



Deliverable D2.5

**Reporting on implementation results from
MERLIN restoration case studies**

Imprint

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MERLIN Key messages

- 1. Large-scale delivery:**
MERLIN restored 9,524 ha, 121 km of rivers, and removed 11 barriers across 16 case studies.
- 2. Targets exceeded overall:**
Despite local shortfalls, total restoration overshot plans by +107% (land) and +74% (rivers).
- 3. Adaptation drives success:**
Frequent technical, administrative, and external obstacles were overcome through adaptive management.
- 4. Broad impact coverage:**
129 Green Deal indicators were applied across all criteria, dominated by environmental outcomes.
- 5. Early positive effects:**
~70% of indicators already show positive impacts or trends within the project timeframe.
- 6. Substantial monitoring continuity:**
Over half of all indicators will continue to be monitored beyond MERLIN, with remaining gaps mainly linked to capacity constraints.
- 7. EU funding backbone with emerging leverage effects:**
EU funding (including MERLIN) underpins most projects and has begun to catalyse complementary investment in selected cases.
- 8. People matter most:**
Trust, engagement, and organisational capacity consistently emerged as the key success factors.
- 9. MERLIN enabled how restoration happens:**
Its strongest impact was building skills, partnerships, and adaptive practice, not redefining goals or budgets.

MERLIN Executive Summary

This deliverable provides a comprehensive overview of the implementation of freshwater ecosystem restoration within MERLIN, drawing on the experiences from 16 case studies across Europe.

Firstly, we present an overview of the MERLIN implementation and compare planned and realised measures. Challenges to implementation were reported by almost all case studies, most commonly relating to external factors or administrative barriers. The case studies also reported a diverse range of solutions and adaptive approaches.

While some case studies did not reach their proposed target, others were able to implement even more than initially planned. In total, **MERLIN has restored 9,524 ha of land, 121 km of river length and removed 11 transversal barriers to free river flow**. This exceeds the target for restored land by 107% and the target for river length by 74%.

The MERLIN case studies monitored 129 Green Deal indicators across all 13 criteria, with a strong emphasis on environmental outcomes complemented by economic and selected social dimensions. Nearly **70% of assessed indicators already show positive impacts or positive trends** within the project timeframe, indicating rapid ecological improvements and early societal benefits from restoration.

Beyond MERLIN, just **over half of all indicators are expected to remain monitored**, with environmental metrics showing the highest continuity due to regulatory embedding, while economic and social monitoring is more frequently discontinued due to funding, staffing, and scaling constraints.

Case studies generally report successful stakeholder engagement during the implementation of their restoration. Positive experiences most frequently related to **building trust and high-quality relationships as well as knowledge exchange and mutual learning** while common bottlenecks were due to technical, contextual or project-design issues.

MERLIN was frequently perceived as influential across different dimensions of restoration work, including stakeholder engagement, policy awareness and the securing or diversifying of funding. Our results indicate that MERLIN's contribution was strongest in **reinforcing the conditions for effective implementation** (including capacity building, stakeholder engagement, joint learning, and legitimacy), while playing a more limited role in reshaping strategic objectives or acting as a primary driver of additional funding.

While this document merely draws on the (sometimes subjective) experience of case studies and their implementing teams, this synthesis offers a first step in identifying common patterns of enabling and hindering factors for freshwater ecosystem restoration in Europe.

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1 Introduction

1.1 Context and role of implementation within MERLIN

The MERLIN project combines research, innovation, and large-scale on-the-ground action to advance the restoration of freshwater ecosystems across Europe. A central pillar of MERLIN is the implementation of physical restoration measures carried out by its case studies. Sixteen case studies implemented restoration measures during the project lifetime, together accounting for approximately half of the total MERLIN budget. As such, implementation represents a core component of MERLIN's contribution to advancing freshwater ecosystem restoration in practice.

