulatory improvements and R&D investment. **Transport and Logistics** initiatives focus on decarbonizing ports and shipping through alternative fuels, smart logistics, and electrified port infrastructure, with the goal of positioning Croatia as a leader in low-emission maritime transport. **ICT-Digital Transformation** prioritizes AI and IoT applications for real-time marine monitoring, data-sharing frameworks, and citizen science engagement. **Environmental sustainability efforts** centre on marine ecosystem restoration, habitat protection, and pollution prevention, leveraging drones and AI technologies for marine monitoring. **Social Innovation initiatives** aim to promote eco-tourism, enhance digital tourism platforms, and encourage community-driven conservation efforts, incorporating green certifications and environmental stewardship models. Croatia transformative innovation actions involve public-private partnerships, financial incentives, and policy reforms to accelerate sustainability. Potential synergies exist with EU-funded projects like Blue Growth, TransH2, and MARGNET, furthering Croatia transition toward a smart and sustainable Mediterranean blue economy.

- **Albania: Promoting Renewable Energy Integration and Sustainable Tourism**

The priority activities in Albania have focused on **Bioeconomy – Agrifood, Renewable Energy Sources, and Tourism**, with an emphasis on **sustainable resource management, clean energy transition, and eco-friendly tourism**. In **Bioeconomy – Agrifood**, Albania aims to enhance sustainable fishing and aquaculture practices, addressing overfishing and climate-related marine habitat degradation through AI-driven fisheries monitoring systems, smart aquaculture technologies, and community-driven conservation initiatives. **Renewable Energy Sources** efforts focus on **marine-based energy production**, particularly **offshore wind and wave energy**, with challenges related to high investment costs and infrastructure gaps. The country plans to develop advanced turbines, encourage public awareness, and establish policy incentives to drive investment in marine renewable energy. **Tourism** is another

priority, where Albania seeks to promote sustainable tourism models and mitigate over-tourism’s environmental impact by integrating smart visitor management, strengthening community engagement, and implementing governance reforms for eco-tourism. Potential synergies exist with EU Blue Growth Initiatives, FAO projects, the EU Green Deal, and regional tourism initiatives, supporting Albania’s transition to a low-carbon, innovation-driven Mediterranean blue economy.

3. TRANSFORMATIVE PORTFOLIO OF MISSIONS

The **transformative portfolio of missions** is designed to **advance a sustainable Mediterranean blue economy**, emphasizing **common territory-specific interventions**. The portfolio outlines the mission-oriented **advanced technologies, governance reforms, financial mechanisms, and social engagement strategies** required to drive economic growth while safeguarding environmental sustainability, while emphasizing the thematic focus and **connections within TRAIN Labs**. It provides a structured framework for identifying and implementing **innovative, scalable solutions** that balance economic development with ecological resilience.

Table 1 Transformative Portfolio of Missions for the Mediterranean blue economy

Mission	Interventions	Actions	TRAIN Labs
Sustainable Marine Food Systems: Enhance sustainable fishing and aquaculture practices while ensuring biodiversity protection.	<ul style="list-style-type: none"> Expand Marine Protected Areas (MPAs). Promote low-impact fisheries and aquaculture. Implement smart monitoring systems. Develop certification programs for sustainable seafood. 	<ul style="list-style-type: none"> Technological: Sustainable aquaculture systems, biodegradable gear. Social: Community-led sustainable aquaculture practices. Financial: Incentives for sustainable feed, biodegradable gear R&D. Governance: Guidelines for sustainable aquaculture and gear usage. 	SP, IT, GR, HR, CY, AL
Renewable Marine Energy Transition: Accelerate the deployment of offshore renewable energy and decarbonize marine and maritime industries.	<ul style="list-style-type: none"> Develop offshore wind, wave, and solar farms. Create financial incentives for green energy transition. Facilitate cross-border energy collaborations. Integration of renewable energy systems in desalination. 	<ul style="list-style-type: none"> Technological: Renewable energy technologies (wind, wave, solar, storage), integration in ports, and desalination plants. Social: Public awareness on renewable energy transition. Financial: Incentives for renewable energy communities. Governance: Renewable energy targets, carbon-neutral policies. 	SP, IT, FR, GR, CY, AL
Eco-Tourism & Sustainable Coastal Development: Promote sustainable tourism and integrate conservation efforts into coastal tourism activities.	<ul style="list-style-type: none"> Strengthen coastal risk mapping. Expand eco-tourism infrastructure. Enforce green tourism potential. Promote sustainable maritime tourism models. 	<ul style="list-style-type: none"> Technological: Digital twins for capacity planning and management, green certifications. Social: Community-based eco-tourism models. Financial: Funding support for local eco-tourism projects. Governance: Regulations on eco-tourism and certifications. 	SP, IT, CY, HR, AL

