MERLIN

Deliverable D2.6:

Evaluation of implementation process and results

Learning from MERLIN Case Studies on Restoration Trajectories, Structural Settings, and Upscaling Potential

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MERLIN

Imprint

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Case study contributors
We gratefully acknowledge the following colleagues for providing case study data and reflections that informed the analyses and learning synthesised in this deliverable: Joost Backx, Helena Barbosa, Pieter Boets, Miriam Colls, Gonçalo Duarte, Frauke Ecke, Karin Eklöf, Arturo Elosegi, Teresa Ferreira, Marie Anne Forio, Elmar Fuchs, Michael Gerisch, Nadine Gerner, Michal Grossman, Tamas Gruber, Vera Henriques, Matea Jarak, Péter Kajner, Svenja Karnatz, Avital Katz, Alice Kaufmann, Steven Kelderman, Iris Kempter, Marieke de Lange, Ewan Lawrie, Francisco Lourenço, Lihi Luzon-Beranen, Silke Michelitsch, Charlotte Neary, Martin Nissen Nørgård, Justyna Olszewka, Angeliki Peponi, Amy Pickard, Estêvão Portela-Pereira, Niall Provan, Iulia Puiu, Tal Ratner-Marciano, Patricia María Rodríguez-González, Tiina Ronkainen, Anna-Kaisa Ronkanen, Julian Rudziński, Andrea Samu, José Maria Santos, Leonor Santos, Albert Scrieciu, Daniel Thorell, Robert Tögel, Pawel Trandziuk, Linda Udklit.

MERLIN Key messages

1. Freshwater restoration typically unfolds over decades. Projects act as stepping stones within longer restoration trajectories rather than representing complete restoration efforts.
2. Across MERLIN cases, actors articulated long-term visions to 2040–2050 and beyond, often combining biodiversity recovery with climate adaptation, water management, and regional development goals.
3. Institutional capacity, financial continuity, and monitoring stewardship appear to influence whether restoration progresses steadily or remains closely tied to individual project cycles.
4. Permitting, land access negotiations, and coordination requirements frequently require redesign or staging of measures during restoration implementation.
5. A partially completed measure may represent structured staging in programme settings but carry higher continuity risks in project-based contexts without secured follow-up.
6. Project monitoring provides early signals but cannot demonstrate long-term outcomes. Continued monitoring responsibility helps generate cumulative evidence for adaptive management.
7. Depending on context, projects may catalyse action, amplify programmes, strengthen organisational capacity, or reinforce legitimacy for restoration.
8. Projects appear more likely to support longer-term progress when responsibilities, follow-up steps, and monitoring continuation are clarified beyond the funding period.

MERLIN Executive Summary

Restoring ecosystems across Europe is a long-term task. The Nature Restoration Regulation (NRR) sets milestones for 2030, 2040, and 2050, yet delivery often occurs through time-bound projects.

This raises a simple question: how do short projects add up to long-term progress?

Across the diverse MERLIN case studies — ranging from stable programme settings to strongly project-based contexts — one recurring pattern emerged: individual projects do not automatically create cumulative restoration progress. What appeared to matter most was whether projects created the conditions for continued progress beyond the project cycle.

What MERLIN showed

Implementation rarely followed a perfect plan-to-target sequence. Permits were delayed. Land access required negotiation. Designs were adjusted. Measures were staged. Monitoring needed to be secured beyond the grant period. These are not signs of failure. They are typical features of restoration in complex governance settings.

Across MERLIN, projects were more likely to support long-term progress when they

- → cleared key dependencies early (permits, access, coordination),
- → defined who takes the next step after the project ends,
- → ensured that at least basic monitoring would continue,
- → and documented changes transparently when plans had to adapt.

Where these elements were in place, restoration more often continued beyond the project cycle, even where projects were embedded in larger programmes. Where they were missing, progress remained more closely tied to the duration of the project.

In simple terms: projects contributed most when they left behind viable next steps, not only completed measures.

Why context matters

Not all restoration settings are the same. Some regions operate within stable programmes with recurrent funding and clear institutional ownership. Others depend largely on short-term project funding, where continuity must be actively secured.

The same delivery result can therefore mean different things. A partially completed measure may represent structured staging within a longer programme. In a more project-based setting, the same outcome may carry higher risk if no follow-up is secured.

For policymakers and funders, this suggests that progress should not be judged only by outputs delivered within a reporting period, but also by whether continuation arrangements are in place.

Practical lessons for restoration governance

MERLIN highlights four design choices that appeared particularly important:

Map dependencies early.
Early clarification of permits, land access, and coordination responsibilities reduced delay and redesign risk.

Allow structured flexibility.
Plans provide direction, but adaptation is normal. When changes are clearly documented and remain linked to original objectives, they strengthen credibility rather than weaken it.

Make staging explicit.
If delivery unfolds in phases, define ownership and the next step clearly so progress does not stall when funding ends.

Secure monitoring beyond the grant.
Without continued monitoring, learning fragments and adaptive management capacity weakens.

These elements help projects build on each other rather than remain isolated efforts.

Content

Summary for Practitioners and Policy Makers

About This Deliverable

Freshwater ecosystem restoration in Europe is typically delivered through short-term projects, yet achieving lasting impact requires progress across much longer time horizons.

Across Europe, freshwater ecosystem restoration is being implemented under very different ecological, institutional, political and financial conditions. The MERLIN project analysed 18 implementation cases covering river restoration, wetland rewetting, barrier removal, and floodplain reconnection. Many of these cases combined biodiversity objectives with climate adaptation, flood risk reduction, and regional development goals.

This deliverable synthesises what these cases reveal about how restoration unfolds in practice. It does not focus only on ecological outcomes. It examines how projects interact with permitting systems, land access negotiations, funding cycles, institutional mandates, and monitoring responsibilities.

To structure this analysis, the deliverable adopts two complementary perspectives. First, it examines restoration initiatives as long-term trajectories shaped by ambition, institutional capacity, financial continuity, and accumulated experience. Second, it analyses MERLIN as a time-bound intervention within these trajectories, examining how implemented measures, adaptations, monitoring practice, and cross-case learning contributed to ongoing restoration processes. The synthesis presented here builds on both perspectives.

Across both analytical perspectives, a central lesson emerging from the cases is that restoration rarely unfolds as a sequence of isolated projects, but rather along a longer-term trajectory shaped by successive interventions. Progress appeared less dependent on ambition alone than on whether projects strengthened the structural conditions of that trajectory — reducing bottlenecks, clarifying responsibility, and securing sufficient fundings to allow continuity.

1. Restoration Unfolds as Trajectories

Across the MERLIN cases analysed, restoration did not begin with MERLIN and will not end with it. Several initiatives had been underway for decades whereas others were in the early stages of development. In each case, MERLIN intervened at a particular moment within an ongoing restoration trajectory.

A consistent lesson nevertheless emerged: the contribution of projects depends on whether they strengthen the structural conditions that allow restoration trajectories to progress over time.

Across cases, projects were more likely to contribute to longer-term progress where they:

- → clarified responsibility beyond the grant,
- → reduced key feasibility bottlenecks,
- → secured form of monitoring continuity.

Where these elements were not addressed, delivery risked remaining tied to the funding window.

For practitioners, this means that successful delivery is not only about completing measures. It is about leaving the conditions in place for restoration to continue beyond the project.

2. Ambition Is Widespread, but Continuity Shapes Progress

Across all cases, actors articulated ambitious long-term objectives that extended beyond the immediate project window. Long time horizons, landscape-scale visions, and multi-objective approaches were not limited to well-resourced contexts.

Across the cases analysed, ambition alone, however, did not explain differences in long-term progress. What varied more markedly was structural continuity. Differences in institutional anchoring, financial stability, and monitoring stewardship likely influences how restoration persists and accumulates beyond the project window.

Where these foundations were more consolidated, time more often translated into cumulative progress. Where they were thinner, advancement depended heavily on securing continued ownership, funding, and monitoring beyond each project cycle.

This distinction matters both for practitioners and policy makers: Ambition signals direction – continuity determines whether it translates into sustained implementation.

3. Deviation Is Normal — Interpretation Matters

Across cases, implementation rarely followed a strict "plan-to-target" pattern. Measures were staged, redesigned, relocated, or substituted. The most frequent constraints were transactional rather than ecological: permitting procedures, land access negotiations, stakeholder opposition, procurement timelines, sequencing constraints, and coordination across agencies. Implementation challenges were therefore predominantly governance- and administration-related rather than ecological in nature.

Also successful cases experienced deviation. They anticipated it, documented it, and communicated it clearly. Where adaptation was transparent and objectives remained explicit, trust was maintained and progress continued. Where adaptation was poorly documented, the same change may be perceived as failure.

The key lesson is not to eliminate change, but to make adaptation transparent and defensible.

For practitioners, early attention to feasibility (permits, access, stakeholder alignment) proved decisive. For policy makers, governance frameworks that allow flexibility while maintaining traceability may be more realistic than rigid adherence to initial plans.

4. Monitoring Is Stewardship, Not Reporting

Biophysical and socio-economic monitoring during a project may provide early signals of system response. However, signals generated within the project lifetime are insufficient to evaluate effectiveness of restoration measures since they only show the initial outcome. Case experience indicates that continued responsibility for monitoring is critical for turning early signals into cumulative learning.

Across cases, monitoring continuation depended less on technical feasibility than on institutional ownership and availability of resources. Where responsibility beyond the project was agreed early and indicator sets were aligned with management needs, monitoring is more likely to continue. Where monitoring frameworks were designed primarily for project reporting, continuation is often uncertain.

A minimum continuity package proved helpful:

- → a small core indicator set linked to functional objectives,
- → a named owner beyond the funding period,
- → modest but secured resources,
- → and clarity on how results inform future decisions.

When monitoring ends with the project, learning fragments. When responsibility and minimal resources are secured beyond the funding period, restoration gains adaptive capacity.

For practitioners and policy makers, the task is to anchor monitoring beyond the grant lifespan, not only within it. Continued responsibility, clear indicators, and traceable results not only strengthen adaptive management — they can also improve credibility and ensure commitment where additional or blended funding is considered.

5. Why Some Cases Could Scale More Easily Than Others

Upscaling readiness differed markedly across cases[1]. Where restoration relied primarily on successive short-term projects, scaling risks were higher, reflecting limited institutional anchoring and unstable funding horizons.

Where restoration was embedded in more stable programmes, projects more easily reinforced and extended ongoing efforts. In contexts with moderate institutional capacity, projects often strengthened routines and coordination in ways that improved future scaling potential.

Scaling is not only expansion in hectares or kilometres. It also involves institutional consolidation and the spread and embedding of improved routines and learning. Where spatial growth was matched by stable ownership, resource continuity, and strengthened implementation practices, restoration was more likely to accumulate over time.

These structural foundations appear to influence funding resilience. Where ownership is stable, risks are transparent, and monitoring is credible, restoration initiatives are better positioned to attract follow-on resources beyond single funding cycles.

For practitioners, this means investing in organisational capability alongside the multidisciplinary delivery of restoration and Nature-based Solutions addressing ecological, social, and economic objectives. For policy makers, it suggests that enabling stable frameworks may be as important as defining ambitious targets.

[1] This assessment builds on the Regional Scalability Plan (RSP) process and the 11-task upscaling self-assessment framework developed in MERLIN Deliverable D2.4 (Ojanen et al., 2024).

6. Cross-Case Learning: What Stood Out

Looking across all cases, several recurring patterns were observed.

What worked well:

- Early stakeholder engagement and trust-building[2].
- Transparent documentation of changes and decision points.
- Clear sequencing of staged measures.
- Maintaining continuity of personnel and relationships.
- Linking monitoring directly to management decisions.

What proved challenging:

- Permitting and land access delays.
- Coordination across multiple administrative levels.
- Securing post-project funding.
- Maintaining monitoring once project funding ended.

Cross-case exchange within MERLIN, particularly through ecosystem cluster discussions and joint field visits, helped normalise these challenges. Restoration teams learned that deviation is common, that transaction and stakeholder engagement costs are usually high, and that structured adaptation is part of responsible implementation.

Freshwater restoration and Nature-based Solution initiatives rarely unfold exactly as planned. Recognising setbacks at an early stage can reduce frustration and improve resilience.

7. Implications for Practitioners and Policy Makers

For practitioners, the cases suggest:

- *Design handover and continuity from the start.*
- *Address feasibility conditions early and explicitly.*
- *Document adaptation clearly.*
- *Keep monitoring simple, purposeful, and owned.*
- *Invest in organisational capability, not only outputs.*

For policy makers, the analysis indicates the value of:

- *Recognise that project-based delivery is structurally variable.*
- *Allow structured flexibility with traceability.*
- *Support monitoring continuation beyond funding cycles.*
- *Interpret partial delivery in context.*
- *Focus on accumulation across cycles, not only compliance within them.*

The Core Question

Restoration governance operates between long-term ambition and short-term funding cycles. The cases analysed here show that cumulative progress depends on whether each intervention strengthens the structural foundations of the trajectory it enters.

