A Structured Pathway for Upscaling Freshwater Ecosystem Restoration?

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Healthy freshwater and wetland ecosystems are vital for people and nature, yet many need restoration. Progress in current restoration efforts remains too slow, small-scale, and fragmented. This brief calls for bold, coordinated action that aligns with EU policy goals and delivers lasting benefits for nature, climate, and society. The time to upscale is now.

From isolated efforts to coordinated, large-scale action

This policy brief introduces a method developed under the EU Horizon 2020 Research and Innovation project MERLIN for creating Regional Upscaling Plans that help freshwater restoration to move from isolated efforts to coordinated, large-scale action. The approach supports alignment with the EU Green Deal goals and shows how local and regional actors can drive systemic transformation. Scaling up restoration is not only essential for ecological recovery—it is a strategic investment in Europe's long-term resilience, competitiveness, and leadership in nature-based innovation.

1. The Challenge: Fragmented Restoration with Limited Impact

Freshwater ecosystems across Europe are in serious decline. Despite their vital role in providing clean water, flood protection, biodiversity, and climate resilience, restoration efforts remain small, localised, and disconnected from broader policy and societal objectives. They often lack integration with sectors such as agriculture, energy, and transport, and are constrained by fragmented governance and limited funding.

As a result, the cumulative impact of ongoing restoration initiatives remains marginal. Slow progress towards achieving good ecological status under the Water Framework Directive underscores the need for a transformative approach. To reverse degradation and deliver co-benefits for nature, climate, and society, restoration must evolve from isolated projects to coordinated, long-term strategies.

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2. What Is Upscaing?

Upscaling refers to the strategic expansion and integration of restoration efforts across five dimensions:

- Geographic scope: from local actions to landscape-scale interventions
- Multiple goals: integrating nature restoration with climate, agricultural, flood risk, and rural development policies
- Stakeholder engagement: ensuring early and broad co-creation across sectors and communities
- Funding: combining public and private sources to secure long-term investment
- Long-term vision: planning beyond typical project cycles, with time horizons extending to 2050 and beyond

Upscaling is not simply about doing more—it is about doing restoration more effectively, connecting actions across systems to create durable, transformative change.

Upscaling requires amongst others a larger landscape perspective

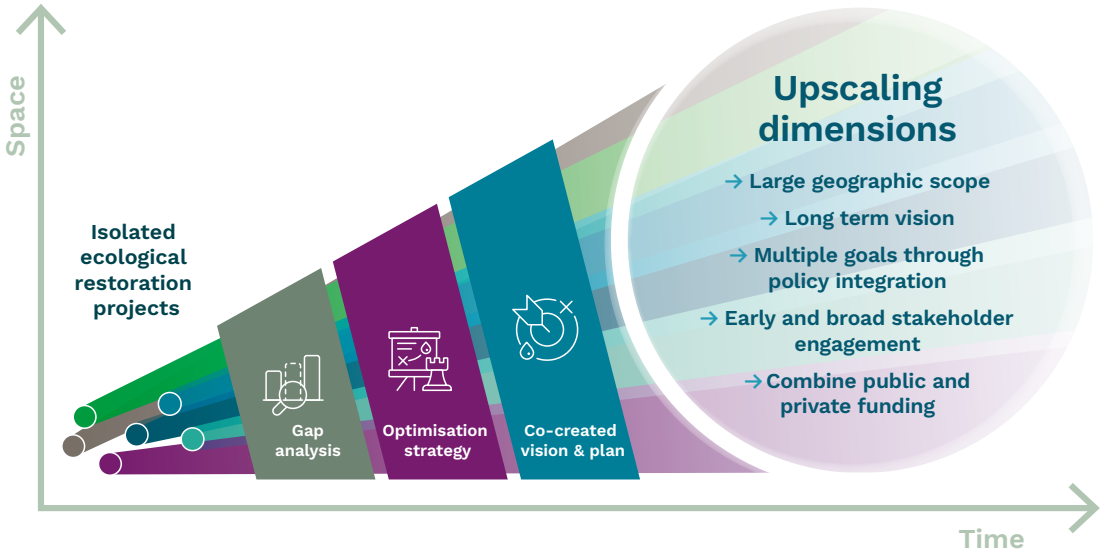
3. The MERLIN Method for Regional Upscaling

MERLIN developed a structured three-step method to guide the creation of Regional Upscaling Plans and move regions from fragmented projects to coherent, long-term strategies

- **Step 1: Gap Analysis**
  Evaluate existing restoration efforts to identify strengths, weaknesses, opportunities, and threats.
- **Step 2: Optimisation Strategy**
  Design tailored approaches that reflect regional context and stakeholder priorities, serving multiple goals with a broader range of (nature-based) solutions.
- **Step 3: Co-created Vision and Plan**
  Bring stakeholders together to define a shared long-term vision and actionable plan.

The method promotes integrated, multi-objective planning aligned with EU Green Deal ambitions, while facilitating access to broader funding and policy support.

A structured pathway for upscaling freshwater ecosystem restoration



4. Enabling Conditions for Regional Upscaling

Align with EU Policy Goals

The European Green Deal and related EU strategies —on biodiversity, climate adaptation, water resilience, and zero pollution—call for ecosystem-based approaches. The Nature Restoration Regulation sets binding targets, reinforcing the need for regional planning.