<p>Smart & Low-Emission Maritime Transport: Implement smart logistics and low-carbon technologies in ports and shipping.</p>	<ul style="list-style-type: none"> • Electrify ports. • Use alternative fuels (hydrogen, LNG, biofuels). • Promote AI-powered logistics systems. • Integrate carbon-neutral policies. 	<ul style="list-style-type: none"> • Technological: Alternative fuels, smart logistics systems, green ship design, material recycling. • Social: Stakeholder collaboration for low-emission transport. • Financial: Funding support for green ports and alternative energy solutions. • Governance: Emissions standards for transport and ports. <p>FR, CY, HR, GR</p>
<p>Marine Biodiversity Conservation & Restoration: Restore marine habitats, protect marine biodiversity, and reduce ocean pollution.</p>	<ul style="list-style-type: none"> • Scale up marine habitat restoration programs. • Implement from rivers to ocean cleanup strategies. • Establish nature-based solutions. • Regulate pollution control measures. 	<ul style="list-style-type: none"> • Technological: Advanced systems for monitoring, bioremediation, and ecological restoration. • Social: Community involvement in habitat restoration and clean-up efforts. • Financial: Grants for ecological restoration and pollution mitigation. • Governance: Policies to strengthen marine protected areas and restoration efforts. <p>SP, IT, GR, HR, AL</p>
<p>Blue Bioeconomy & Circular Economy: Accelerate blue biotechnologies, foster a marine-based bioeconomy, and promote circular economy models.</p>	<ul style="list-style-type: none"> • Advance the adoption of marine-derived biofuels, cosmetics, pharmaceuticals, and nutraceuticals. • Enable circular economy strategies for waste valorization. 	<ul style="list-style-type: none"> • Technological: Blue biotechnologies, genomic advancements, waste valorization. • Social: Awareness campaigns on waste management, and blue biotechnology benefits. • Financial: Funding support for marine-derived products. • Governance: Policies to strengthen waste valorization, and promote blue biotechnology. <p>IT, CY, HR, GR</p>
<p>Digitalization & Smart Marine Monitoring: Integrate AI, IoT, and real-time data for advanced Marine resource monitoring and strategic decision-making.</p>	<ul style="list-style-type: none"> • Deploy AI-powered marine surveillance. • Develop digital twins for coastal ecosystems. • Integrate predictive modeling, and enhance data-sharing frameworks. 	<ul style="list-style-type: none"> • Technological: Digital twins, AI-driven IoT, risk prediction models, real-time monitoring systems. • Social: Community-led science programs for environmental monitoring. • Financial: Strategic investment in digital marine systems. • Governance: Regulatory frameworks for open data sharing in marine conservation. <p>SP, IT, FR, CY, GR, HR</p>

4. ANNEXES

ANNEX I: Transformative Portfolio of Missions

TRAIN Lab Spain (Balearic Islands)

Bioeconomy – Agrofood

Correlated Sectors: Sustainable Marine Food Systems

Environmental Objectives:

Protect biodiversity and achieve carbon neutrality in fisheries and aquaculture.

Expand and strengthen marine reserves to improve fisheries sustainability and combat illegal fishing.

Conserve vulnerable marine habitats such as coral reefs and critical coastal ecosystems.

Territorial Challenges:

Resistance to the declaration of new marine protected areas (MPAs).

Insufficient sustainable fisheries management frameworks.

Climate-related impacts degrading marine habitats and ecosystems.

Transformative Innovation Actions:

Technology: Deploy innovative floating trawl doors to reduce fuel consumption by up to 30%, minimizing carbon emissions.

Social: Foster collaboration between government bodies, fisheries, and communities to enhance sustainable fishing practices.

Financial: Increase economic viability by promoting locally sourced, high-quality seafood through initiatives like the PeixNostrum brand.

Governance: Accelerate the adoption of low-impact fishing regulations, closed zones, and certification measures.

Relevant S3 Areas:

Integrate sustainable marine food systems into gastronomy and eco-tourism development, with a focus on showcasing high-quality, local seafood in tourism strategies.

Intervention Areas:

Legislate and incentivize the creation of MPAs and implement comprehensive habitat management programs.

Leverage tourism laws to prioritize local seafood consumption and branding, distinguishing local products from imports.

Promote sustainable fishing practices as a core strategy to enhance the economic performance of coastal communities.