The cases suggest that the key question is not only "*What has been delivered?*" but also "*What conditions have been strengthened that allow restoration to continue?*". This will set the trajectory legacy, which determine whether restoration can attract and retain diverse sources of funding over time.

[2] The role of stakeholder engagement in enabling feasibility, legitimacy, and long-term embedding is examined in depth in MERLIN Deliverable D4.9 ("Just Transformations – Embedding stakeholder engagement to mainstream nature-based solutions in freshwater ecosystems"; Ibrahim et al., 2025), which synthesises lessons across cases on participation design and equitable benefit-sharing.

1 Introduction

1.1 From Projects to Trajectories: Understanding Restoration Implementation Beyond the Funding Window

Across Europe, freshwater restoration is increasingly organised through time-bound delivery units. Funding programmes mobilise resources, define outputs, and structure reporting periods. At the same time, restoration ambition is inherently long-term. River basin recovery, wetland rewetting, floodplain reconnection, and biodiversity enhancement typically unfold over decades rather than funding cycles.

This deliverable examines how such short-term interventions operate within longer-term restoration processes. It develops a trajectory perspective, asking under which structural conditions project-based delivery contributes to cumulative progress rather than remaining episodic.

For clarity, this report distinguishes between three analytical levels:

- Measures refer to concrete ecological interventions, such as rewetting a wetland or removing a barrier.
- Projects refer to time-bound organisational and funding units with defined start and end dates, budgets, and reporting obligations that deliver such measures.
- Programmes or regulatory frameworks provide longer-term governance structures within which multiple projects may occur over time. While programmes can offer strategic continuity, implementation frequently proceeds through discrete project cycles. The issue addressed here is therefore not whether restoration is implemented through projects, but how these projects are embedded within longer-term trajectories.

The analysis draws on 18 MERLIN case studies across diverse freshwater ecosystems and governance contexts, of which 16 implemented restoration measures during the MERLIN project period. These cases include river restoration, wetland rewetting, barrier removal, and floodplain reconnection, often combining biodiversity, climate adaptation, and regional development objectives (Pott et al., 2025; Wenskus et al., 2026).

Across cases, long-term ambition was widespread, frequently extending restoration programmes toward 2040–2050. Differences emerged less in ambition itself than in the institutional and financial conditions under which ambition was pursued. Institutional anchoring, financial continuity, and monitoring stewardship shaped how steadily restoration accumulated beyond individual funding windows.

The deliverable proceeds in three steps.

Chapter 2 characterises restoration as a long-term trajectory and differentiates structural settings.

Chapter 3 analyses MERLIN implementation pathways, constraint regimes, monitoring continuation, and structured case reflections.

Chapter 4 translates these findings into governance considerations, identifying conditions that appear to support cumulative restoration under project-based delivery.

Across the analysis, a consistent pattern emerges. Projects appear to contribute to long-term restoration not primarily through the scale of outputs delivered within the grant period, but through how they clarify responsibilities, reduce feasibility bottlenecks, and secure continuity beyond the funding window. Structural setting does not determine ambition; it conditions how far project influence can be extended.

This perspective is particularly relevant for implementation of the EU Nature Restoration Regulation (NRR), which sets long-term targets while delivery will often occur through time-bound programmes and projects. The governance challenge is therefore not only to define ambitious milestones, but to organise continuity across project cycles so that successive interventions create a trajectory which accumulate into coherent freshwater restoration pathways.

1.2 Data Basis and Analytical Approach

Empirical foundation

This synthesis builds primarily on a harmonised survey of MERLIN case study partners conducted in 2025–2026. The survey formed the empirical basis of Deliverable D2.5 (Wenskus et al., 2026) and was compiled as a structured dataset (Hershkovitz & Birk, 2026). It provides comparable information across cases on restoration ambition, governance setting, funding continuity, investment volumes, MERLIN funding share, implementation experience, monitoring practices, and structured self-reflection.

Additional sources include the upscaling self-assessment framework developed in D2.4 (Ojanen et al., 2024) and the harmonised synthesis of restoration challenges and measures presented by Pott et al. (2025).

The MERLIN cases do not represent all European restoration contexts. However, they cover a broad range of freshwater ecosystems and governance arrangements, allowing structured comparison across heterogeneous settings.

Analytical differentiation

The analysis proceeds along two complementary lenses:

Chapter 2 examines restoration as a long-term trajectory. Drawing on information on ambition (including time horizons), accumulated investment, starting year, financial continuity, institutional capacity, and upscaling readiness, it characterises structural settings and compares how restoration progresses under different embedding conditions. Eighteen case studies are included in this trajectory-level assessment.

Chapter 3 focuses on MERLIN as a time-bound intervention within these trajectories. It concentrates on the 16 case studies that implemented restoration measures during the MERLIN project period. The analysis examines planned and realised measures, deviations and adaptations, encountered challenges and work-arounds, monitoring practice and its continuation beyond MERLIN, and structured reflections on perceived contributions and upscaling relevance.

Chapter 4 synthesises these comparative findings and formulates governance considerations. These are not statistically derived prescriptions, but synthesis-informed interpretations of recurring patterns observed across cases.

2 Restoration Trajectories Beyond the Project Horizon

2.1 Freshwater Ecosystem Restoration as Long-Term Trajectory

From projects to trajectories

Freshwater ecosystem restoration rarely begins and ends with a single project. Across the MERLIN cases, restoration efforts are part of longer processes that extend well beyond the project period. In many cases, long-term visions reach to 2050 and cover entire catchments or landscapes. These ambitions often started before MERLIN and are expected to continue after it ends.

For this reason, restoration is better understood as a long-term trajectory composed of successive project interventions.

In ecological restoration literature, the term “trajectory” typically refers to the temporal development of ecosystem properties following restoration intervention (Zedler & Callaway, 1999; Matthews et al., 2009). In governance research, related concepts describe how long-term goals are pursued through sequences of interventions that form adaptive pathways over time (Haasnoot et al., 2013). In this report, the concept is used in a broader governance sense to describe the long-term restoration trajectory through which ambition, institutional capacity, funding stability, and accumulated experience interact over time.

Long-term ambition provides direction. It sets the intended scale and goals of restoration. However, ambition alone does not ensure steady progress. Whether plans translate into sustained action depends on the stability of governance structures and funding arrangements. Ambition shows where to go. Structural conditions influence how steadily that direction can be followed.

Why structural conditions matter

Restoration unfolds in different structural settings. In some cases, restoration is supported by stable mandates and recurring funding. In others, it relies mainly on individual projects and short-term grants. Initiatives may also originate from different actors, including government programmes, grassroots initiatives, or private actors. These differences do not determine ambition, but they shape how implementation proceeds and how resilient initiatives are to administrative or political change.

Restoration is also rarely linear. Implementation may be followed by redesign, negotiation, or delay. Ecological responses emerge gradually. Learning accumulates unevenly and depends on continued monitoring and institutional support. Trajectories therefore differ not only in ambition and governance setting, but also in how long they have been underway and how much progress has already been made.

MERLIN as a time-bound intervention

MERLIN operates within these longer processes as a time-bound intervention. Its role varies depending on context: it may help initiate action in early-stage settings, stabilise progress where structures are still consolidating, or reinforce implementation within established programmes. In all cases, MERLIN interacts with ongoing efforts rather than starting restoration from scratch.

In this report, a restoration trajectory refers to the longer-term process through which ambition, governance capacity, funding stability, and accumulated experience interact over time. Projects intervene at particular moments, but the broader pathway extends beyond any single funding period.

Understanding restoration in this way helps explain why cases differ in how they evolve. Ambition, governance setting, and accumulated experience interact to shape implementation over time. The following sections examine these dimensions in more detail.

2.2 Challenges and Measures as Empirical Baseline

Before analysing structural differences across restoration trajectories, it is useful to briefly describe the types of challenges and measures that characterise the cases.

A harmonised assessment of the MERLIN case studies (Pott et al., 2025) identified 133 distinct challenges, primarily related to environmental degradation, biodiversity loss, water management, and climate resilience. Governance, economic, and social challenges also recur, though less prominently.

The range of measures reflects this diversity. Nature-based and ecosystem-based approaches form the largest group of interventions. At the same time, cases include policy instruments, coordination mechanisms, capacity building, knowledge development, and selected grey infrastructure measures.

Together, these characteristics show that the analysed trajectories are rooted in environmental pressures but operate within broader institutional and socio-economic settings. Restoration therefore combines physical ecosystem measures with governance and organisational action.

This baseline profile provides the starting point for the subsequent analysis of structural settings, articulated ambitions, temporal maturity, and upscaling readiness.

2.3 Structural Settings for Restoration Delivery

Restoration does not take place under uniform conditions. Across the MERLIN cases, two factors strongly influence how steadily restoration can progress over time: the stability of funding and the strength of institutional capacity.

Figure 1 illustrates this simple framework. Cases are positioned according to how stable their funding is and how strong their organisational capacity is. This is not a ranking of performance. It describes the structural setting in which restoration is delivered.

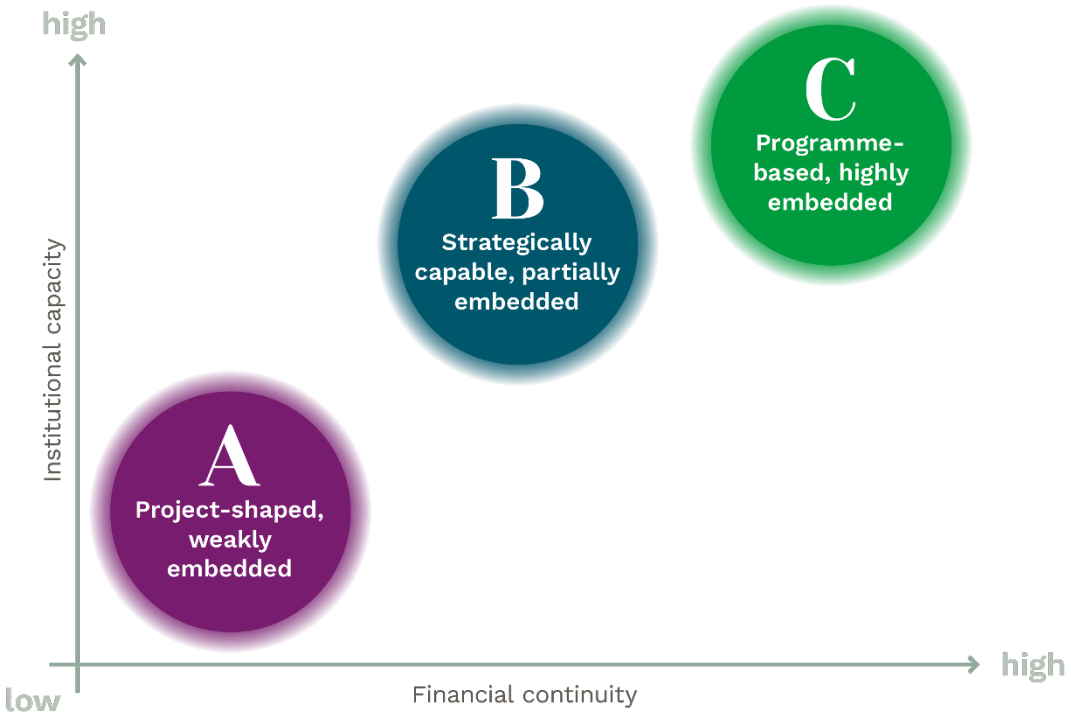

Figure 1: Structural settings for restoration delivery across analysed case studies.
Cases are positioned according to financial continuity and institutional capacity (see Annex 1 for methodological detail).

Financial continuity refers to whether funding is recurring and predictable, or mainly dependent on short-term project grants. Institutional capacity refers to whether there are stable mandates, clear responsibilities, and administrative structures that can organise and sustain restoration over time.

While these settings are defined at initiative level, they are influenced by broader national conditions such as economic capacity and governance traditions. However, these broader factors do not automatically determine how individual cases are positioned.

Across the analysed cases, three recurring structural settings can be distinguished.

A. Project-shaped settings
Restoration relies mainly on time-bound projects. Funding is episodic and often externally sourced. Institutional structures are limited. Progress therefore depends heavily on the dedication and perseverance of individuals and organisations, as well as on successive project opportunities, and may be uneven or interrupted.

B. Strategically capable settings
Long-term visions and governance structures are in place, but funding remains partly dependent on project cycles or mixed financing. Restoration advances step by step. Direction is clear, but financial continuity is not fully secured.

C. Programme-based settings
Restoration is anchored in stable mandates and recurring budgets. Institutional capacity and funding continuity reinforce each other. Implementation can continue steadily over time, allowing cumulative learning and expansion.

