



Policy guidance 3

Setting up effective innovation ecosystems to support coastal ecosystem restoration

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Why innovation ecosystems matter for coastal restoration

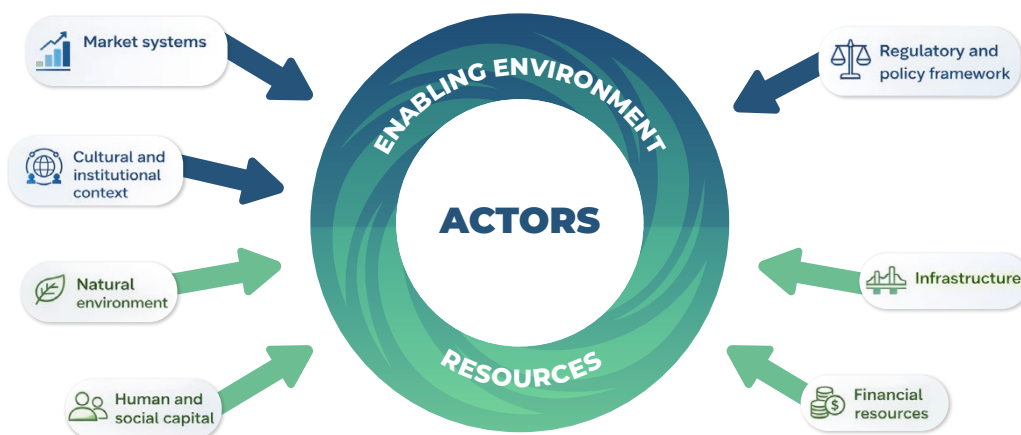
The European Union (EU) has set ambitious restoration objectives in its policy frameworks, as illustrated by the objectives of its Biodiversity Strategy for 2030 or Nature Restoration Regulation. Achieving these targets will require scaling up coastal and marine ecosystem restoration far beyond current implementation levels as well as technical, institutional, and financial capacities. While the urgency of restoration is widely recognised, the systems needed to generate, diffuse and implement restoration innovation at large scale remain underdeveloped.

Innovation in coastal ecosystem restoration goes beyond technological advancement. It encompasses social, governance, financial, and policy innovation, all of which are necessary to ensure that restoration initiatives are effective, accepted by society, and sustainable over time. Restoration projects often operate under ecological uncertainty, deliver benefits that are largely public goods, and generate returns over long time horizons. These characteristics limit private investment and complicate implementation.

As a result, achieving EU restoration ambitions depends not only on increasing the number of projects, but on establishing well-functioning innovation ecosystems capable of mobilising actors, resources, and governance structures to support the full lifecycle of innovation, from early-stage development to large-scale deployment.

This policy guidance aims to identify key ingredients to build strong and functioning innovation ecosystems that support the development and upscaling of innovative initiatives for marine and coastal restoration. It provides an overview of limitations currently observed and provide practical recommendations to enable innovation development and upscaling.

Understanding innovation ecosystems and the process of innovation development



An innovation ecosystem can be understood as the interaction between three core components: actors, resources, and the enabling environment. These components collectively determine whether innovative restoration solutions can move from concept to large-scale, durable implementation.

- ➔ **Actors** include researchers, entrepreneurs, policymakers, public authorities, and investors, all contributing to different stages of the innovation process. Effective ecosystems require not only the presence of these actors but also strong connections between them.
- ➔ **Resources** encompass financial capital, knowledge and skills, infrastructure, and natural assets. Gaps in any of these areas can hinder innovation. For instance, insufficient long-term funding or lack of testing infrastructure can prevent promising solutions from progressing beyond pilot stages.
- ➔ The **enabling environment** includes regulatory frameworks, market conditions, governance systems, and cultural factors. It shapes incentives and determines whether innovation is encouraged or constrained. In coastal restoration, current frameworks often fail to actively support innovation, particularly non-technological forms such as governance or social innovation.

Innovation pathways are typically described through **Technology Readiness Levels (TRL)** and **Societal Readiness Levels (SRL)**. While TRL focuses on technological maturity, SRL captures societal acceptance and governance readiness. For coastal restoration, combining these perspectives is essential, as successful implementation depends as much on social and institutional factors as on technical performance.

Structural barriers limiting innovation in coastal restoration

Despite growing policy attention, current innovation ecosystems for coastal restoration face persistent structural limitations that prevent solutions from scaling. These barriers are summarised according to the three core components of an innovation ecosystem.

Fragmented actors and weak collaboration

Innovation ecosystems remain highly fragmented. There are limited interactions between restoration communities and innovation communities, and too few actors from across the full innovation value chain are systematically involved in restoration initiatives. This fragmentation reduces knowledge exchange and slows the progression of solutions.

Private-sector engagement is particularly limited. Restoration projects often lack clear business models, and benefits are uncertain, long-term, and difficult to monetise. Companies involved in restoration tend to be small and face constraints in scaling their activities. At the same time, public authorities remain cautious about adopting innovative solutions due to uncertainty regarding their effectiveness.

Insufficient and poorly adapted resources

Financial resources are heavily skewed toward short-term public funding. There is a lack of mechanisms supporting long-term deployment and maintenance, which leaves many projects stuck at pilot stage. Funding for non-technological innovation, such as stakeholder engagement or governance models, is especially limited.

Knowledge gaps also persist. While scientific expertise is strong, its translation into practice is weak. Monitoring and evaluation systems are insufficiently developed, limiting the evidence base needed for replication. In addition, many actors lack business and innovation management skills.