These implementation activities span a wide range of freshwater-related ecosystems, including peatlands and wetlands, small streams and basins, and large transboundary rivers. They differ substantially in scale, biophysical context, governance setting, and maturity of restoration trajectories. Documenting this diversity in a structured and transparent way is essential for understanding what was implemented within MERLIN, under which conditions, and with which immediate outcomes.

1.2 Purpose and scope of Deliverable D2.5

This deliverable reports on the participatory evaluation of the implementation process as well as impact and effectiveness of the implemented measures. In operational terms, this deliverable primarily serves as a descriptive account of restoration implementation activities carried out within MERLIN.

The main purpose of D2.5 is therefore to document:

- which physical restoration measures were planned and implemented by the MERLIN case studies,
- the degree of implementation achieved by the end of the project,
- deviations from original implementation plans and the reasons for these deviations,
- and contextual aspects that are relevant for understanding the effectiveness and impacts of these measures.

Rather than providing an overall evaluation or synthesis of success and failure (for this, see D2.6), this deliverable focuses on transparent reporting of implementation activity and its immediate context. It establishes the empirical basis for subsequent analytical and evaluative work.

1.3 Data basis and methodological approach

The analyses presented in this deliverable draw on two complementary data sources collected from the implementation case studies.

First, implementation progress was accompanied throughout the project by frequent bilateral exchanges between task leads and implementation partners. These exchanges took the form of structured and semi-structured interviews, regular check-ins, and follow-up discussions. They allowed for continuous clarification of implementation status, emerging challenges, adaptive responses, and contextual factors influencing restoration delivery.

Second, an extensive standardised questionnaire survey was conducted among all implementation case studies in autumn 2025. This survey systematically captured information on:

- planned versus implemented restoration measures,
- implementation status and deviations from original plans,
- challenges encountered and adaptive responses,
- monitoring activities linked to implementation,
- restoration investments, cost structures, and funding sources,
- participatory and sectoral aspects of implementation,
- and case study reflections on implementation experiences and the perceived role of MERLIN.

Together, these data sources provide a consistent, case-based documentation of implementation across all 16 implementing MERLIN case studies, combining qualitative process-oriented insights with harmonised quantitative and categorical reporting.

Note that the data underpinning this deliverable are based on self-reported information provided by the 16 implementing MERLIN case studies, collected through structured questionnaire surveys and continuous bilateral exchange throughout the project. As such, the information reflects the perspectives and assessments of the implementation partners directly involved in planning and delivering restoration measures. Perceptions of

challenges, implementation progress, or participatory processes are therefore inherently shaped by local, cultural, and institutional contexts and may vary between case studies.

Accordingly, the dataset provides a structured and comparative documentation of implementation activity as reported by the case studies themselves. While this enables a consistent overview across diverse restoration contexts, the data are not intended to support a comprehensive or generalisable assessment of success or failure in freshwater restoration, but rather to document implementation processes and their contextual conditions within the MERLIN project.

The primary datasets generated through the questionnaire survey are available at: <https://doi.org/10.5281/zenodo.18405265>.

1.4 Implementation versus demonstration within MERLIN

MERLIN case studies combine two conceptually distinct, though empirically connected, forms of restoration activity: implementation and demonstration.

In the context of this deliverable, implementation refers exclusively to physical restoration measures that were planned and funded by MERLIN, and carried out during the lifetime of the MERLIN project. These measures form the empirical core of D2.5 and are the basis for reporting on implementation status, deviations from plans, associated monitoring activities, investments, and participatory processes.

In contrast, several case studies also build on restoration activities initiated prior to MERLIN or during the MERLIN lifespan but funded by other sources. These pre-existing activities primarily fulfil a demonstration function within the project, providing learning contexts, reference conditions, or longer-term restoration trajectories. Such demonstration activities are not analysed as implementation in this deliverable.

The systemic impacts of both demonstration activities and MERLIN implementation measures are partly covered in Deliverable D1.6, which synthesises results from MERLIN's project-wide impact monitoring framework. Where available, D1.6 therefore includes impacts emerging from implementation activities documented in the present report, alongside impacts linked to pre-existing restoration efforts.