These structural settings describe the conditions under which restoration takes place. They do not judge ambition or ecological success. Cases in all three settings articulate long-term goals. What differs is how securely and consistently those goals can be pursued.

The next section examines how long-term ambitions are expressed across these different structural settings.

2.4 Long-term ambitions across Structural Settings

Beyond structural setting, restoration trajectories differ in how they express long-term ambition. To allow comparison across cases, ambitions were assessed along four dimensions: scale, time horizon, breadth of ambition, and degree of formalisation (see Annex 2 for methodological detail).

Scale and time horizon.
Across all structural settings, most cases articulate ambitions that extend well beyond the immediate project scale. Basin-level, regional, and even national visions are present not only in programme-based settings, but also in project-shaped and strategically capable settings.

A similar pattern appears for time horizons. Many trajectories aim toward mid-century targets around 2040–2050, regardless of structural setting. Some extend beyond 2050, particularly in more embedded settings, but long-term ambition is not limited to them. Shorter horizons are also observed across contexts.

In short, large spatial ambitions and long timeframes are not confined to settings with stable funding or strong institutional embedding.

How broad the ambition is.
Cases also differ in how broadly they link restoration to wider policy objectives. Some focus mainly on biodiversity or hydromorphology. Others integrate climate adaptation, water management, and socio-economic objectives.

This variation occurs across all structural settings. More embedded settings do not automatically show broader goal integration.

How ambitions are formalised.
Clearer differences appear in how ambitions are expressed. In programme-based settings, ambitions are more often framed through quantified targets, defined indicators, and formal policy anchoring. Strategically capable settings tend to show intermediate levels of formalisation. Project-shaped settings display greater variation, ranging from narrative visions to clearly specified targets.

What this means.
Long-term ambition is present across all structural settings. The scale and time horizon of restoration visions do not depend solely on funding stability or institutional capacity.

What structural setting influences is not whether ambition exists, but how securely and consistently it can be pursued over time. Ambition defines where restoration aims to go. Structural setting influences how steadily it can move in that direction.

2.5 How Progress Accumulates Over Time

Restoration trajectories differ not only in ambition and structural setting, but also in how long they have been underway and how progress is perceived.

Some initiatives are relatively recent. Others have evolved over several decades. Cases also differ in how far they consider themselves advanced toward their long-term ambition. These differences add another perspective to understanding how restoration unfolds over time.

Looking across cases, a common pattern emerges: restoration does not progress automatically in step with time. In many trajectories, the level of implementation reported is lower than the share of time that has passed since the start of the declared ambition horizon. Progress tends to unfold unevenly rather than proportionally.

A gradual pattern can nevertheless be observed across structural settings. In project-shaped settings, years of effort often translate into progress in phases closely linked to funding cycles. Periods of implementation may alternate with consolidation or delay. In strategically capable settings, accumulation appears somewhat steadier. In programme-based settings, time and reported progress tend to align more closely, suggesting that stable funding and institutional capacity can support more continuous advancement.

This does not mean that any structural setting guarantees success or that others are bound to struggle. Variation exists within all settings. However, the comparison indicates that structural conditions influence whether years of effort build steadily on each other or remain closely tied to individual project phases.

2.6 Readiness for Scaling

A final dimension of restoration trajectories concerns readiness for expansion. Can initiatives move beyond individual measures and organise restoration at larger scale?

Based on the self-assessment framework developed in D2.4 (Ojanen et al., 2024; see Annex 3), cases reflected on key tasks required for structured upscaling. A clear pattern emerges across structural settings.

In project-shaped settings, readiness for scaling is generally limited. While ambitions may be broad, expansion often depends on securing new project funding. Core elements such as stable resource mobilisation and long-term coordination structures are frequently still under development.

In strategically capable settings, scaling preparation is more advanced. Governance structures and long-term visions are in place, but financial continuity is not always fully secured.

In programme-based settings, stable mandates and recurring budgets provide a stronger foundation for organising expansion over time.

Overall, upscaling capacity appears closely linked to structural setting. Scaling requires more than ambition. It depends on stable funding and institutional continuity that allow initiatives to move beyond isolated project phases.

2.7 What the Trajectory Perspective Shows

Looking across cases, differences in cumulative and scalable implementation are linked more closely to structural setting than to ambition alone.

First, successful restoration trajectories rarely emerge from isolated projects alone. Restoration unfolds over time through direction, accumulated experience, and institutional continuity. Projects intervene within these longer pathways; they do not define them.

Second, ambition is widely distributed. Large spatial scopes, long time horizons, and broad ecological objectives are present across all structural settings. Ambition alone does not explain why some trajectories advance more steadily than others.

Third, time does not automatically produce progress. In many cases, perceived advancement lags behind the share of time that has already passed within the stated ambition horizon. Restoration is therefore not time-linear. Years provide opportunity, but continuity determines whether that opportunity translates into sustained implementation.

Fourth, structural setting shapes how consistently projects accumulate over time. In more embedded settings, elapsed time is more often associated with steady advancement and organised scaling. In strongly project-based settings, progress depends more heavily on securing follow-up beyond each funding phase.

Viewed through the lens of the five building blocks for upscaling freshwater ecosystem restoration (Birk et al., 2026), these differences concern less the presence of ambition than the consolidation of structural foundations. Narratives of the future are widely articulated across settings. What varies more systematically is the stability of resource management (financial continuity and institutional capacity) and the continuity of evidence-informed practice, particularly monitoring stewardship. Where these building blocks are thin, restoration can advance, but cumulative scaling remains fragile. Where they are consolidated, trajectories more readily convert time and project activity into sustained progress.

These patterns do not imply that only highly embedded settings are viable. Restoration can begin and advance under constrained conditions. However, sustaining and expanding restoration over time appears to depend increasingly on the consolidation of core building blocks (especially resource continuity and learning continuity) alongside ecological ambition.

2.8 MERLIN Within Ongoing Restoration Pathways

The preceding sections described restoration as a long-term process shaped by ambition, structural setting, time, and scaling readiness. Within this perspective, MERLIN can be understood as a stepping-stone within ongoing restoration pathways.

The stepping-stone allegory, illustrated in Figure 2, captures a simple idea: restoration progresses through successive project phases. Each project represents a discrete moment of action within a longer trajectory

directed toward articulated ambition. The stones do not create the pathway, and they do not guarantee continuous movement. Their contribution depends on how they connect to what comes before and after.

MERLIN neither initiated nor concludes the trajectories analysed in this report. During its lifespan (2021-2025) it intervened at specific moments within structurally different settings. Its effect must therefore be interpreted relative to the trajectory position and the institutional and financial conditions in which it operated.

In project-shaped settings, a project such as MERLIN may function as a catalytic stone within otherwise discontinuous development. In strategically capable settings, it may reinforce coherence or prepare subsequent scaling steps. In programme-based settings, it may contribute incrementally within already continuous processes. Across settings, cross-case exchange within MERLIN also stimulated new ideas and experimentation, encouraging actors to test approaches beyond their usual routines and comfort zones.

The remainder of this deliverable examines how MERLIN functioned within these structurally differentiated pathways — how implementation unfolded, how adaptations were managed, how monitoring was secured, and how project effects related to longer-term trajectory development.

Figure 2: MERLIN as a time-bound stepping-stone intervention within structurally differentiated restoration trajectories.

Restoration initiatives unfold as long-term, directionally oriented trajectories toward articulated restoration ambition. These trajectories differ in structural setting, reflected in varying levels of institutional capacity and financial continuity (Settings A–C).

3 Project Implementation Within Restoration Trajectories

Chapter 2 conceptualised freshwater ecosystem restoration as a long-term trajectory shaped by institutional and financial embedding. This chapter turns to the MERLIN implementation phase and examines how restoration intent translated into action within a bounded project horizon.

The focus is not on ambition, but on delivery: how measures were implemented under real-world constraints, how deviations emerged, how adaptation was managed, and how monitoring continuity was secured beyond the grant period. The analysis asks what kinds of contribution a time-bound implementation project can credibly make to longer restoration trajectories.

Interpretation is informed by the three structural settings introduced in Section 2.3:

- Setting A (project-shaped, weakly embedded),
- Setting B (strategically capable, partially embedded), and
- Setting C (programme-based, highly embedded).

These settings are not success categories. They describe different degrees of institutional and financial continuity that shape how implementation unfolds, how constraints are absorbed, and how far project effects extend beyond the project window.

Accordingly, the implementation pathways discussed in this chapter should be read as delivery patterns under different embedding conditions rather than as performance rankings.

3.1 Delivery Pathways and Deviation

Across 16 implementing case studies, MERLIN delivered 42 measures: 9,524 hectares restored, 121 km of river length improved, and 11 transversal barriers removed. Restored area and river length exceeded initial plans (Wenskus et al., 2026).

Yet implementation rarely followed a linear plan-to-target sequence. Of 43 planned measures, 24 reached their original targets, 18 deviated, and one was not implemented.

The observed deviation pattern does not indicate implementation instability. Rather, it shows that delivery outcomes are systematically shaped by the number and interdependence of permits, land agreements, coordination steps, and external interfaces required to realise a measure, rather than by shortcomings in initial design.

Across cases, four delivery pathways emerged:

- **Linear delivery** – targets reached once dependencies were resolved.
- **Adaptive reconfiguration** – redesign or relocation while preserving functional intent.
- **Partial delivery** – progress made, but closure extended beyond the project window.
- **Deferred or blocked delivery** – feasibility constraints remained binding within the funding period.

Deviation appeared in three main forms: phasing, scope change, and substitution. Phasing extended completion beyond the project window. Scope change adjusted the magnitude of intervention, sometimes exceeding initial targets. Substitution replaced the original design with an alternative that preserved functional intent. Across cases, deviation functioned less as plan failure than as a mechanism of feasibility management within constrained institutional and temporal settings.

The key distinction lies not in whether deviation occurred, but in why.

Comparative analysis reveals two distinct implementation logics: measures unfolding as staged phases within longer programme sequences, and measures executed as discrete interventions dependent on specific permits and coordination steps:

- Area-based, programme-oriented interventions (e.g. wetland or floodplain restoration) unfold across multi-year sequences. A single project represents one phase within a longer trajectory. Here, partial delivery often reflects structured staging rather than shortfall.
- Technically discrete, dependency-sensitive measures (e.g. barrier removal) hinge on permits, land access, and infrastructure interfaces. These external dependencies can delay or constrain implementation within a bounded funding window.

Structural setting does not determine whether deviation occurs, but whether it can be institutionally absorbed and reintegrated into the longer trajectory. In programme-based settings with stable ownership and funding continuity, staging and redesign remain embedded within a continuing trajectory. In project-shaped settings with limited continuity, the same delay or redesign can interrupt momentum if follow-up is not secured.

Empirically, small stream interventions, which are typically dependency-sensitive, showed the highest deviation rates (nearly 60%), consistent with their higher transaction intensity.

The comparative evidence therefore shifts the focus from strict plan adherence to the conditions under which adaptation can continue. Deviation is not exceptional; it follows identifiable patterns. What differentiates trajectories is whether institutional mandates and funding continuity allow delays and redesigns to be integrated into ongoing restoration efforts, rather than limiting their effects to a single project phase.

3.2 Constraint Regimes and Adaptation

Constraint Regimes: The Core Work of Feasibility

Across cases, implementation instability was rarely driven by ecological uncertainty or design shortcomings. Instead, delays and redesign were primarily linked to permitting procedures, land access negotiations, procurement processes, and coordination across institutional interfaces.

Most measures encountered multiple interacting constraints. Securing approvals, aligning actors, managing interfaces, and sequencing activities proved central to progress. The data suggest that variation in delivery outcomes is explained less by technical design complexity than by the number and interdependence of administrative and coordination steps required for execution.

Across cases, adaptation followed a recurring repertoire:

- timing and sequencing adjustments,
- intensified stakeholder engagement,
- additional planning and follow-up work,
- redesign or substitution where necessary.

The recurrence of similar adjustment strategies across heterogeneous cases indicates that adaptation followed recognisable patterns rather than isolated improvisation.

Structural Absorption of Constraints

While the types of constraints encountered were broadly similar across settings, their trajectory consequences differed systematically. The critical variation lies not in exposure to constraints, but in whether institutional mandates and funding continuity allow delay and redesign to be integrated into ongoing cycles.

- In programme-based settings, where restoration is embedded in ongoing mandates and funding cycles, phasing and redesign can be integrated into longer trajectories. A delayed measure may represent structured staging rather than interruption.
- In intermediate settings, institutional capacity allows for redesign and substitution, but continuity depends on maintaining flexibility and clear documentation.
- In project-shaped settings with limited continuity, similar constraints can halt momentum if follow-up is not secured. Here, feasibility handover and continuity planning become critical outputs in their own right.