Potential Synergies:

Collaboration with gastronomy-focused regional tourism initiatives.

Integration with sustainable food safety and quality programs to expand market access for local seafood.

Energy

Correlated Sectors: Carbon-Neutral Marine Renewable Energy

Environmental Objectives:

Achieve carbon neutrality by transitioning to renewable energy sources for marine and coastal applications.

Expand offshore renewable energy farms (wind and solar) and develop sustainable marine-based green fuels like hydrogen and wave energy.

Territorial Challenges:

High capital investment required for renewable energy infrastructure deployment.

The need for stakeholder coordination to ensure seamless integration of renewable energy systems.

Transformative Innovation Actions:

Technology: Advance green hydrogen production and integrate innovative marine renewable energy technologies.

Social: Launch public awareness campaigns highlighting the economic and environmental benefits of renewable energy.

Financial: Develop innovative financing models, including public-private partnerships, to mitigate high initial investment barriers.

Governance: Streamline administrative processes and regulatory frameworks to accelerate renewable energy project approvals.

Relevant S3 Areas:

Promote territorial sustainability through modernization of renewable energy systems.

Foster digital and ecological transformation in blue economy and circular economy sectors.

Intervention Areas:

Strengthen public-private partnerships to catalyze renewable energy adoption and investment.

Develop cross-sectoral strategies to align renewable energy goals across stakeholders.

Utilize EU funding opportunities to support innovative renewable energy pilot projects and research.

Potential Synergies:

Collaborate with green hydrogen and renewable energy initiatives such as EU Green Deal projects. Strengthen partnerships with regional energy networks to facilitate knowledge exchange and technology transfer.

Cultural and Creative Industry – Social Innovation

Correlated Sectors: Inclusive and Sustainable Blue Innovation

Environmental Objectives:

Conserve biodiversity and mitigate pollution through sustainable tourism practices. Promote eco-friendly tourism models, citizen science initiatives, and the adoption of green certifications. Implement education programs to balance tourism-driven economic growth with environmental conservation.

Territorial Challenges:

Insufficient infrastructure to support sustainable and eco-tourism. Low levels of digital and ecological transformation within the hospitality and tourism sectors.

Transformative Innovation Actions:

Technology: Introduce electric boats and support infrastructure for sustainable nautical tourism, including charging stations in marinas.

Social: Develop community-led eco-tourism programs and public campaigns to enhance awareness of sustainable tourism practices.

Financial: Establish financing mechanisms to retrofit tourism infrastructure and support green innovation in the hospitality sector.

Governance: Develop and enforce stricter environmental regulations for the nautical tourism industry.

Relevant S3 Areas:

Transform the tourism value chain to focus on sustainability and inclusivity. Leverage cultural and creative industries for emerging transformative blue economy sectors.

Intervention Areas:

Reorient tourism strategies to emphasize gastronomic, cultural, and ecological tourism rather than traditional sun-and-beach models.

Enhance regional infrastructure to support electric vehicles, bicycles, and green transport solutions. Support digital transformation and ecological practices in the hospitality and nautical sectors to reduce their environmental impact.

Potential Synergies:

Collaborate with international organizations (e.g., UNWTO initiatives) to develop sustainable tourism models.

Leverage programs promoting tourism innovation, such as electric vehicle integration and smart visitor management systems.

TRAIN Lab Italy (Emilia Romagna)

Bioeconomy – Agrifood

Correlated Sectors: Marine Living Resources, Marine Bio-Based Solutions

Environmental Objectives:

Protect biodiversity and advance circular economy principles in fisheries and aquaculture. Reduce waste by promoting the recycling and valorization of fishery and aquaculture by-products. Support the creation of Marine Protected Areas (MPAs) as nurseries to safeguard marine species. Foster regenerative aquaculture and bioremediation practices.

Territorial Challenges:

Lack of standardized guidelines for sustainable aquaculture practices. Insufficient utilization of local resources and alien species for sustainable regional production. Vulnerabilities to climate change, impacting fishery activities and aquaculture yields.

Transformative Innovation Actions:

Technology: Promote sustainable aquaculture systems and marine-derived biotechnologies.

Social: Enhance collaboration between fishermen, civil society, and academic institutions to drive sustainable aquaculture.

Financial: Provide grants to fishermen and research centers for innovation in sustainable aquaculture and alien species management.

Governance: Implement regional regulations to promote sustainable fisheries and aquaculture practices.

Relevant S3 Areas:

Blue Bioeconomy focusing on marine biotic resources, blue biotechnologies, and mitigation of anthropogenic pollution.