Scaling up freshwater restoration meets these goals while strengthening Europe's competitiveness. Healthy water systems sustain agriculture, clean energy, resilient infrastructure, and innovation in nature-based solutions. Aligning restoration EU priorities creates synergies that enhance economic resilience and global leadership in green technologies.

Mobilising Diverse Actors and Funding

Effective upscaling depends on collaboration among communities, businesses, landowners, and public authorities at all levels. Co-creation and policy integration foster ownership and unlock long-term investment. Lasting commitment grows from inclusive engagement and shared design of restoration measures.

Bridge Strategy and Implementation

Regional Upscaling Plans bridge the gap between high-level policy and on-the-ground results. They turn EU and national ambitions into coordinated local action, backed by Communities of Practice and practical tools.

MERLIN events with external stakeholder interaction: (top left: Danube floodplain restoration Austria, right Tzipori basin restoration Israel, bottom right Room for the Rhine Netherlands, left Tisza floodplain rewetting Hungary)

5. Learning from Lighthouse Examples

MERLIN highlights several exemplary models of restoration at scale:

Room for the Rhine (Netherlands): Over 30 projects (2006–2018) improved flood safety and spatial quality for nature and people by giving rivers more space through dike relocation, floodplain lowering, side channels, and bypasses.

Emscher River Basin (Germany): A 30-year, €5 billion transformation of an industrial waste-water system into a near-natural river landscape, improving biodiversity, climate resilience, and regional quality of life.

Green Denmark Agreement: The 2024 Tripartite Agreement commits €5.76 billion to a fair green transition—rewetting 140,000 ha of farmland, planting 250,000 ha of forest, and introducing the world's first agricultural CO_2 tax, with key milestones for 2030 and 2035.

Tisza River (Hungary): WWF Hungary's roadmap toward 2050 combines rewetting, invasive-species control, native vegetation recovery, sustainable grazing, and biomass production to restore floodplains and livelihoods.

These cases demonstrate that long-term commitment, local leadership, and inclusive dialogue are key to success. Field exchanges, storytelling, and peer learning can effectively inspire and accelerate restoration across Europe.

6. Recommendations for Policymakers

To enable regional upscaling, policymakers should:

- **Support long-term, landscape-scale planning**
  Embed Regional Upscaling Plans into national strategies with a 2050 outlook. Apply stepwise implementation with clear milestones and adaptive management cycles.
- **Strengthen multi-actor governance**
  Invest in capacity-building for municipalities, NGOs, water authorities, and landowners to foster shared ownership and coordinated action.
- **Adopt multi-objective restoration**
  Align restoration efforts with EU Green Deal objectives to justify cross-sectoral investments and integration into national policy frameworks.
- **Leverage the momentum of Nature-based Solutions**
  Position freshwater restoration as a cornerstone for linking climate adaptation, rural revitalization, and disaster risk reduction.
- **Promote peer learning and exchange**
  Facilitate knowledge transfer through lighthouse projects, field visits, storytelling, and Communities of Practice to build trust and momentum.
- **Invest in monitoring and adaptive planning**
  Track ecological and societal impacts and integrate lessons learned into continuous, evidence-informed planning cycles.

7. Conclusion: The Time to Upscale Is Now

To meet Europe's ecological and climate ambitions, freshwater restoration must shift from isolated projects to coordinated, large-scale strategies. Regional Upscaling Plans offer a clear pathway forward. Using MERLIN's method and aligning with EU goals will enable durable benefits for nature, people, and the economy.

8. Contact

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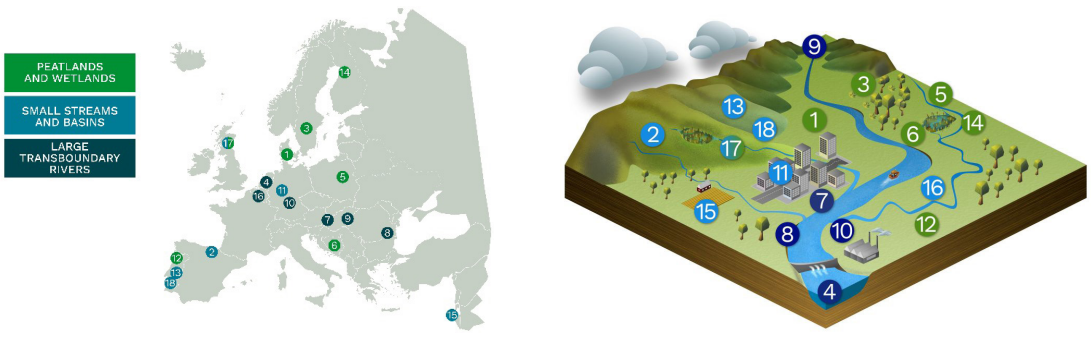
9. Further Reading

MERLIN has developed several outputs to support the development of Regional Upscaling Plans:

- MERLIN deliverable 2.1 Case study optimisation strategies
- MERLIN deliverable 2.2 Synthesis of the Interim Regional Scalability Plans
- MERLIN deliverable 2.4 Synthesis of the final Regional Scalability Plans

The individual upscaling plans prepared by the 18 case studies are available through MERLIN's case study portal



For all 18 MERLIN case studies Regional Upscaling Plans have been prepared, clustered for different freshwater ecosystems: peatlands and wetlands; small streams and basins and large transboundary rivers' (left). These case studies cover a wide range of freshwater ecosystems within a catchment (right)