Constraints are common across all cases. What differs is not their presence, but whether existing mandates and funding structures allow delays and redesign to be integrated into ongoing restoration efforts. Where continuity is weak, similar constraints can interrupt progress rather than postpone it.

Assessing Success Across Time Horizons

Delivery is a point-in-time observation. Restoration is a multi-decade process. Whether a project strengthens that process depends not only on what it delivers, but on what continues afterwards. The cases demonstrate that identical short-term delivery outcomes can have divergent long-term implications depending on whether feasibility and learning are institutionally anchored beyond the grant period.

- *Short term* – ***Delivery credibility***.
  Measures were implemented and outputs are demonstrable. Where plans changed, reasons are documented and defensible.
- *Medium term* – ***Feasibility continuity.***
  Permissions, ownership, and sequencing for next phases are secured. The conditions for continuation are in place beyond the grant period.
- *Long term* – ***Learning continuity.***
  Monitoring responsibilities remain anchored. Evidence continues to accumulate, allowing future evaluation and adaptive management.

These horizons together determine whether a project strengthens a restoration trajectory. Identical delivery outcomes can imply different levels of long-term advancement depending on structural setting. In project-

shaped contexts, feasibility and learning continuity are more fragile. In programme-based contexts, project outputs are more readily integrated into ongoing cycles.

Project outputs strengthen restoration trajectories only where mechanisms for continuation (legal, financial, and organisational) extend beyond the funding window.

3.3 Monitoring Signals and Learning Continuity

Monitoring during the project horizon provides early directional signals. It indicates whether systems respond, but not whether effects persist. Restoration outcomes unfold over longer timeframes than the project window allows.

Across cases, monitoring coverage was broad and early responses were predominantly positive. These results provide encouraging short-horizon steering. They do, however, not demonstrate stable functional restoration.

What matters for trajectory development is monitoring continuation beyond the project. Here, a structural pattern emerges: Continuation is strongest where mandates and resourcing are recurrent. It is conditional where institutional capacity exists, but budgets and ownership must be secured. It is most fragile where monitoring remains project-bound.

Discontinuation is rarely driven by technical infeasibility. Reported reasons point primarily to resource constraints and institutional misalignment. In some cases, elements of the systemic monitoring framework were selectively integrated into routine governance rather than continued in full.

Monitoring therefore follows the same structural logic as delivery: Early signals become cumulative evidence only where stewardship persists. Without continuation, they remain isolated observations.

3.4 Case Reflections and Learning

Sections 3.1–3.3 examined implementation and monitoring. This section turns to how case study partners interpreted MERLIN's contribution within their restoration trajectories. The synthesis draws on structured self-assessments reported consistently across cases (see Annex 4).

Overall Perceived Contribution

Across settings, partners consistently highlighted relational and operational contributions — particularly strengthened stakeholder relationships, enhanced organisational competence, tangible ecological outputs, and increased visibility of restoration efforts. Such effects are commonly associated with collaborative restoration initiatives that combine implementation with learning and coordination activities. The more distinctive finding lies in how differently their reach was perceived across structural settings.

Across cases, MERLIN was rarely perceived as altering institutional mandates or funding structures. As a time-bound project, its perceived effects were primarily relational, organisational, and operational rather than structural.

The types of contribution were similar across settings. What differed was how far these effects were perceived to extend within the trajectory:

- In project-shaped settings, MERLIN was primarily experienced as stabilising delivery in contexts where continuity was otherwise uncertain. Reported effects remained largely confined to operational practice rather than influencing longer-term funding or strategic orientation.
- In strategically capable settings, reported contributions extended beyond operational delivery. Partners linked implementation gains to adjustments in organisational practice, knowledge diffusion, and positioning within broader strategic agendas.
- In programme-based settings, MERLIN's contribution was described as reinforcing existing programmes rather than redirecting them. Effects were integrated into established structures but rarely altered strategic direction or funding frameworks.

Perceived Influence Across Functional Domains

Partners assessed MERLIN's influence across internal capacity, funding leverage, visibility, stakeholder engagement, methods and tools, and strategic direction (Figure 3).

A clear pattern appears across settings: Strategically capable settings reported the highest overall perceived influence across most domains. Programme-based settings showed strong reinforcement of existing capacities but limited perceived impact on strategic direction. Project-shaped settings reported influence primarily in operational domains such as methods, tools, and stakeholder engagement, with more constrained effects on strategic positioning.

Taken together, these perception patterns mirror the structural distinctions identified earlier. Partners across settings describe similar types of contribution, but they differ in how far these effects are perceived to extend beyond immediate implementation. The self-assessments reinforce the earlier finding that the influence of a time-bound project is conditioned by the institutional and financial context in which it operates. Similar activities are experienced as stabilising, extending, or reinforcing depending on the degree of structural embedding.

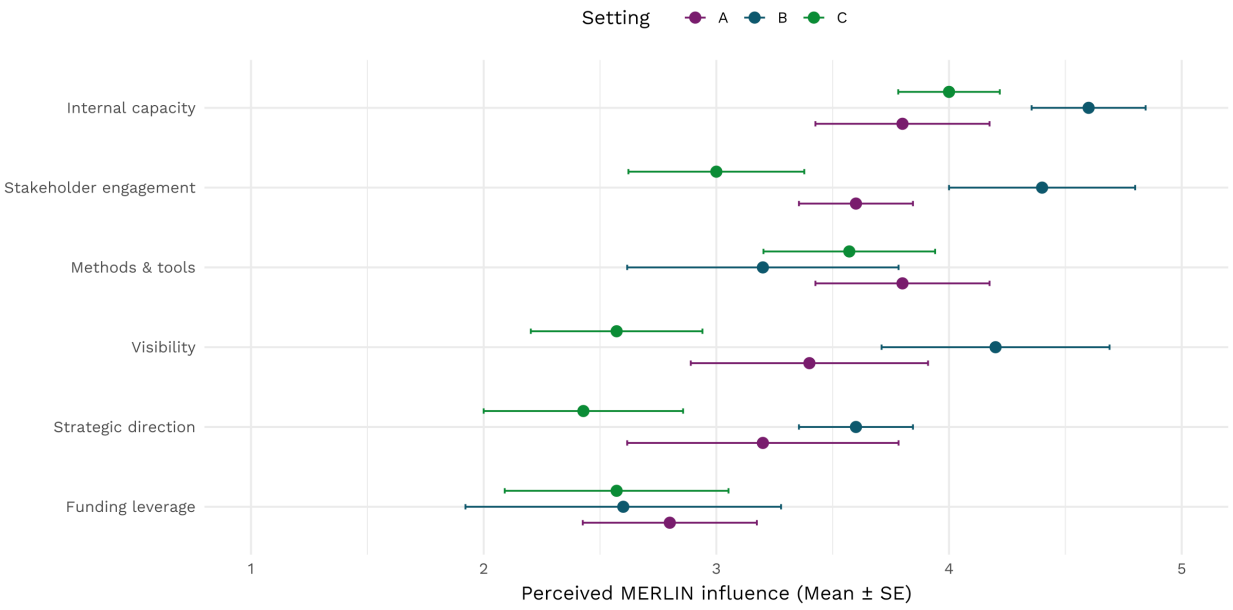

Figure 3: Perceived influence of MERLIN across functional domains and structural settings. Mean scores (± SE = standard error) reported by case study partners for the six domains of influence, disaggregated by structural setting (A: project-shaped, weakly embedded; B: strategically capable, partially embedded; C: programme-based, highly embedded); (1 = not at all, 5 = very much).

4 From MERLIN to Transferable Restoration Governance Insights

The trajectory analysis in Chapters 2 and 3 showed that differences in cumulative and scalable restoration are closely linked to the consolidation of structural settings. Ambition is widely present across settings. What varies more systematically is the stability of resource management, the continuity of evidence-informed practice, and the institutional anchoring of stakeholder engagement — three out of the five core building blocks for upscaling restoration (Birk et al., 2026).

Chapter 4 translates these structural insights into governance implications. It examines how time-bound projects can strengthen (or fail to strengthen) these foundations within different structural settings.

4.1 Structural Contingencies of Project Impact

Projects are the dominant instrument for implementing restoration measures, yet their long-term contribution varies substantially. The comparative evidence shows that identical delivery outputs can either consolidate a restoration trajectory or remain confined to the project period. Whether a project strengthens a longer trajectory or remains a stand-alone intervention depends on what happens beyond the funding window: Is there clear ownership? Is follow-up secured? Does monitoring continue?

Across MERLIN, projects were more likely to support longer-term progress when delivery was accompanied by clear follow-up arrangements. Where responsibilities for subsequent phases were clarified, key dependencies addressed, and monitoring secured beyond the grant period, project outputs were more likely to translate into sustained progress rather than remain confined to the funding window.

Where follow-up responsibilities were unclear, monitoring ended with the grant, or adaptations were insufficiently documented, project outputs were less likely to translate into sustained progress and instead remained tied to the funding period.

These differences are not random. They reflect the structural setting in which projects operate.

In project-shaped settings, where funding and ownership are not institutionally secured, continuation depends heavily on explicit handover planning and early clarification of dependencies.

In partially embedded settings, institutional capacity allows redesign and forward planning to be integrated into organisational routines, increasing the likelihood that project gains extend beyond the funding period.

In programme-based settings, projects tend to reinforce and extend existing programmes, as ownership, sequencing, and monitoring responsibilities are already institutionally anchored.

In short, projects contribute to cumulative restoration when they institutionalise continuation mechanisms (legal, organisational, and financial) rather than delivering outputs alone.

4.2 Functional Roles of Projects Within Trajectories

Structural conditions shape whether projects can contribute cumulatively. Within those conditions, projects perform different functional roles. Analysis of implementation experiences, monitoring and learning activities, and structured case self-assessments reveals four recurring roles that MERLIN projects assumed within restoration trajectories.

Catalyst.
In several cases, projects initiated implementation where long-standing ambitions had not yet translated into action. By clarifying responsibilities, addressing initial feasibility barriers, or demonstrating practical viability, they moved restoration from intention to execution.

Amplifier.
Where restoration was already underway, projects expanded spatial scope, increased implementation intensity, or strengthened visibility within existing programmes. In these contexts, projects reinforced and accelerated ongoing efforts rather than redirecting them.

Capacity Builder.
Projects frequently strengthened organisational routines, technical competence, coordination practices, and structured learning processes. This included improving documentation, refining adaptive procedures, and embedding practical knowledge that extended beyond the funding period.

Legitimiser.
In contested or politically sensitive contexts, visible implementation and stakeholder engagement contributed

to stabilising acceptance. Demonstrable freshwater ecosystem recovery and transparent processes helped reduce opposition and increase trust in restoration efforts.

These roles often overlapped within individual cases. However, their relative prominence varied systematically across structural settings.

- In weakly embedded, project-shaped settings, catalytic, capacity-building, and legitimising roles were most prominent. Delivery needed to be combined with trust-building and explicit continuity planning to prevent restoration from remaining episodic.
- In partially embedded settings, projects most frequently combined capacity-building and amplifying functions. Tangible implementation was linked to organisational adjustment and clearer forward planning.
- In highly embedded, programme-based settings, projects primarily acted as amplifiers, reinforcing and extending established programmes where ownership, sequencing, and monitoring responsibilities were already institutionally anchored.

Project impact is therefore better understood in terms of the functional role performed within a given structural setting than by strict adherence to initial plans. Identical project activities can initiate action, reinforce momentum, strengthen organisational routines, or stabilise legitimacy depending on the institutional and financial context in which they operate.

The following section translates these roles into practical design mechanisms that help convert project outputs into cumulative restoration progress.

4.3 Transferable Lighthouse Mechanisms

The previous sections examined how projects functioned within different structural settings and how implementation and monitoring unfolded in practice. Building on that comparative analysis, this section formulates four lighthouse mechanisms that appear to support cumulative rather than episodic restoration.

These mechanisms are not statistically derived causal findings. Rather, they represent an analytically grounded synthesis of recurring challenges, responses, and continuation conditions observed across cases, combined with expert judgement on what seemed to matter for trajectory continuity. They describe design features that, in the MERLIN experience, were associated with greater likelihood of sustained progress beyond the funding window.

1. Early Clarification of Permitting and Access Dependencies
Across cases, implementation often depended on permits, land access agreements, and coordination with external actors. Where these dependencies were clarified early (including mapping required approvals, assigning responsibilities, and identifying decision checkpoints) projects appeared better positioned to avoid unplanned delay and risk of partial delivery.

Where such clarification occurred late or remained incomplete, measures were more frequently phased, re-scoped, or deferred. Especially in structurally fragile settings, early dependency clarification seemed to influence whether implementation could proceed within the project horizon at all.

2. Structured Substitution Under Changing Conditions
Redesign was common when permits were delayed, costs shifted, or stakeholder conditions changed. In cases where the functional intent of a measure was clearly articulated and alternatives were transparently documented, redesign tended to preserve trajectory coherence despite technical modification.