Intervention Areas:

Establish a Regional Observatory for monitoring aquaculture and fishery activities.

Develop end-of-waste criteria for fishery by-products to enable circular economy solutions.
Foster professional training programs and enhance regional networks linking research, businesses, and public administration.

Promote adaptability in fishing techniques to address seasonal and climatic variability.

Potential Synergies:

Collaborate with initiatives such as 2B-Blue, Blue Mission Med, and EUROCIGUA for regional research, sustainable aquaculture, and ecosystem restoration.

Energy, Shipbuilding, Manufacturing

Correlated Sectors: Renewable Energy

Environmental Objectives:

Transition to marine renewable energy to achieve carbon neutrality and reduce pollution.

Promote the adoption of offshore wind, solar farms, and sustainable energy storage systems.

Encourage the recycling and upcycling of marine litter to foster a circular economy.

Territorial Challenges:

High cost and complexity in implementing renewable energy systems.

Fragmented supply chains for marine infrastructure and renewable energy production.

Transformative Innovation Actions:

Technology: Advance renewable energy technologies, including floating photovoltaics, wind farms, and bio-based materials.

Social: Build awareness on renewable energy benefits and engage stakeholders in low-emission transport initiatives.

Financial: Offer subsidies for electrified ports, renewable energy installations, and bio-based material development.

Governance: Streamline administrative processes to expedite project approvals and encourage investment in green shipbuilding technologies.

Relevant S3 Areas:

Renewable energy from the sea, including offshore wind, floating PV, and wave energy.

Sustainable shipbuilding and marine robotics.

Intervention Areas:

Develop a maritime spatial plan to facilitate renewable energy installations.

Establish integrated supply chains for marine energy infrastructure, from materials to professional expertise.

Leverage research infrastructure to transform decommissioned offshore platforms into renewable energy hubs.

Implement advanced monitoring systems to minimize the environmental impact of installations.

Potential Synergies:

Collaborate with projects like Blue Mission MED and EOLIANN for renewable energy and advanced monitoring.

Cultural and Creative Industry – Social Innovation

Correlated Sectors: Coastal Tourism and Coastal Infrastructure

Environmental Objectives:

Promote eco-tourism and marine conservation to protect biodiversity and mitigate pollution.

Upgrade areas of cultural and environmental interest, such as marine parks and fauna observatories.

Territorial Challenges:

Fragmentation of stakeholders in coastal tourism planning and execution.

Limited tools for systemic monitoring and risk management in coastal areas.

Transformative Innovation Actions:

Technology: Use digital platforms, drones, and lidar technologies for coastal monitoring and tourism management.

Social: Develop community-based eco-tourism models that prioritize education and conservation.

Financial: Offer grants to local tourism projects promoting sustainability and environmental awareness.

Governance: Strengthen regulations for eco-tourism and implement certifications for sustainable tourism operators.

Relevant S3 Areas:

Coastal and Maritime Tourism 2.0, with a focus on marine and coastal strip sustainability and economic uses of the sea.

Intervention Areas:

Map coastal risks using scientific and public engagement strategies to enhance land management and resilience.

Promote education and training on marine ecosystems to foster long-term conservation practices.

Enhance sediment and salinity monitoring in coastal regions through satellite and drone technologies.

Establish regeneration plans for urban, beach, and marine water restoration in the Romagna Coast.

Potential Synergies:

Partner with initiatives such as PORTODIMARE and DISCOV.ER to integrate eco-tourism with marine conservation and resilience-building activities.

TRAIN Lab France (Sud PACA-Occitanie)**Transport and Logistics**

Correlated Sectors: Marine Living Resources, Marine Bioeconomy/Biotechnology

Environmental Objectives:

Achieve carbon neutrality and reduce pollution in maritime transport.

Minimize the environmental impact and energy costs of port and shipping activities.

Facilitate the sequestration and transport of CO₂ at sea.

Territorial Challenges:

Implementation of low-carbon technologies for maritime logistics and shipping.

Insufficient digital tools for environmental monitoring and water quality management.

Resistance to changes in port infrastructure to accommodate clean and innovative technologies.

Transformative Innovation Actions:

Technology: Promote alternative fuels, smart logistics systems, green ship designs, and material recycling in maritime operations.

Social: Enhance collaboration between stakeholders to foster adoption of low-emission transport methods.

Financial: Introduce subsidies for electrified ports and alternative fuel technologies.

Governance: Implement stricter emissions standards for ports and maritime transport.

Relevant S3 Areas:

Occitanie Region: Focus on marine and coastal economy, smart and sustainable mobility, and innovative materials.