1.5 Positioning of D2.5 within the MERLIN deliverable landscape

Deliverable D2.5 is deliberately positioned as a descriptive implementation report. Its role is to document what was implemented within MERLIN and under which conditions, rather than to provide an overarching evaluation.

This distinguishes D2.5 clearly from Deliverable D2.6, which builds on the empirical basis provided here to deliver an evaluation and synthesis of the implementation process and results, including successes, hurdles, adaptations, lessons learned, and an assessment of effectiveness and impact across case studies.

Read together, D2.5 and D2.6 provide a comprehensive account of MERLIN's implementation work: D2.5 establishes the factual and contextual foundation, while D2.6 offers the analytical interpretation and cross-case learning.

1.6 Structure of this deliverable

Following this introduction, the report presents:

- an overview of the MERLIN implementation case studies and their implementation status,
- a typology and comparison of implemented restoration measures,
- an analysis of planned versus realised implementation and associated deviations,
- reported challenges, risks, and adaptive responses during implementation,
- monitoring activities linked to implementation and early signals of effects,
- an overview of restoration funding structures,
- participatory and sectoral aspects of implementation,
- and case study reflections on implementation experiences and the perceived role of MERLIN.

Overall, this deliverable provides a structured and transparent account of restoration implementation within MERLIN, serving as a reference point for evaluation, synthesis, and future learning across large-scale freshwater restoration initiatives.

2 Overview of MERLIN implementation cases

2.1 Case study coverage and implementation status

Sixteen case studies across Europe performed restoration measures in various freshwater-related ecosystems, covering peatlands and wetlands, small streams and basins as well as large transboundary rivers (Note: MERLIN comprises a total of 18 case studies, however, two of these did not implement restoration measures during MERLIN but instead solely represented demonstration cases. As this deliverable focus on the implementation performed during MERLIN, these case studies – CS07b Danube sidearm reconnect HU and CS10 Blue Belt Germany DE – are not included in any of the following analyses). Each case study implemented between one and six individual restoration measures (Table 1). One case study, CS17 Forth basin restoration (UK), performed restoration in peatlands as well as in local small streams, hence showing up in both clusters.

All case studies started their work within MERLIN in 2021 when the project began, though planning and permitting procedures as well as challenges during the implementation delayed both the start and the continued implementation of restoration in some cases. Nonetheless, all case studies have completed more than 50% of their planned implementation, with many cases even overshooting their target. In three cases (CS05 Kampinos wetland rewetting, CS11 Emscher basin restoration and CS17 Forth basin restoration) adaptive management resulted in the abandonment of one planned measure and the successful implementation of a closely related alternative measure. Completion scores for the case studies range from 50% to 1125% with an average of 159% (counting the three adapted measures as 100% as their implementation was successful once they were included in the project plan).

Table 1: Overview of the restoration works implemented by 16 MERLIN case studies, separated in the three clusters Peatland and wetlands, Small streams and basins and Large transboundary rivers. CS17 Forth basin restoration (UK) implemented measures in peatlands and local small streams, hence is included in both clusters with their respective information. Implementation status % is the median of completion of all implemented measures by a case study, with "completion" representing the ratio of planned vs. realised (until December 2025) target value of the case. In three cases, a planned measure could not be implemented and was replaced by a different measure (CS05, C11, CS17peat), setting the planned measure to 0% complete. As the replacement-measure was successfully implemented, i.e. completed 100%, the implementation status for the case was calculated twice: once with the measure at 0% and once with the measure at 100% (noted as "adapted: xx").