By contrast, where substitution occurred without explicit documentation of purpose or shared understanding among actors, redesign more easily generated confusion, contestation, or renewed delay. The MERLIN experience suggests that maintaining clarity of functional objective, even when technical form changes, could support continuity.

3. Explicit Staging of Multi-Phase Delivery
In many settings, restoration unfolded in phases extending beyond a single project period. Where phase boundaries were explicitly defined, post-project responsibilities clarified, and subsequent steps documented, staged delivery appeared more likely to translate into continued implementation.

Where staging remained implicit, partial delivery risked being interpreted as stagnation. Even when long-term ambition remained intact, lack of clarity regarding next steps increased the likelihood of interruption. Explicit staging thus functioned as a continuity device rather than merely a reporting structure.

4. Anchored Monitoring Custody
Monitoring during the project period provided early indications of system response. However, only in cases

where monitoring responsibilities were anchored beyond the grant did these signals appear capable of accumulating into longer-term evidence.

In cases where monitoring will continue, three elements were typically present: a clearly defined core indicator set, a named post-project owner, and minimal resourcing for continuation. Where monitoring remained project-bound, data collection often ceased at project closure, limiting learning continuity despite positive short-term signals.

Cross-Cutting Enabling Conditions

Across structurally diverse settings, cumulative impact appeared more likely where four enabling conditions were present: active stakeholder engagement, transparent documentation of adaptations, explicit continuation planning, and clearly assigned post-project ownership.

These conditions do not guarantee continuity. However, their absence was frequently associated with greater risk that project outputs would remain confined to the funding period. They functioned as stabilising elements that allowed the four mechanisms above to operate effectively.

The structural features described here also correspond to governance criteria increasingly relevant in blended or follow-on financing contexts, where clarity of responsibility, documented risk management, measurable indicators, and defined post-grant ownership are assessed alongside ecological ambition. While the MERLIN analysis does not establish causal links to financing outcomes, it suggests that projects incorporating continuity-oriented design features may be structurally better positioned for both ecological accumulation and funding credibility.

Across MERLIN, cumulative impact did not depend primarily on strict adherence to initial plans. Instead, sustained progress appeared more closely associated with mechanisms that reduced feasibility bottlenecks and clarified institutional continuity beyond the funding window. The four lighthouse mechanisms summarise this synthesis-informed perspective.

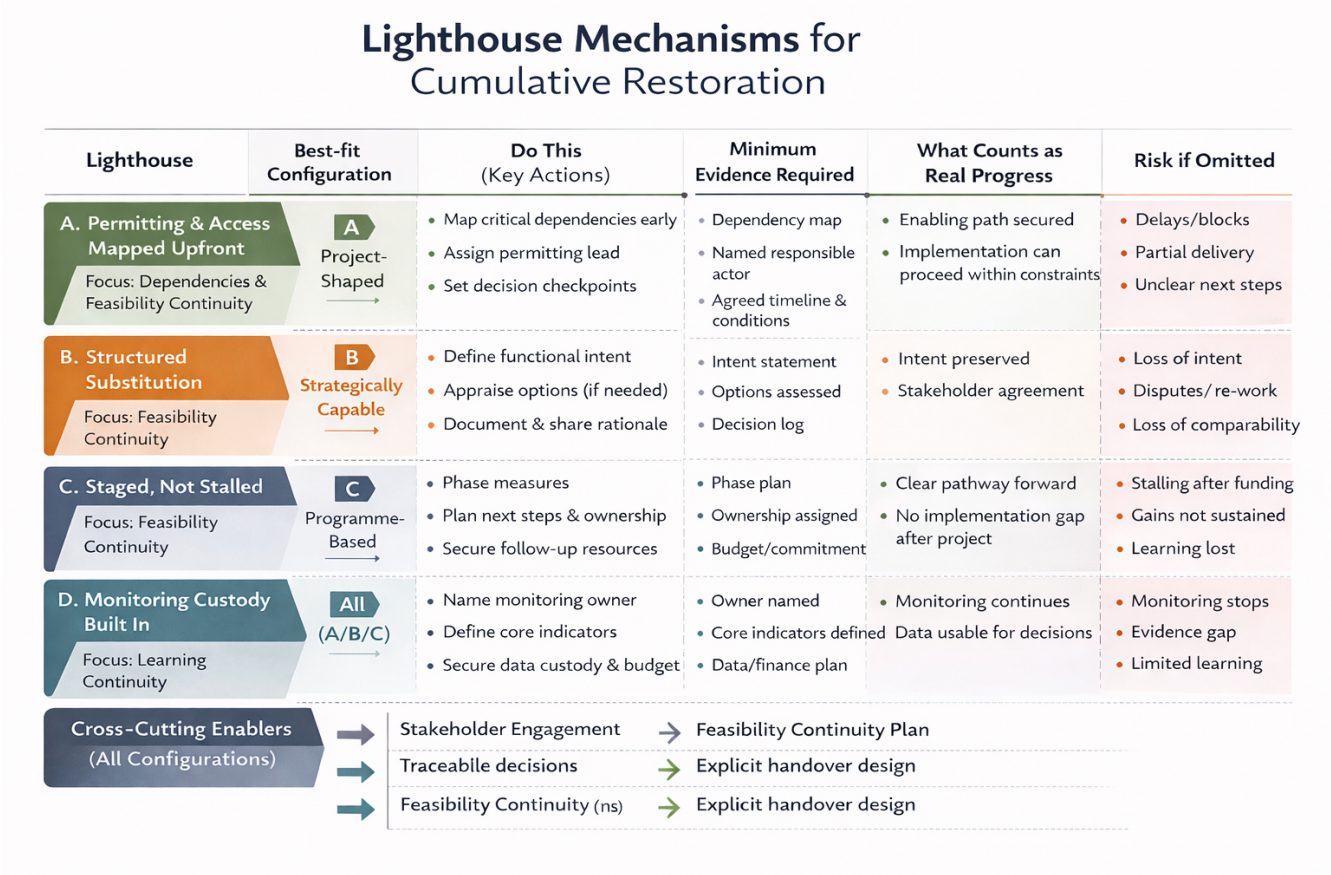

Figure 4: Transferable lighthouse mechanisms for cumulative restoration progress. The figure summarises four recurring design mechanisms observed across MERLIN, each aligned with typical structural settings (A–C). For each mechanism, the table specifies key actions, the minimum evidence required to maintain credibility, what counts as real progress, and the risks if the mechanism

is omitted. Together, these mechanisms illustrate how project outputs can be translated into cumulative trajectory progress rather than remaining isolated interventions.

4.4 Implications for NRR Implementation: Delivery Across Structural Settings

The Nature Restoration Regulation (NRR) establishes binding restoration targets and requires Member States to prepare National Restoration Plans (NRPs) specifying measures, timelines, and monitoring arrangements. In practice, implementation will occur within diverse national and regional governance contexts.

This deliverable identified a spectrum of structural settings — ranging from project-based contexts with fragile continuity to programme-based contexts with stable institutional ownership. While derived from MERLIN cases and not intended as a representative sample of all Member States, this range illustrates the types of structural variation likely to shape NRP implementation across Europe.

The governance challenge is therefore not only to define long-term milestones for 2030, 2040, and 2050, but to ensure that project-based delivery contributes to coherent restoration pathways rather than remaining episodic.

In many Member States, NRP measures will be implemented through time-bound projects and funding programmes. The relevant question is whether successive projects accumulate into steady progress or whether implementation remains concentrated within individual funding cycles.

The MERLIN experience points to three governance considerations that may be relevant for aligning long-term NRR targets with project-based delivery.

First, continuity requires deliberate design.
Delivering measures within a reporting period is only one dimension of progress. MERLIN cases indicate that where projects clarified follow-up responsibilities, defined next steps, and secured monitoring continuation, restoration was more likely to extend beyond the funding window. Where such arrangements were absent, progress tended to remain closely tied to the project period.

Second, implementation is likely to involve structured adaptation.
Staging, scope adjustments, and substitution were frequent responses to permitting constraints, land access negotiations, changing environmental conditions, and other feasibility conditions. Under the NRR, similar adjustments are likely to occur. The MERLIN cases suggest that when such changes are transparently documented and remain consistent with the broader restoration intent, they can represent responsible trajectory management rather than implementation failure. Plans provide orientation; sustained implementation in complex socio-ecological systems requires adaptive flexibility.

Third, structural settings matter for scaling.
The same delivery outcome may imply different levels of long-term security depending on whether stable ownership and recurrent funding are in place. In programme-based settings, partial completion may represent structured phasing within a longer plan. In strongly project-based settings, comparable outcomes may carry higher risk if continuation mechanisms are not secured.

This distinction is particularly relevant given that the NRR implies progressive upscaling over time. Scaling does not depend on ambition alone; it appears closely linked to institutional capacity and financial continuity that allow successive measures to build on one another.

In structurally project-based contexts, the risk of episodic implementation may therefore be higher due to thinner continuity infrastructure. This does not imply weaker ambition. It reflects greater dependence on external funding cycles. In such contexts, NRR implementation may benefit from reinforcement measures — including capacity strengthening, longer funding horizons, and continuity-oriented monitoring support — to reduce discontinuity risks.

Taken together, the MERLIN experience indicates that ambitious target-setting alone does not guarantee cumulative restoration. The effectiveness of the NRR is likely to depend on how continuity across project cycles is organised and supported within structurally diverse settings. Where resource continuity, sustained monitoring, stakeholder alignment, and clear long-term direction are progressively strengthened, projects are more likely to function as sequential steps within longer restoration trajectories rather than as isolated interventions.

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Annex 1: Structural settings of freshwater ecosystem restoration trajectories in Europe

Restoration as Trajectory Rather Than Project

Restoration initiatives across Europe are typically organised through discrete projects, yet the ecological and societal transformations they pursue unfold over decades. Individual projects rarely constitute endpoints. Rather, they act as episodic interventions embedded within longer restoration trajectories that extend beyond funding cycles and political mandates.

Understanding restoration therefore requires attention not only to project-level design and performance, but also to the structural environments within which trajectories unfold. Financial continuity, institutional embedding, and broader socio-economic context shape the extent to which restoration efforts can be sustained, expanded, and integrated over time. These structural settings condition the stability and scalability of trajectories, irrespective of the technical quality or ambition of individual projects.

From Diversity to Structural Settings

This raises a broader analytical question: can the diversity of freshwater ecosystem restoration efforts in Europe be understood as recurring structural settings that condition trajectory dynamics? If so, identifying such settings may help explain patterned differences in implementation continuity, upscaling potential, and long-term embedding across contexts.

Addressing this question comprehensively would require a representative dataset covering restoration initiatives across Europe. Here, we provide an exploratory typology based on structured contextual information from 18 freshwater ecosystem restoration cases distributed across diverse biophysical and socio-economic settings. While not statistically representative, this sample captures substantial variation in governance arrangements, financial continuity, and cumulative investment patterns.

Analytical Dimensions: Financial Continuity and Institutional Capacity

Drawing on structured contextual information from the 18 case studies, we identify three recurring structural settings of freshwater ecosystem restoration. These settings are defined by the joint level of financial continuity and institutional capacity, and represent stylised context envelopes within which restoration trajectories unfold. They are analytical constructs rather than normative categories, and do not describe ambition, project quality, or ecological success.

These settings are positioned within a two-dimensional analytical space defined by financial continuity and institutional capacity (Figure A1).

Financial continuity refers to the degree to which restoration funding is recurrent, structurally embedded, and decoupled from individual project cycles. It captures whether restoration is sustained through stable budget lines and long-term programmes, or relies predominantly on episodic, competitive project-based financing.

Institutional capacity refers to the structural ability to organise, coordinate, and sustain restoration over time. It encompasses stable mandates, administrative competence, coordination mechanisms, and governance arrangements that enable implementation beyond isolated interventions. Institutional capacity is not a normative assessment of governance quality, but a structural description of the conditions under which restoration can be planned and maintained.

Together, these two dimensions define a continuous analytical space within which restoration trajectories unfold. The three settings represent recurring regions within this space, characterised by distinct combinations of financial continuity and institutional capacity. They should be understood as structural context envelopes that condition trajectory dynamics. Cases may approximate these settings to varying degrees, but do not transition mechanically between them.