PACA Region: RIO Economy of the Sea, focusing on tomorrow's energies.

Intervention Areas:

Digital Transformation: Develop and deploy precision technologies and tele-management systems for biosecurity and water quality control.

Sustainable Ports: Equip ports with facilities for clean energy reception, such as electrification at quaysides.

Infrastructure Innovation: Modernize port infrastructures to support circular economy practices and eco-innovative solutions.

Collaborative Research and Training: Leverage regional R&D capabilities to address technological gaps and upskill the maritime workforce.

Potential Synergies:

Collaborate with R&D initiatives and public-private partnerships in the Occitanie and PACA regions. Integrate with EU and international programs targeting sustainable transport and energy innovations.

Coordinate with regional S3 priorities to streamline funding and development pathways for clean maritime transport.

TRAIN Lab Cyprus**Transport and Logistics**

Correlated Sectors: Port Activities and Maritime Transport

Environmental Objectives:

Achieve carbon neutrality and prevent pollution in maritime activities.

Enhance efficiency and sustainability in port and shipping operations.

Territorial Challenges:

Adoption of alternative fuels and electrification of ports.

Limited integration of smart logistics systems and digital innovations.

Need for regulatory updates to comply with international environmental standards.

Transformative Innovation Actions:

Technology: Develop alternative fuels, implement smart logistics systems, and integrate green technology in ship designs.

Social: Strengthen collaboration between stakeholders for the adoption of low-emission transport.

Financial: Provide subsidies for port electrification and alternative fuel infrastructure.

Governance: Enforce emissions standards for ports and maritime transport.

Relevant S3 Areas:

Focus on Digital Technologies, Advanced Materials, Renewable Energy, and Environmental solutions for maritime and shipping ecosystems.

Intervention Areas:

Digital Transformation: Introduce digital technologies for autonomous vessels and optimized logistics.

Green Ports: Support the electrification of ports to meet emission reduction goals.

Public-Private Partnerships: Facilitate collaboration between R&D institutions, industries, and governments.

Potential Synergies:

Align with initiatives like the MariTech Talent Programme and DiGiNN to develop innovative maritime technologies.

Bioeconomy – Agrofood

Correlated Sectors: Marine Living Resources, Marine Bio-Based Solutions

Environmental Objectives:

Promote biodiversity conservation and achieve carbon neutrality in aquaculture and fisheries.
Enhance sustainable marine food systems.

Territorial Challenges:

Address gaps in Illegal, Unreported, and Unregulated (IUU) fishing.
Improve aquaculture's environmental footprint and reduce waste.

Transformative Innovation Actions:

Technology: Use sustainable aquaculture systems and develop biodegradable gear.
Social: Encourage community-driven sustainable aquaculture practices.
Financial: Provide subsidies for sustainable feed and biodegradable gear R&D.
Governance: Establish robust regulations on aquaculture sustainability.

Relevant S3 Areas:

Integration of Digital Technologies, Renewable Energy, and Environmental priorities into aquaculture and fisheries.

Intervention Areas:

Smart Systems: Develop monitoring systems and bioindicators for better aquaculture management.
Waste Valorization: Promote recycling and reuse of aquaculture gear and by-products.
Capacity Building: Provide support for R&D in sustainable farming practices.

Cultural and Creative Industry – Social Innovation

Correlated Sectors: Coastal Tourism, Marine Living Resources

Environmental Objectives:

Protect biodiversity and mitigate pollution in tourism activities.
Develop sustainable marine tourism models.

Territorial Challenges:

Gaps in infrastructure for eco-tourism and digital adoption in hospitality.
Insufficient public awareness about sustainable tourism benefits.

Transformative Innovation Actions:

Technology: Implement digital platforms and green certifications for eco-tourism.
Social: Promote citizen science and community-based eco-tourism.
Financial: Introduce financing for retrofitting tourism infrastructure.
Governance: Develop regulations to support sustainable marine tourism.

Relevant S3 Areas:

Integration of Digital Technologies, Agrifood, Maritime, and Environmental strategies into tourism innovation.

Intervention Areas:

Education and Awareness: Conduct campaigns to encourage eco-friendly tourism practices.
Sustainable Tourism Zones: Design certified eco-tourism regions with smart visitor management.
Regulatory Frameworks: Strengthen policies to ensure tourism aligns with conservation goals.

Potential Synergies:

Collaborate with the DiGiNN program to implement digital solutions in tourism.

Energy

Correlated Sectors: Marine Non-Living Resources, Renewable Energy, and Desalination

Environmental Objectives:

Achieve carbon neutrality and address water scarcity through low-impact technologies.
Transition to marine renewable energy sources.