Case Study	Number of Measures Implemented	Total Restored Area (ha)	Total Restored River Length (km)	Number of Barriers Removed	Implementation Status [%]	Notes / Key Deviations or Comments
Peatlands & wetlands						
CS01 — Kvorning wetland rewetting DK	2	505	6	0	109	
CS03 — Beaver river engineering SE	2	1.01	0.15	0	100	
CS05 — Kampinos wetland rewetting PL	2	1010	0	0	0 (adapted: 100)	implemented one measure differently but successfully (100%)
CS06 - Hutovo Blato peatland rewetting BiH	6	1488	2	0	100	
CS12 — Lima floodplain forest restoration PT	3	0	7.95	0	163	
CS14 — Komppasuo peatland rewetting FI	1	130	0	0	100	

CS17 — Forth basin restoration UK	2	379.77	1	0	125 (adapted: 175)	implemented one measure differently but successfully (100%)
Total	18	3513.78	17.1	0		
Small streams & basins						
CS02 — Deba barrier removal ES	1	0	28	8	80	last 2 dams postponed beyond MERLIN timeline
CS11 — Emscher basin restoration DE	1	0.021	0	0	0 (adapted: 100)	implemented one measure differently but successfully (100%)
CS13 — Sorraia river restoration PT	4	13.07	2.34	1	53	
CS15 — Tzipori basin restoration IL	1	10	1.25	0	100	
CS16 — Upper Scheldt restoration BE	4	7.084	8.006	2	100	
CS17 — Forth basin restoration UK	2	33.2	49	0	97	
CS18 — Ervidel river restoration PT	4	3.38	2.4	0	122	
Total	17	66.755	90.996	11		
Large transboundary rivers						
CS04 — Room for the Rhine NL	2	611	0	0	93	
CS07b — Danube floodplain restoration AT	2	9.8	1	0	100	
CS08 — Danube floodplain reconnect RO	2	823	12	0	100	
CS09 — Tisza floodplain rewetting HU	1	4500	0	0	1125	
Total	7	5943.8	13	0		
Grand total (all clusters)	42	9524.335	121.096	11		

In total, 42 measures were implemented (Peatlands and wetlands: 19; Small streams: 17; Large rivers: 8), resulting in about 9524ha of restored land, 121km of restored river length and 11 removed transversal barriers.

All 11 barrier removals and most restored river kilometres were achieved within the small streams cluster, while the large rivers cluster restored most of the land area, i.e. floodplains adjacent to the rivers (Figure 1).

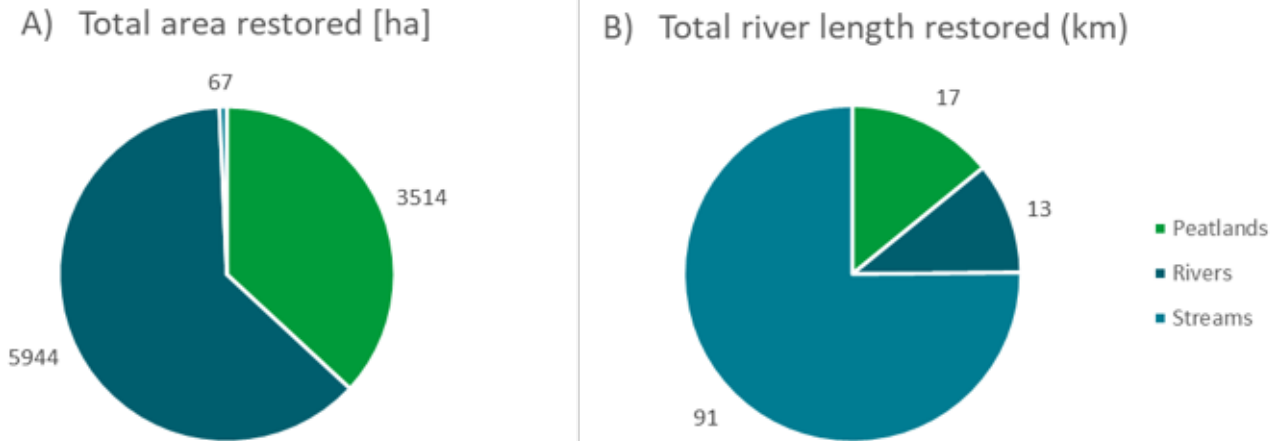


Figure 1: (A) Total restored area [ha] and (B) river length [km] within MERLIN. Pie charts show the distribution of restored units by the three clusters Peatlands and wetlands (green), Small streams and basins (petrol) and Large transboundary rivers (dark blue).