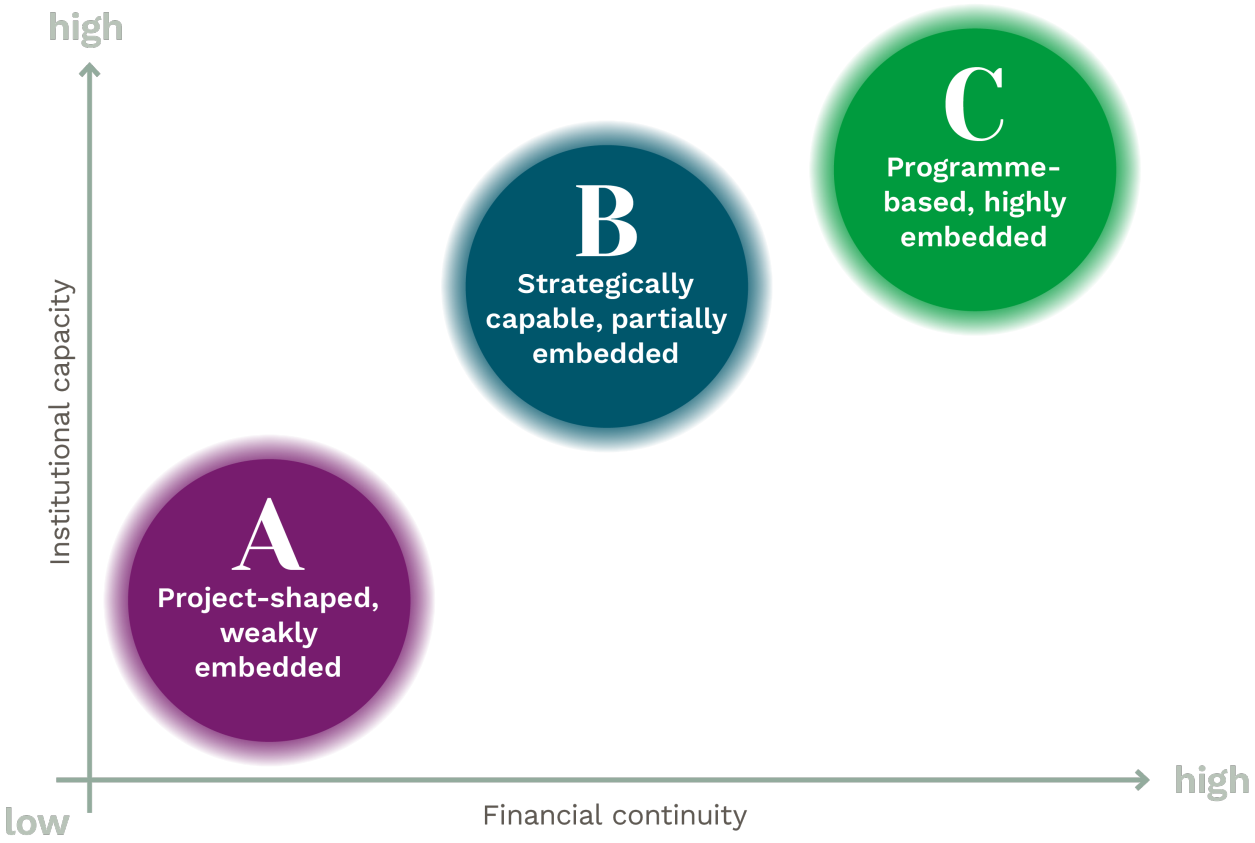

Figure A1: Structural settings of freshwater ecosystem restoration implementation contexts in Europe.
Settings represent recurring structural settings defined by the joint level of financial continuity and institutional capacity. Both dimensions describe enabling conditions for sustained and scalable restoration, rather than project performance, ambition, or ecological success. The degree of embedding (weak, partial, high) reflects the extent to which restoration is institutionally and financially anchored beyond individual project cycles. Shaded regions indicate stylised structural contexts rather than discrete empirical classes.

The following sections elaborate each setting in terms of its defining structural characteristics and the trajectory dynamics it conditions.

Setting A: Project-shaped, weakly embedded contexts

This setting combines low financial continuity with limited institutional capacity. Restoration is predominantly organised through discrete, externally funded projects, with weak institutional and financial embedding in stable mandates, long-term programmes, or recurrent budget structures.

Core structural characteristics

Funding is episodic and competitive, typically secured through time-limited grants. Financial resources are tied to individual project cycles rather than integrated into sustained public investment frameworks. Institutional responsibilities for restoration are fragmented, informal, or weakly consolidated. Public authorities may support or enable restoration but rarely act as long-term stewards with secure mandates and dedicated budgets.

Administrative capacity, coordination mechanisms, and access to complementary funding streams are often limited. As a result, restoration depends on the initiative of specific actors and the availability of external project funding rather than on structurally guaranteed continuity.

Conditioned trajectory dynamics

Restoration trajectories in this setting are opportunity-driven and site-focused. Individual projects can deliver tangible ecological improvements and generate valuable local learning. However, continuation beyond the

funded period is uncertain. Expansion depends on securing new project resources, often through repeated competitive applications.

Learning, monitoring, and stakeholder relationships may be strong within a project cycle but are not automatically retained across successive initiatives. Trajectory progression therefore tends to be discontinuous rather than cumulative, shaped by funding windows rather than long-term sequencing strategies.

Implications for scaling

Scaling does not occur through programme expansion but through the aggregation of successive projects. Progress depends on the ability to bridge funding gaps, maintain institutional memory, and coordinate otherwise independent initiatives across time and space.

In the absence of such bridging mechanisms, restoration remains fragmented. Where knowledge retention and actor networks persist across project cycles, however, opportunity-driven interventions can accumulate into substantial long-term impact despite low structural embedding.

Illustration from MERLIN cases

Several MERLIN case studies exemplify this setting (Table A1). These cases demonstrate how externally funded projects can initiate restoration action under constrained structural conditions, while also revealing the limits to continuity and scaling in the absence of stronger institutional and financial embedding.

Policy relevance

Project-shaped, low-embedded contexts are likely to be widespread across Europe. They should therefore not be interpreted as transitional or deficient, but as structurally characteristic of European restoration practice.

The policy challenge is not to replace project-based delivery with fully consolidated programmes in all contexts. Rather, it is to design mechanisms that enhance continuity, cumulative learning, and financial bridging across successive projects. Strengthening these connective structures is central to enabling long-term trajectory development where embedding remains limited.

Table A1: MERLIN case studies illustrating Setting A

CS_ID	Name	Governance[1]	Cumulative investment[2]	MERLIN share[3]	GDP context[4]
CS06	Hutovo Blato peatland rewetting BiH	Non-state	<€2M	>50%	low
CS07b	Danube sidearm reconnect HU	Non-state	<€2M	NA	low
CS08	Danube floodplain reconnect RO	Non-state	<€2M	25-50%	low
CS09	Tisza floodplain rewetting HU	Non-state	<€2M	>50%	low
CS12	Lima floodplain forest rehab PT	Local	<€2M	10-25%	low-medium
CS18	Ervidel river restoration PT	Regional	<€2M	5-10%	low-medium

[1]Actor category primarily shaping restoration decisions and coordination; [2]Total restoration funding committed over full implementation period (reference year: 2025); [3]Proportion of total restoration funding provided by MERLIN; [4]National/regional GDP per capita as proxy for institutional capacity; NA=not available.

Setting B: Strategically capable, partially embedded contexts

This setting combines moderate to high institutional capacity with incomplete financial continuity. Restoration is supported by established governance structures and strategic orientation, but funding remains partially project-dependent and insufficiently anchored in recurrent financial frameworks.

Core structural characteristics

Institutional responsibilities are clearly articulated and supported by administrative competence and coordination mechanisms. Restoration ambitions are embedded in planning documents, long-term visions, or sectoral strategies. Actor networks are mature, and governance arrangements allow for strategic prioritisation and cross-sectoral alignment.

However, financial continuity is fragmented. Funding is often secured for specific components, pilot sites, or demonstration measures, while broader roll-out, maintenance, and long-term scaling lack recurrent budget commitments. Implementation therefore depends on successive funding cycles, blended financing arrangements, or continued fundraising efforts.

The structural constraint does not lie in governance capability or legitimacy, but in the absence of fully consolidated financial embedding.

Conditioned trajectory dynamics

Restoration trajectories in this setting are strategically coherent but financially discontinuous. Projects are typically well designed and aligned with broader ambitions. Learning processes, monitoring systems, and stakeholder engagement structures are often robust.

Yet expansion beyond implemented sites remains contingent on securing additional resources. Implementation proceeds in phases rather than as a continuous programme. Trajectories advance incrementally, but realised outcomes systematically remain below what institutional capacity alone would permit.

This creates a persistent gap between strategic ambition and operational scale.

Implications for scaling

Scaling in this setting is structurally possible but financially conditional. Many prerequisites for scaling (governance stability, coordination capacity, stakeholder legitimacy) are already in place. What constrains further expansion is not institutional weakness, but insufficient financial consolidation.

Changes in funding architecture, such as recurrent budget lines, integrated financing mechanisms, or binding policy commitments, would alter the structural conditions under which restoration operates in these contexts. Absent such shifts, restoration remains financially conditional despite strong institutional capacity.

Illustration from MERLIN cases

Several MERLIN case studies illustrate this setting (Table A2). These cases demonstrate that strong governance capacity and strategic clarity do not automatically translate into large-scale implementation when financial embedding remains partial.

Policy relevance

Strategically capable, partially embedded contexts are of high leverage under European restoration policy. They represent environments where institutional readiness and policy ambition are aligned, but financial architecture lags behind governance capacity.

Targeted interventions that convert strategic capability into durable financial continuity are likely to produce disproportionate scaling effects. Strengthening financial embedding in these contexts may therefore offer the most efficient pathway toward large-scale restoration under the Nature Restoration Regulation.

Table A2: MERLIN case studies illustrating Setting B

CS_ID	Name	Governance[1]	Cumulative investment[2]	MERLIN share[3]	GDP context[4]
CS02	Deba barrier removal ES	Regional	<€2M	>50%	medium-high
CS03	Beaver river engineering SE	National	<€2M	25-50%	high
CS14	Komppasuo peatland rewetting FI	National	<€2M	25-50%	high
CS13	Sorraia river restoration PT	Non-state	€2-10M	5-10%	low-medium
CS17	Forth basin restoration UK	Non-state/National	<€2M	25-50%	medium-high

[1]Actor category primarily shaping restoration decisions and coordination; [2]Total restoration funding committed over full implementation period (reference year: 2025); [3]Proportion of total restoration funding provided by MERLIN; [4]National/regional GDP per capita as proxy for institutional capacity.

Setting C: Programme-based, highly embedded contexts

This setting combines high institutional capacity with high financial continuity. Restoration is institutionally and financially embedded in stable mandates, recurrent budget structures, and long-term programme frameworks. Implementation is not dependent on individual project cycles but proceeds within consolidated governance and financing arrangements.

Core structural characteristics

Institutional responsibilities for restoration are clearly assigned and supported by administrative competence, coordination mechanisms, and cross-sectoral integration. Restoration objectives are formally anchored in policy frameworks, statutory instruments, or binding planning documents.

Financial continuity is structurally secured. Restoration is supported by recurrent public budgets, long-term funding programmes, or legally mandated investment schemes. Project-based funding, where present, plays a supplementary or accelerating role rather than serving as the primary delivery mechanism.

Governance and financing structures are aligned, allowing restoration to operate as a routine and sustained public function.

Conditioned trajectory dynamics

Restoration trajectories in this setting are continuous and programme-based. Measures can be strategically sequenced, expanded territorially, and maintained over time without interruption driven by funding uncertainty. Monitoring, learning, and adaptive management are institutionally retained rather than project-bound.

Trajectory progression is therefore cumulative rather than episodic. The scale and pace of implementation are shaped primarily by strategic prioritisation and political choice, not by structural constraints in governance or finance.

Implications for scaling

Scaling in this setting is structurally enabled rather than conditional. Expansion can occur through territorial extension, programme optimisation, or strategic acceleration, without requiring fundamental changes to institutional mandates or funding architecture.

The primary challenges lie in prioritisation, efficiency, and long-term political commitment, rather than in securing structural continuity. Highly embedded contexts therefore represent environments where restoration can be delivered as an integrated and durable component of public policy.

Illustration from MERLIN cases

A number of MERLIN case studies approximate this setting (Table A3). These cases demonstrate how strong institutional anchoring and consolidated financial continuity allow restoration to proceed beyond project logic and operate at programme scale.

Policy relevance

Programme-based, highly embedded contexts illustrate the structural conditions under which large-scale and durable restoration becomes routine rather than exceptional. They provide reference cases for how institutional mandates and recurrent financing can jointly sustain long-term ecological transformation.

At the same time, their limited prevalence across Europe underscores the structural challenge of scaling restoration more broadly. Variations in embedding, financially and institutionally, shape how restoration trajectories unfold across contexts.