Territorial Challenges:

High initial costs for renewable energy infrastructure.
Coordination challenges in scaling up desalination technologies.

Transformative Innovation Actions:

Technology: Expand renewable energy technologies, including wave energy and offshore wind.
Social: Promote public awareness about the environmental benefits of renewable energy.
Financial: Offer incentives for renewable energy projects and green desalination initiatives.
Governance: Implement carbon-neutral policies and water management strategies.

Relevant S3 Areas:

Development of energy-efficient desalination technologies and marine renewable energy systems.

Intervention Areas:

Renewable Infrastructure: Develop pilot projects for wave and wind energy.
Water Efficiency: Introduce technologies to reduce energy consumption in desalination plants.
Funding Opportunities: Leverage EU initiatives to support green energy developments.

Potential Synergies:

Collaborate with the Water Mining project for sustainable water management.

Public Health

Correlated Sectors: Marine Living Resources, Marine Bioeconomy/Biotechnology

Environmental Objectives:

Promote the circular economy through marine-derived pharmaceuticals, nutraceuticals, and biofuels.

Link conservation efforts with public health improvements.

Territorial Challenges:

Limited funding for biopharmaceutical R&D.

Regulatory hurdles for biotech innovations.

Transformative Innovation Actions:

Technology: Advance marine-derived biotechnologies and genomic research.

Social: Increase public awareness of the benefits of marine-based health solutions.

Financial: Introduce subsidies for R&D in biopharmaceuticals and sustainable biofuels.

Governance: Strengthen policies supporting bio-based innovation and genomics.

Relevant S3 Areas:

Develop biotechnology for agriculture, aquaculture, and livestock through public health applications.

Intervention Areas:

Cross-Sector Collaboration: Bring together biotech, agriculture, and public health sectors for innovation.

Capacity Building: Establish funding mechanisms to accelerate biotech R&D.

Policy Advocacy: Streamline regulations to facilitate marine biotechnology applications.

Potential Synergies:

Leverage insights from EU and regional programs to expand Cyprus's biotech capabilities.

TRAIN Lab Greece

Bioeconomy – Agrofood

Correlated Sectors: Sustainable Marine Food Systems

Environmental Objectives:

Enhance biodiversity protection and carbon neutrality in aquaculture.

Develop sustainable marine food systems through rearing new/emerging species.

Territorial Challenges:

Implementing sustainability standards and certifications.

Reducing environmental impacts of aquaculture and fisheries.

Transformative Innovation Actions:

Technology: Adopt Integrated Multi-Trophic Aquaculture (IMTA) to manage nutrient overload and waste.

Social: Foster community-driven sustainable aquaculture practices.

Governance: Establish policies for aquaculture sustainability.

Relevant S3 Areas:

Fisheries and Aquaculture with priorities on biotechnology and sustainable marine products.

Intervention Areas:

Promote sustainable aquaculture systems.

Strengthen R&D for polyculture and new species farming.

Support regulatory alignment for environmental and food standards.

Environment – Sustainable Innovation

Correlated Sectors: Ecosystem Restoration, Climate Change Mitigation

Environmental Objectives:

Restore marine biodiversity and reduce pollution.

Implement innovative solutions for plastic and pollutant removal.

Territorial Challenges:

Scaling technologies for waste collection and valorization.

Addressing pollution in marine habitats.

Transformative Innovation Actions:

Technology: Deploy advanced waste collection technologies for rivers and estuaries.

Social: Engage communities in habitat restoration efforts.

Governance: Align national plans with EU directives for the blue economy.

Relevant S3 Areas:

Focus on Waste Management and Soil and Water Health.

Intervention Areas:

Promote technologies for marine litter cleanup.
Expand bioindicator systems for environmental monitoring.
Strengthen grants and policies for ecosystem restoration.

ICT-Digital Transformation**Correlated Sectors: Smart Marine Systems****Environmental Objectives:**

Achieve carbon neutrality in marine and coastal ecosystems.
Improve management of marine resources through digital innovation.

Territorial Challenges:

Limited adoption of AI and IoT technologies in marine systems.
Need for enhanced data-sharing policies.

Transformative Innovation Actions:

Technology: Introduce AI-based monitoring and IoT systems for real-time marine data.
Governance: Develop data-sharing frameworks for sustainability.

Relevant S3 Areas:

Focus on smart, digitized industry and manufacturing.

Intervention Areas:

Promote the use of predictive forecasting for marine management.
Foster public-private collaboration for digital infrastructure.