3 Overview of implemented restoration measures

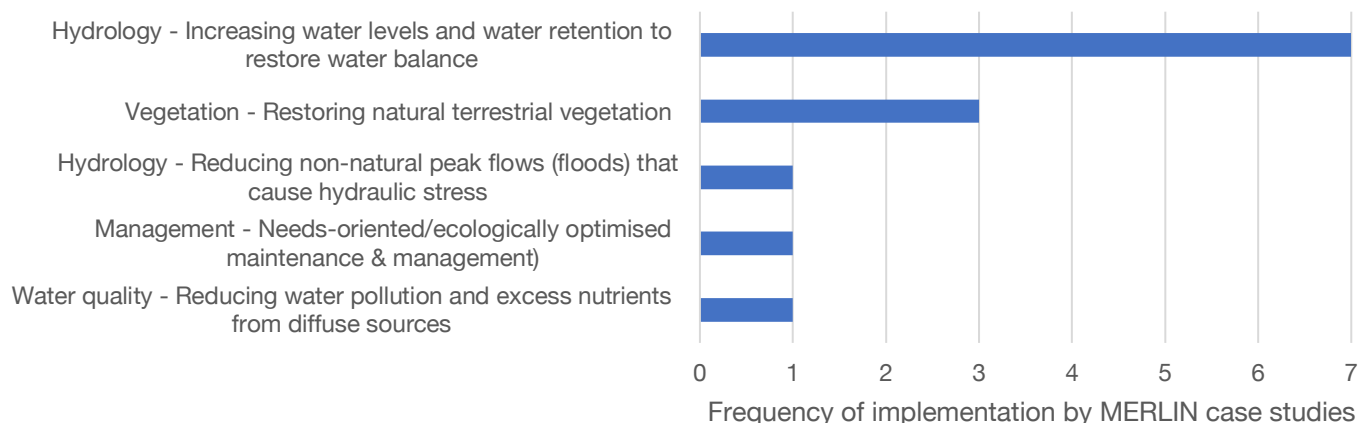
This section summarises the different restoration measures implemented by 16 MERLIN case studies. We compare the planned and the realised implementation and reflect on the challenges to implementation and how the case studies overcame hurdles. Despite both anticipated and not anticipated challenges occurring, MERLIN has in summary proved very effective in restoring European freshwater ecosystems, overshooting the initially set targets significantly.

3.1 Typology of restoration measures across cases

The 16 MERLIN case studies implemented a total of 42 single restoration measures, from removing longitudinal or lateral barriers to adding leaky dams or woody debris to changing land-use to control of non-native invasive species. For comparability, these were sorted into categories (measure types, such as, "Morphology") and subtypes (such as "Morphology - Restoring riparian physical habitats") according to a typology suggested by Birk et al. (2025). The typology separates measures performed on or at streams and rivers from measures performed in peatlands and other wetlands. Within MERLIN, five different peatland and other wetland measure subtypes (in 13 single measures) and ten river and stream measure subtypes were implemented (in 29 single measures), covering changes to hydrology, morphology, water quality, connectivity, biota, vegetation and management (Figure 2). Even case studies belonging to the peatland and wetlands cluster in MERLIN performed "river and stream" measures where they intervened directly in the stream to restore their focal wetland area.

The majority of measures related to restoring the hydrology in the peatlands and other wetlands measures (8 measures out of 13) and to restoring the morphology in the rivers and streams measures (13 of 29 measures). In both groups, measures restoring natural terrestrial vegetation were frequently implemented (3 and 8 measures, respectively in peatlands and other wetlands, and rivers and streams).