Table A3: MERLIN case studies illustrating Setting C

CS_ID	Name	Governance[1]	Cumulative investment[2]	MERLIN share[3]	GDP context[4]
CS01	Kvorning wetland rewetting DK	National	>€100M	<5%	high
CS04	Room for the Rhine NL	National	>€100M	<5%	high
CS05	Kampinos wetland rewetting PL	National	>€100M	<5%	low-medium
CS07a	Danube floodplain restoration AT	National	€10-100M	<5%	high
CS10	Blue Belt Germany DE	National	€2-10M	NA	high
CS11	Emscher basin restoration DE	Regional	>€100M	<5%	medium-high
CS15	Tzipori basin restoration IL	Regional	€10-100M	<5%	high
CS16	Upper Scheldt restoration BE	Regional	€10-100M	<5%	medium-high

[1]Actor category primarily shaping restoration decisions and coordination; [2]Total restoration funding committed over full implementation period (reference year: 2025); [3]Proportion of total restoration funding provided by MERLIN; [4]National/regional GDP per capita as proxy for institutional capacity.

Annex 2: Operationalisation of Long-Term Ambition Dimensions

Purpose and Analytical Scope

This annex documents the operationalisation and coding of long-term ambition dimensions used in Section 2.4 of this deliverable. Ambition is treated as a structural dimension of restoration trajectories, analytically distinct from structural setting, perceived progress, and upscaling readiness. The purpose of this annex is to ensure transparency regarding data sources, coding logic, and classification thresholds.

The assessment describes articulated long-term orientation and does not evaluate feasibility, performance, or implementation success.

Data Sources

The ambition assessment draws on the following sources:

- Hershkovitz, Y., & Birk, S. (2026). MERLIN case study restoration measures implementation data (D2.5 Annex) [Dataset]. Zenodo. https://doi.org/10.5281/zenodo.18405265
- Pott, L., Hershkovitz, Y., & Birk, S. (2025). Mapping multiple benefits in large-scale freshwater restoration: A theory of change approach. Nature-Based Solutions, 8, 100240. https://doi.org/10.1016/j.nbsj.2025.100240
- Wenskus, F., Anzaldua, G., Buijse, T., Cooke, A.-K., Gerner, N., Grondard, N., Hering, D., Hershkovitz, Y., Ibrahim, A., Katz, A., Kok, S., Penning, E., Birk, S. (2026). Reporting on implementation results from MERLIN restoration case studies. EU H2020 MERLIN Deliverable D2.5.

Several of the ambition-related data stem from structured questionnaire responses collected from case study leaders as part of Deliverable D2.5. In particular, the following open-ended questions were used:

- What is the overall long-term vision or goal for your restoration case?
- What is the total size of the restoration being aimed for in the long term?
- What specific conditions or outcomes would lead you to conclude that your restoration mission has been successfully accomplished?

These qualitative responses were analysed and coded into structured ambition dimensions as described below.

Operationalisation of Ambition Dimensions

Four ambition dimensions were derived:

- Spatial Scope
- Temporal Horizon
- Degree of Goal Integration
- Degree of Formalisation

Spatial Scope

Definition: Spatial scope captures the intended territorial extent of the long-term restoration ambition.

Operationalisation: Coding was based on the reported long-term target area (in hectares or kilometres) and the qualitative description of spatial ambition in the vision statements.

Classification thresholds:

- Low: Localised or site-scale ambition (e.g., individual intervention sites or clearly bounded local areas; typically <100 ha or equivalent scale).
- Medium: Catchment-level or regional ambition extending beyond individual intervention sites but confined to sub-basin or defined regional boundaries.
- High: Basin-scale, national, or multi-regional ambition; or explicit target areas exceeding approximately 10,000 ha.

Where explicit area figures were provided, these were used directly. Where area figures were absent, classification relied on qualitative descriptions of spatial reach (e.g., “entire river basin”, “national programme”, “regional floodplain system”).

Temporal Horizon

Definition: Temporal horizon captures the intended timeframe for achieving the articulated long-term ambition.

Operationalisation: Coding was based on reported completion years or explicit long-term target dates in the vision statements.

Classification thresholds:

- Low: Target year ≤ 2035
- Medium: Target year 2036–2050
- High: Target year > 2050

If no explicit year was stated, temporal classification was inferred conservatively from contextual references (e.g., "mid-century", "2100 vision").

Degree of Goal Integration

Definition: Degree of goal integration captures the breadth of policy objectives addressed by the restoration trajectory.

Operationalisation: Goal integration was derived from the scoring of 13 EU Green Deal-related objectives. For each objective, cases were scored as:

- 3 = Primary goal
- 2 = Secondary goal
- 1 = Co-benefit

The sum of these scores was used to classify ambition breadth.

Classification thresholds

- Focused (14–18)
- Multi-objective (19–23)
- Highly integrated (24–28)

This dimension reflects the breadth of articulated objectives rather than the scale or feasibility of implementation.

Degree of Formalisation

Definition: Formalisation captures the degree of operational specificity with which long-term ambition is articulated.

Operationalisation: Coding was based on the presence of:

- Quantified spatial targets (ha/km),
- Explicit target years,
- Measurable success indicators,
- Formal anchoring in policy documents or statutory frameworks.

Classification thresholds

- Low: Narrative vision without quantified targets or measurable success criteria.
- Medium: Presence of quantified elements (e.g., area or time horizon) or partial specification of outcomes.
- High: Quantified targets combined with explicit, measurable success criteria and/or formal policy anchoring.

Formalisation reflects specification and operational clarity, not implementation progress.

Case-Level Classification Table

CS_ID	Spatial Scope	Temporal Horizon	Goal Integration	Formalisation
CS01	High	Low	Focused	High
CS02	High	Medium	Focused	Medium
CS03	High	Low	Focused	Low
CS04	High	High	Focused	Medium
CS05	High	Medium	Multi-objective	Medium
CS06	Medium	Medium	Focused	Low
CS07a	Medium	Medium	Focused	Medium
CS07b	Medium	Medium	Focused	Medium
CS08	High	Medium	Highly integrated	High
CS09	High	Low	Multi-objective	Medium
CS10	High	Medium	Focused	High
CS11	Medium	Medium	Highly integrated	Medium
CS12	Low	Low	Focused	Medium
CS13	Medium	Medium	Focused	Medium
CS14	Medium	High	Highly integrated	Medium

CS_ID	Spatial Scope	Temporal Horizon	Goal Integration	Formalisation
CS15	Medium	Low	Multi-objective	Medium
CS16	Medium	Medium	Multi-objective	Medium
CS17	High	High	Multi-objective	Medium
CS18	Low	Medium	NA	Low

Interpretation Boundaries

The ambition assessment describes articulated long-term orientation as expressed by case study leaders. It does not assess feasibility, likelihood of success, or actual implementation performance. Ambition is analysed as one dimension of restoration trajectories and is considered analytically distinct from structural embedding (financial continuity and institutional capacity), perceived progress, and upscaling readiness.

Annex 3: Operationalisation of Upscaling Readiness

Purpose and Analytical Scope

This annex documents the operationalisation and classification of upscaling readiness as applied in Section 2.6 of this deliverable. Upscaling readiness is treated as a trajectory dimension describing preparedness for structured expansion beyond current implementation. It is analytically distinct from long-term ambition, structural setting (financial continuity and institutional capacity), and perceived implementation progress.

Upscaling readiness reflects organisational preparedness to organise and sustain expansion. It does not measure achieved territorial scaling, ecological performance, or financial magnitude.

Conceptual Basis and Data Source

Upscaling readiness is derived from the self-assessment framework developed in Deliverable D2.4 (Ojanen et al., 2024). The framework builds on a structured scaling-up process model and was applied to all MERLIN case studies.

Case study leaders assessed their current status across eleven tasks considered essential for structured scaling. Each task was evaluated using a five-point scale:

- 5 = Ready
- 4 = Advanced or concrete ideas
- 3 = Initial thoughts
- 2 = Do not know how to do this
- 1 = Not relevant

The results of this structured self-assessment are documented in D2.4 and constitute the empirical basis for the classification presented here.

Task Structure

The eleven tasks are grouped into three functional steps reflecting the staged logic of scaling:

Step 1: Reviewing Existing Plans

- Task 1: Checking the what, why, how and where
- Task 2: Evaluating and increasing ambition
- Task 3: Detailing actions, ownership, and funding

Step 2: Strengthening Preconditions

- Task 4: Understanding stakeholder needs
- Task 5: Legitimising change
- Task 6: Building constituency
- Task 7: Identifying information gaps

Step 3: Implementing Scaling

- Task 8: Mobilising resources
- Task 9: Modifying and strengthening organisations
- Task 10: Coordinating action
- Task 11: Adapting strategy and maintaining momentum

Steps 1 and 2 primarily concern conceptual clarity and enabling conditions. Step 3 captures operational implementation capacity and adaptive management structures.

Aggregation and Classification Procedure

For each case study, arithmetic mean scores were calculated for each step:

- Mean_Step1 (Tasks 1–3)
- Mean_Step2 (Tasks 4–7)
- Mean_Step3 (Tasks 8–11)

Based on these step-wise averages, cases were classified using predefined threshold rules:

- Ready: Mean_Step1 ≥ 4 AND Mean_Step2 ≥ 3.5 AND Mean_Step3 ≥ 3
- Emerging: Mean_Step1 ≥ 3 AND Mean_Step2 > 3, but not fulfilling the criteria for “ready”.
- Not ready: All remaining cases.

Threshold differentiation reflects the staged and asymmetric nature of scaling processes. Step 1 (planning) and Step 2 (enabling conditions) concern conceptual clarity, strategic orientation, and the consolidation of foundational preconditions such as stakeholder alignment, legitimacy, and constituency-building. For a case to be classified as “ready”, these dimensions must demonstrate relatively high maturity, as unclear plans or weak enabling conditions would undermine structured expansion regardless of implementation capacity.

Step 3, by contrast, captures operational implementation tasks—mobilising financial and human resources, coordinating action across actors, strengthening organisations, and adapting strategies over time. These tasks are structurally demanding and often contingent on broader institutional embedding and financial continuity. Requiring Step 3 to meet the same threshold as Steps 1 and 2 would effectively equate readiness with full institutional consolidation. Instead, a threshold of ≥3 ensures that cases classified as “ready” have moved beyond initial consideration and demonstrate tangible advancement in operational scaling functions, while recognising that complete consolidation of implementation mechanisms is rarely achieved simultaneously across all dimensions.

Distribution Across Structural Settings

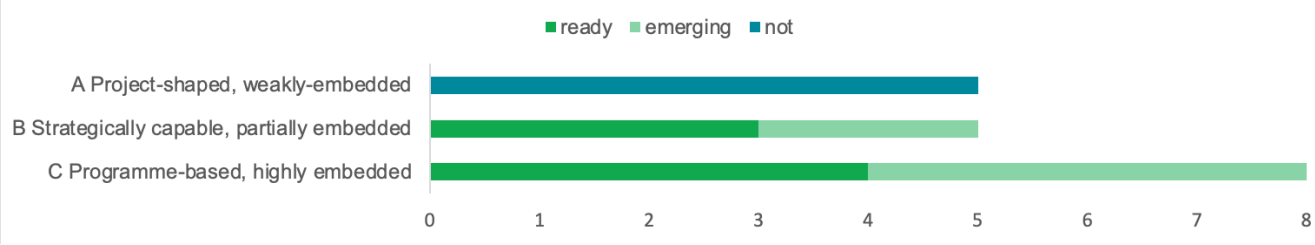

Figure A2. Upscaling readiness across structural settings. Number of cases per readiness class within each structural setting.

The figure summarises the distribution of upscaling readiness across project-shaped, strategically capable, and programme-based contexts. Project-shaped, weakly embedded contexts are exclusively classified as “not ready”. Both strategically capable, partially embedded contexts and programme-based, highly embedded contexts are distributed between “emerging” and “ready”, with no case classified as “not ready”.

Interpretation Boundaries

Upscaling readiness reflects self-assessed organisational preparedness to expand restoration beyond current implementation. It does not measure achieved scaling, ecological outcomes, or funding levels. As a self-assessment-based metric, it captures perceived readiness within a structured analytical framework rather than externally validated performance.

Annex 4: Case study reflections (four lenses structure)

Building on the trajectory perspective developed in Section 2, this section turns to case study reflections on MERLIN's contribution. Rather than introducing new structural dimensions, the focus here lies on how case study partners themselves assessed and interpreted MERLIN's role within their ongoing restoration trajectories.

The analysis draws on the harmonised questionnaire surveys completed by case study partners (Hershkovitz & Birk, 2026; documented in Wenskus et al., 2026). These self-assessments provide structured yet reflective insights into how MERLIN was experienced at the case study level. While inherently subjective, they offer a consistent comparative basis across structural settings and allow patterns to be examined systematically.

Figure A2 introduces the analytical framing adopted for this synthesis. Four complementary lenses structure the interpretation of case reflections.

- The **scaling lens** captures reported contributions to spatial expansion, institutional embedding, and diffusion beyond the immediate intervention.
- The **friction lens** synthesises lessons learned, highlighting governance challenges, organisational constraints, and adaptive demands encountered during implementation.
- The **value lens** examines points of pride articulated by partners, indicating which aspects were internally experienced as meaningful achievements.
- The **exemplar lens** considers lighthouse aspects identified by partners as transferable or inspiring beyond their own case context.