Public Health**Correlated Sectors: Marine Biotechnology for Health****Environmental Objectives:**

Advance biopharmaceutical innovations derived from marine resources.
Promote circular economy in public health applications.

Territorial Challenges:

Limited biopharmaceutical R&D funding.
Regulatory gaps in marine-based biotechnology.

Transformative Innovation Actions:

Technology: Develop pharmaceuticals and nutraceuticals using marine biotechnologies.
Governance: Strengthen policies for biopharmaceutical development.

Relevant S3 Areas:

Focus on pharmaceutical products and biotechnology.

Intervention Areas:

Increase investment in marine-derived biohealth products.
Foster partnerships between academia, industry, and policy makers.

Energy**Correlated Sectors: Carbon-Neutral Marine Renewable Energy****Environmental Objectives:**

Reduce shipping emissions and enhance energy efficiency.
Address water scarcity using low-impact technologies.

Territorial Challenges:

High costs of implementing renewable energy systems.
Complexities in integrating cold ironing and renewable sources.

Transformative Innovation Actions:

Technology: Expand renewable energy technologies like wave and wind energy.
Governance: Establish incentives for green energy infrastructure.

Relevant S3 Areas:

Focus on energy and transport innovations.

Intervention Areas:

Accelerate pilot projects for renewable energy and cold ironing.
Promote public awareness of marine renewable energy.

Potential Synergies

Collaboration with EU-funded programs and regional initiatives for aquaculture, energy, and ecosystem restoration.
Integration with digital tools to enhance monitoring and data-sharing capabilities.

TRAIN Lab Croatia**Bioeconomy – Agrofood****Correlated Sectors: Marine Living Resources, Marine Bio-Based Solutions****Environmental Objectives:**

Protect biodiversity and achieve carbon neutrality.
Advance sustainable aquaculture systems and reduce waste.

Territorial Challenges:

Address gaps in Illegal, Unreported, and Unregulated (IUU) Fishing.
Develop biodegradable gear and reduce environmental footprints.

Transformative Innovation Actions:

Technology: Promote sustainable feed and alternative protein sources.
Social: Foster community-driven sustainable aquaculture practices.
Finance: Subsidize biodegradable gear R&D.
Governance: Establish regulations for aquaculture and gear usage.

Relevant S3 Areas:

Sustainable aquaculture systems and development of biodegradable gear.

Intervention Areas:

Implement a Community-Driven Sustainable Aquaculture Program.
Promote research in new protein sources and waste valorization.
Integrate regenerative aquaculture practices with local communities.

Potential Synergies:

Collaboration with initiatives like H2020 AQUAEXCEL2020, H2020 Blue Growth, and BlueMed.

Transport and Logistics**Correlated Sectors: Port Activities and Maritime Transport****Environmental Objectives:**

Achieve carbon neutrality and pollution prevention in ports and shipping.
Promote renewable energy and green ship technologies.

Territorial Challenges:

High costs for port electrification and alternative fuels.
Integration of autonomous vessels and smart logistics.

Transformative Innovation Actions:

Technology: Introduce alternative fuels and smart logistics systems.
Social: Promote collaboration for low-emission transport systems.
Finance: Subsidize electrified ports and alternative fuels.
Governance: Implement emissions standards for ports and vessels.

Relevant S3 Areas:

Adoption of smart technologies and green ship innovations.

Intervention Areas:

Electrify ports and integrate renewable energy technologies.
Position Croatia as a leader in low-emission maritime transport.

Potential Synergies:

Collaboration with TransH2 (Interreg Italy-Croatia).

ICT-Digital Transformation**Correlated Sectors: All Marine Industries****Environmental Objectives:**

Enhance biodiversity protection and carbon neutrality.
Optimize resource management using digital tools.

Territorial Challenges:

Need for advanced monitoring and predictive technologies.
Limited infrastructure for real-time marine data collection.

Transformative Innovation Actions:

Technology: Deploy AI and IoT for real-time marine monitoring.
Social: Engage citizens in data collection via citizen science programs.
Finance: Invest in digital marine systems.
Governance: Develop data-sharing frameworks for sustainability.

Relevant S3 Areas:

Intelligent monitoring systems for sustainability and resource management.

Intervention Areas:

Build a National Marine Digital Infrastructure.
Use digital tools to optimize port operations and minimize environmental impact.

Potential Synergies:

Collaboration with EUROFLEETS (H2020) and Blue Growth.

Environment – Sustainable Innovation**Correlated Sectors: Ecosystem Restoration and Climate Change Mitigation****Environmental Objectives:**

Prevent pollution and restore marine ecosystems.
Advance technologies for habitat restoration and marine litter cleanup.