Infrastructure and data availability are uneven. Access to testing sites, interoperable data systems, and tailored innovation support services remains limited, further constraining development and scaling.

An enabling environment that does not incentivise innovation

Policy and regulatory frameworks often allow innovation but rarely promote it actively. Environmental policies do not systematically integrate innovation into their implementation, while innovation policies remain focused on technological and economic outcomes rather than public goods.

Governance structures are complex and fragmented, with misalignment between innovation objectives and restoration goals. Cultural factors, including risk aversion and a narrow understanding of innovation as purely technological, further limit experimentation and adoption.





Policy directions to build effective innovation ecosystems

Addressing these systemic barriers requires coordinated action to strengthen the enabling conditions for innovation ecosystems. The following policy directions establish clear links between identified challenges and concrete recommendations.

Align policy and governance frameworks to better connect restoration and innovation

SITUATION

A major barrier lies in the disconnection between environmental policy and innovation policy. Restoration is treated primarily as an environmental objective, while innovation policy focuses on competitiveness and technological development. This separation limits the integration and scaling of innovative restoration solutions.

SUGGESTIONS

Innovation should be explicitly embedded into environmental policy implementation. This includes recognising innovative restoration approaches within frameworks such as the Nature Restoration Regulation and integrating them into national restoration plans. At the same time, restoration objectives should be incorporated into EU innovation and competitiveness strategies to create structural links between policy domains.

The role of EU Missions, regional lighthouses, and Horizon Europe projects as builders of innovation ecosystems rather than standalone research efforts should be strengthened, with specific expectations and assessment of the beneficiaries as regard to how the innovation ecosystem will continue after the project ends. Innovation specialists should be systematically involved in project consortia and advisory boards.

At national and regional levels, authorities should establish dedicated innovation support structures for restoration and foster long-term partnerships between public authorities, researchers, and practitioners, including through communities of practice. Regulatory frameworks should be simplified and clarified to reduce uncertainty and facilitate experimentation with innovative solutions.

Develop dedicated and flexible funding mechanisms

SITUATION

Current funding structures do not support the full lifecycle of restoration innovation. Short-term project funding and limited support for non-technological innovation prevent scaling and long-term impact.

SUGGESTIONS

At EU level, funding instruments should be adapted to support a broader range of innovation types, including governance, financial, and social innovation. Funding should prioritise initiatives delivering public goods and provide long-term support beyond pilot phases. Requirements for strategic financial planning should be integrated into funding criteria to ensure pathways toward scaling.

Guidance should be developed to improve the assessment of economic and social impacts of restoration projects. This would reduce uncertainty and help attract private investment by clarifying expected costs, benefits, and timelines.

At national and regional levels, public authorities should use procurement and spatial planning as strategic tools to create demand for innovative restoration solutions. By integrating innovation criteria into public tenders and planning processes, authorities can stimulate market development. In addition, bundled financing approaches should be developed to reduce risk and support larger-scale initiatives.

Develop robust knowledge-sharing, learning and evaluation mechanisms for strengthened capacities across the innovation ecosystem

SITUATION

A lack of knowledge transfer and capacity across the innovation ecosystem significantly limits scaling.

SUGGESTIONS

At EU level, clearer guidance should be provided on the use and interpretation of TRL and SRL frameworks to ensure consistent application across programmes. This would improve the evaluation and support of innovation projects, particularly those involving non-technological components.

Long-term monitoring and evaluation systems should be established to assess environmental, social, and economic impacts beyond project lifecycles. Embedding these systems into policy frameworks, such as national restoration plans, would support evidence-based scaling of successful solutions.

At national and regional levels, authorities should support the development of communities of practice and long-term partnerships that facilitate continuous learning. Training programmes should be developed to enhance both 'restoration literacy' among innovation actors and 'innovation literacy' among restoration practitioners. Integrating innovation specialists into restoration initiatives and governance structures would further bridge existing gaps between communities.

Concluding remarks

The transition from pilot projects to large-scale deployment remains the central challenge for coastal ecosystem restoration in Europe. This transition requires not only more innovation, but better systems to support innovation.

Effective innovation ecosystems provide the conditions for this transition by connecting actors, mobilising resources, and creating enabling environments that support experimentation, learning, and scaling. Without such ecosystems, promising solutions will continue to stagnate at early stages, and EU restoration targets will remain out of reach.

By aligning policy frameworks, adapting funding mechanisms, and strengthening knowledge and evaluation systems, the conditions for innovation ecosystems that deliver both environmental and societal benefits can be fulfilled. This systemic approach is essential to achieve durable, large-scale restoration of Europe's coastal ecosystems.

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References

APRE, CDTI (2022). Guiding notes to use the TRL self-assessment tool. Deliverable under the framework of BRIDGE2HE.

European Commission (2025). Scaling up ideas. Using Technology Readiness Levels to analyse technology progression in Horizon Europe. Monitoring & evaluation report.

Gorjanc, S., Jarry, C., Rivière, C., Strosser, P. (2024) Challenges, opportunities and adaptations in the current policy framework to deliver upscaling of marine and coastal innovative nature restoration activities. A-AAgora project Deliverable 1.1

Gorjanc, S., Zaiter, Y., Jarry, C., De Paoli, G., Wang, J., Rivière, C., Strosser, P. (2026) Is the European Union's innovation policy sufficient to enable marine, coastal, and freshwater restoration in Europe? Restoration Ecology. doi: 10.1111/rec.70333

Zaiter, Y., Wang, J., De Paoli, G. (2024). Catalogue of services supporting innovation. Deliverable 5.1 of the Horizon Europe EcoDaLLi project.