These lenses reflect different but interrelated dimensions of project contribution: observable extension, experienced constraints, internal valuation, and outward-facing relevance. Together, they allow MERLIN's role to be analysed not only in terms of measurable outputs, but also in terms of perceived influence, learning processes, and narrative positioning within the broader restoration landscape.

The following paragraphs synthesise findings across these four lenses and examine how patterns vary across structural settings, thereby clarifying how MERLIN's contribution was conditioned by trajectory context.

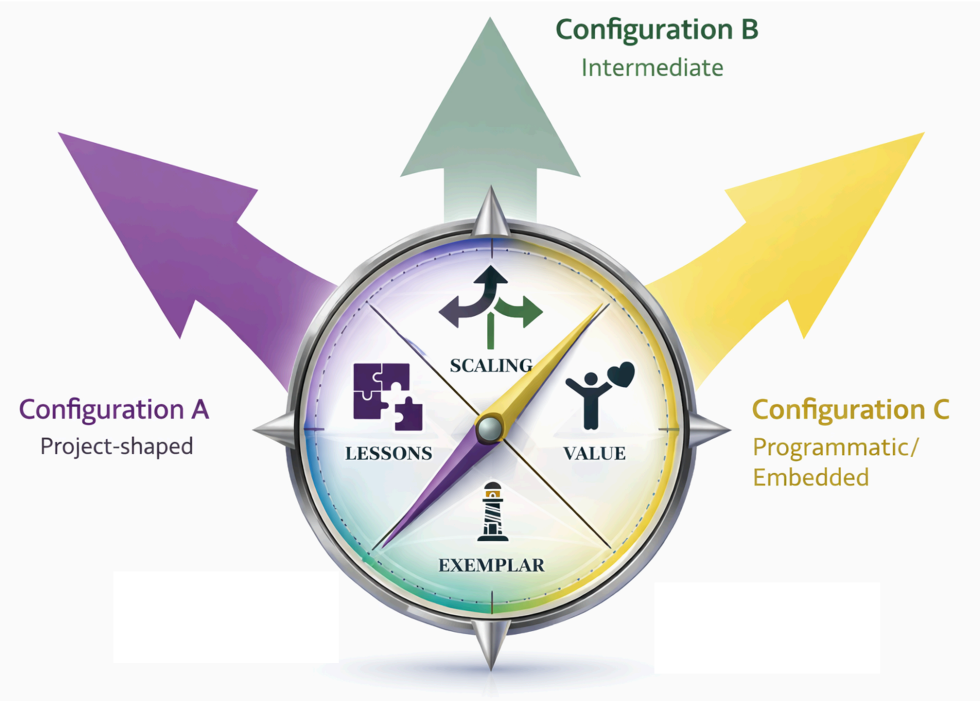

Figure A2. Four analytical lenses structuring case study reflections on MERLIN's contribution.

The compass represents the interpretative framework applied to harmonised questionnaire self-assessments. Scaling, lessons, value, and exemplar capture complementary dimensions of how partners perceived MERLIN's role within their restoration trajectories (Setting A to C).

Scaling Lens: *Differentiated Scaling Patterns Across Settings*

Viewed through the scaling lens, MERLIN's contribution did not manifest as uniform scaling, but as differentiated patterns across structural settings. Following Moore et al. (2015), reported upscaling pathways were grouped into spatial expansion ("scaling out"), institutional embedding ("scaling up"), and cognitive or normative diffusion ("scaling deep").

Across cases, setting-sensitive contrasts emerge (see Figure A3 in Annex 4). In project-shaped, weakly embedded contexts (Setting A), scaling was predominantly spatial. Partners most frequently described expansion of restoration activities or geographical reach, while references to institutional consolidation or deeper diffusion remained comparatively limited.

Strategically capable but only partially embedded contexts (Setting B) exhibited the most diversified scaling profile, combining spatial growth with institutional embedding and knowledge diffusion.

In programme-based, highly embedded contexts (Setting C), scaling effects were more selective. Where restoration was already institutionally anchored, partners reported incremental reinforcement rather than broad structural transformation. Occasional references to limited upscaling reflect this already embedded trajectory context.

Taken together, the scaling lens indicates that the mode and breadth of scaling varied systematically with structural setting.

Friction Lens: *Governance Learning Across Settings*

Viewed through the friction lens, implementation challenges were interpreted primarily as governance and organisational work rather than ecological uncertainty. Reported lessons most frequently concerned stakeholder engagement, trust-building, and communication, followed by structured planning and organisational capacity.

Across cases, setting-sensitive contrasts emerge. In project-shaped, weakly embedded contexts (A), lessons more often emphasised human resources, leadership, and the need to stabilise organisational capacity within a bounded project horizon. Here, friction was experienced as fragility of competence and continuity.

Strategically capable but only partially embedded contexts (B) combined engagement themes with references to adaptive management and flexibility. Learning centred on navigating shifting feasibility conditions while preserving intent.

In programme-based, highly embedded contexts (C), lessons more frequently highlighted structured planning, sequencing, and coordination across institutional interfaces. Friction appeared less as acute blockage and more as the challenge of maintaining coherence within complex governance environments.

Taken together, the friction lens suggests that MERLIN's implementation experience reinforced relational and organisational competence across settings. Where scaling reflected extension, friction reflected the governance work required to stabilise action under real-world dependencies.

Value Lens: *What Partners Experienced as Meaningful Contribution*

Viewed through the value lens, points of pride articulated by partners centred primarily on relational achievements and tangible ecological outcomes rather than structural transformation. Across settings, stakeholder relationships, community engagement, and ecological improvements featured prominently as sources of satisfaction.

Setting-sensitive contrasts nonetheless emerge. In project-shaped, weakly embedded contexts (A), pride was often attached to concrete ecological achievements and visible moments of influence, including local upscaling or policy recognition. These reflections suggest that tangible delivery and demonstrable change carried particular significance where institutional continuity is limited.

Strategically capable but only partially embedded contexts (B) exhibited the most diversified pride profile. Partners combined relational achievements, cross-sector collaboration, ecological gains, and references to upscaling or visibility. In these trajectories, MERLIN's contribution was experienced not only as implementation success but as consolidation and outward influence.

In programme-based, highly embedded contexts (C), pride more frequently centred on outreach, visibility, and demonstration effects, alongside ecological improvements. Where restoration was already institutionally anchored, partners appeared to value MERLIN's role in reinforcing public presence and showcasing practice rather than altering structural direction.

Taken together, the value lens suggests that perceived success was grounded less in structural embedding and more in relational strength, ecological change, and narrative visibility. MERLIN's contribution was experienced as meaningful where it strengthened trust, delivered visible improvement, or enhanced the trajectory's public and collaborative standing.

Exemplar Lens: *Outward-Facing Positioning Across Settings*

Viewed through the exemplar lens, partners highlighted aspects of their case they considered transferable, inspirational, or lighthouse-like beyond their immediate context. Across settings, ecological achievements and stakeholder relationships most frequently formed the basis of such outward-facing positioning.

Setting-sensitive contrasts are nonetheless visible. In project-shaped, weakly embedded contexts (A), exemplar claims most often centred on tangible ecological outcomes and adaptive problem-solving. Where institutional continuity is limited, visible transformation and innovation appear to carry exemplar value.

Strategically capable but only partially embedded contexts (B) combined ecological achievements with innovation and collaborative approaches. In these trajectories, cases positioned themselves as adaptable and solution-oriented, emphasising transferable governance practices and partnership models.

In programme-based, highly embedded contexts (C), exemplar narratives more frequently highlighted stakeholder collaboration and landscape-level ecological transformation. Where restoration is already institutionally anchored, partners appeared to emphasise demonstration value and the visibility of sustained practice rather than structural change.

Taken together, the exemplar lens suggests that lighthouse positioning is grounded less in institutional embedding and more in visible ecological outcomes, collaborative governance, and adaptive problem-solving. Across settings, cases framed their broader relevance in relational and practical terms rather than through structural characteristics.

Exemplar Lens: Outward-Facing Lighthouse Claims Across Settings

Viewed through the exemplar lens, partners identified aspects of their cases they considered transferable, inspirational, or relevant beyond their immediate context. Across settings, lighthouse claims most frequently centred on ecological achievements and stakeholder relationships, often framed as demonstrable transformation or effective collaboration.

Setting-sensitive contrasts nonetheless appear. In project-shaped, weakly embedded contexts (A), lighthouse claims most often highlighted tangible ecological outcomes and adaptive problem-solving. Where institutional continuity is limited, visible environmental improvement and innovative solutions appear to underpin claims of broader relevance.

Strategically capable but only partially embedded contexts (B) combined ecological achievements with innovation and collaborative approaches. Cases in these trajectories positioned themselves externally as adaptable and partnership-driven, emphasising governance practices and problem-solving capacity as transferable elements.

In programme-based, highly embedded contexts (C), lighthouse narratives more frequently emphasised stakeholder collaboration and landscape-level ecological transformation. In already institutionalised settings, partners tended to frame their broader relevance in terms of sustained practice, demonstration value, and visibility rather than structural change.

Taken together, the exemplar lens suggests that outward-facing positioning is grounded primarily in visible ecological outcomes and collaborative governance. Across settings, cases framed their lighthouse value in practical and relational terms rather than through institutional embedding itself.

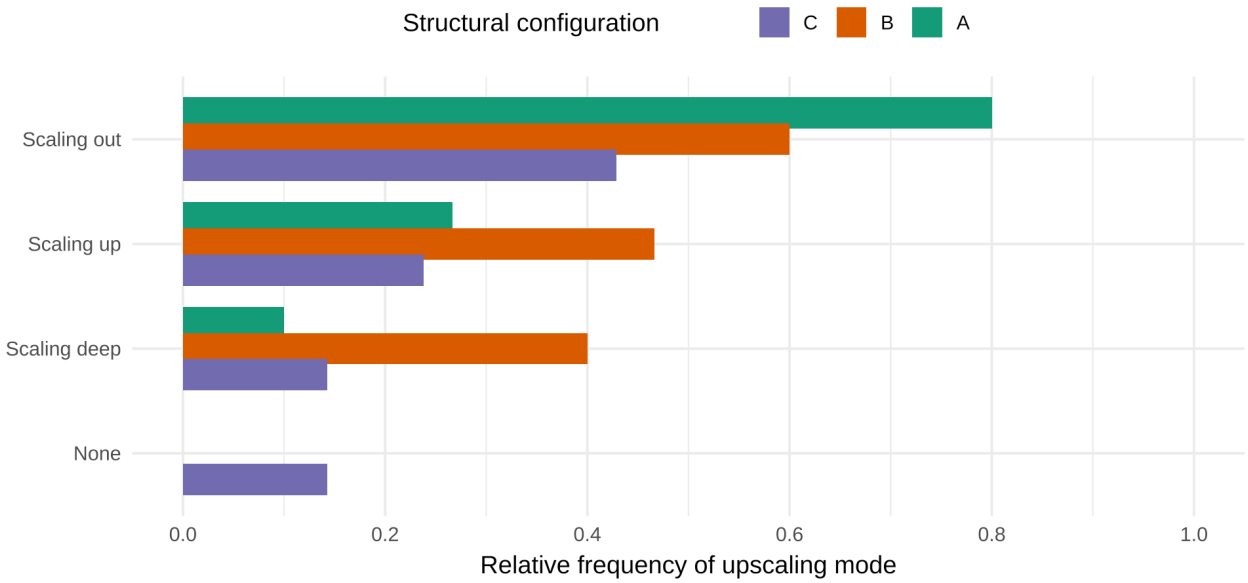

Figure A3: Relative frequency of reported upscaling modes by structural setting

This figure provides the empirical basis for the scaling synthesis presented in Section 3.4 (Scaling Lens). It visualises the relative frequency with which case study partners reported different upscaling modes in response to Question 9.1 ("Did the MERLIN implementation project support a wider implementation / upscaling?").

Reported upscaling categories were coded and aggregated into three scaling dimensions following Moore et al. (2015):

- Scaling out (spatial expansion of restoration action and geographical reach),
- Scaling up (institutional embedding, including strengthened partnerships, legitimacy, political support, and financial leverage), and
- Scaling deep (knowledge transfer, methodological adoption, replication, and lighthouse effects).
- Responses indicating no wider upscaling effect were coded as "None."

Bars represent the relative frequency of each scaling mode within each structural setting (Setting A: project-shaped, weakly embedded; Setting B: strategically capable, partially embedded; Setting C: programme-based, highly embedded). Relative frequency is calculated as the proportion of reported upscaling instances per setting that fall into each scaling category.

The figure underpins the setting-sensitive scaling patterns discussed in Section 3.4.