Territorial Challenges:

Insufficient tools for monitoring and managing pollution.

Limited community engagement in restoration projects.

Transformative Innovation Actions:

Technology: Use drones and AI for habitat monitoring and restoration.

Social: Engage citizens in marine litter cleanup initiatives.

Finance: Provide grants for habitat restoration and pollution control.

Governance: Develop policies for Marine Protected Areas (MPAs).

Relevant S3 Areas:

Advanced environmental monitoring and restoration technologies.

Intervention Areas:

Launch a Marine Ecosystem Restoration Initiative.

Promote innovation in bioremediation and marine gardening.

Potential Synergies:

Collaboration with MARGNET, ECOSEA, and BlueMed.

Social Innovation

Correlated Sectors: Cultural and Creative Industries

Environmental Objectives:

Protect biodiversity while balancing economic growth.

Promote community-based eco-tourism and green certifications.

Territorial Challenges:

Limited awareness of sustainable tourism practices.

Infrastructure gaps for eco-friendly tourism models.

Transformative Innovation Actions:

Technology: Develop digital platforms for eco-tourism.

Social: Encourage community-driven tourism and public education.

Finance: Offer grants for sustainable tourism projects.

Governance: Implement green certifications for tourism businesses.

Relevant S3 Areas:

Community-based eco-tourism models and cultural innovation.

Intervention Areas:

Foster eco-tourism initiatives that promote environmental stewardship.

Implement the Socio-Ecological System (SES) approach to integrate marine resource management with local needs.

Potential Synergies:

Collaboration with Tourism4SDG and other Interreg Europe programs.

TRAIN Lab Albania

Bioeconomy- Agrifood

Correlated Sectors: Fisheries, Aquaculture

Environmental Objectives:

Enhance sustainable fishing practices.

Address overfishing and improve marine biodiversity conservation.

Territorial Challenges:

Climate change impacts on marine habitats.

Overfishing and lack of advanced monitoring systems.

Transformative Innovation Actions:

Technology: Implement AI-driven fisheries monitoring systems and smart aquaculture technologies.

Social: Strengthen community engagement to support sustainable fisheries practices.

Finance: Introduce blue finance mechanisms to fund sustainable practices.

Governance: Develop and enforce regulatory frameworks for sustainable fisheries management.

Relevant S3 Areas:

Sustainable marine resource management.

Intervention Areas:

Use AI-based monitoring to optimize resource use and reduce overfishing.

Promote aquaculture innovations to enhance sustainability and traceability.

Collaborate with local communities to integrate digital tools for fisheries management.

Potential Synergies:

EU Blue Growth Initiatives.

Collaboration with FAO projects.

Renewable Energy Sources

Correlated Sectors: Offshore Wind, Wave Energy

Environmental Objectives:

Increase renewable energy production from marine resources.

Support clean energy transitions to reduce carbon emissions.

Territorial Challenges:

Lack of infrastructure for marine-based renewable energy.

High initial investment costs for pilot projects.

Transformative Innovation Actions:

Technology: Develop advanced turbines and wave energy converters.

Social: Raise public awareness about renewable energy benefits.

Finance: Leverage green funding programs for pilot projects.

Governance: Implement policy incentives to encourage investment in marine renewable energy.

Relevant S3 Areas:

Clean energy and climate resilience.

Intervention Areas:

Establish pilot offshore wind farms to harness marine energy resources.

Research wave energy technologies to diversify renewable energy sources.

Foster regional collaborations for infrastructure development and funding.

Potential Synergies:

EU Green Deal funding programs.

Regional energy network collaborations.

Tourism

Correlated Sectors: Eco-Tourism, Cruise Tourism

Environmental Objectives:

Promote eco-friendly tourism models.

Mitigate environmental degradation caused by over-tourism.

Territorial Challenges:

Over-tourism leading to environmental pressures.

Lack of integration between tourism and sustainability practices.

Transformative Innovation Actions:

Technology: Use smart tourism platforms to manage visitor flows.

Social: Ensure local business integration for sustainable tourism initiatives.

Finance: Establish sustainable tourism funds for eco-tourism projects.

Governance: Implement tourism governance reforms to regulate eco-tourism.

Relevant S3 Areas:

Tourism and cultural heritage.

Intervention Areas:

Develop certified eco-tourism zones with smart visitor management systems.

Promote local community engagement to ensure sustainable tourism development.

Reorient cruise tourism to adopt eco-friendly practices.

Potential Synergies:

UNWTO projects.

Adriatic-Ionian regional initiatives.