A) peatland and other wetland measures



B) river and stream measures

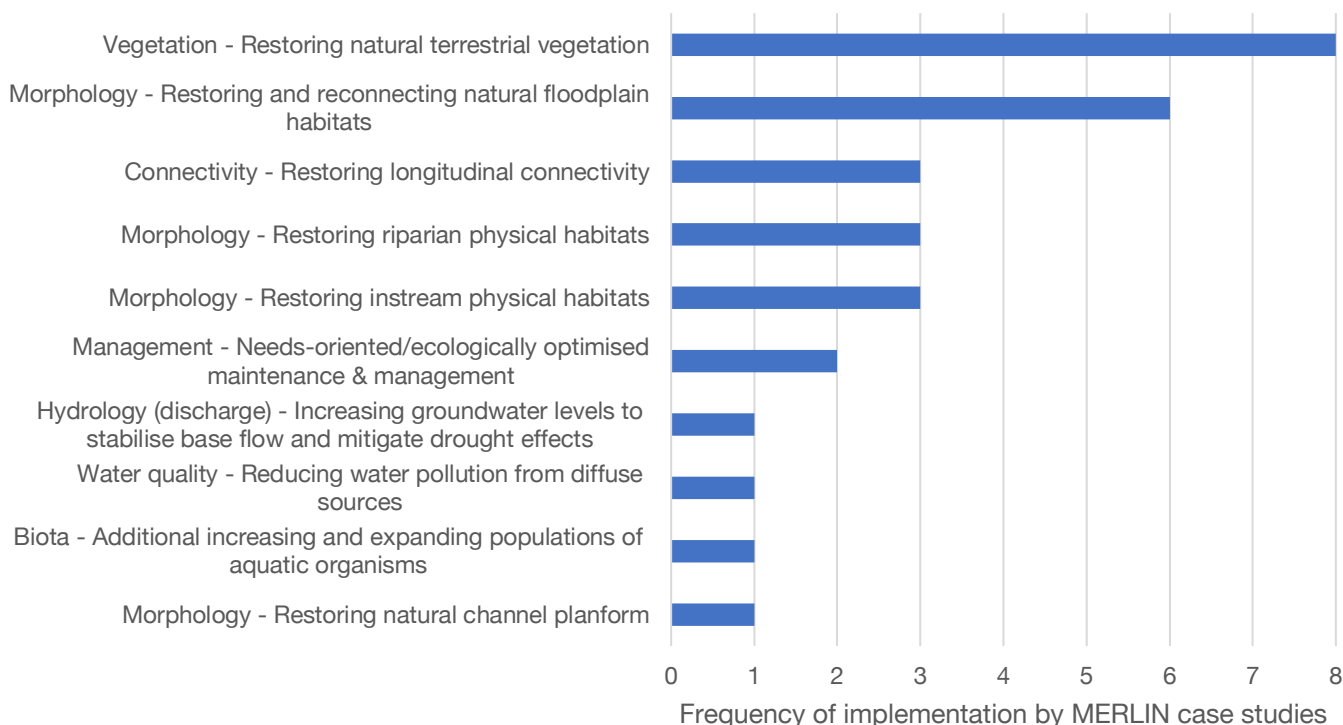


Figure 2: Restoration measures implemented within MERLIN distributed into measure types based on Birk et al. (2025). The typology separates measures performed in peatlands and other wetlands (A) from measures in streams or rivers (B). Note that case studies belonging to the peatlands and wetlands cluster in MERLIN can still perform "river and stream measures" of this typology, if they intervene in the local stream to restore the adjacent wetland.

3.2 Planned vs implemented measures

Of 43 planned restoration measures, only one was not implemented at all (one of three measures at CS05 Kampinos wetland re-wetting, PL). For the majority of measures (24) the implementation target was met, while for 18 measures the realised implementation deviated from the original target value (Figure 3).

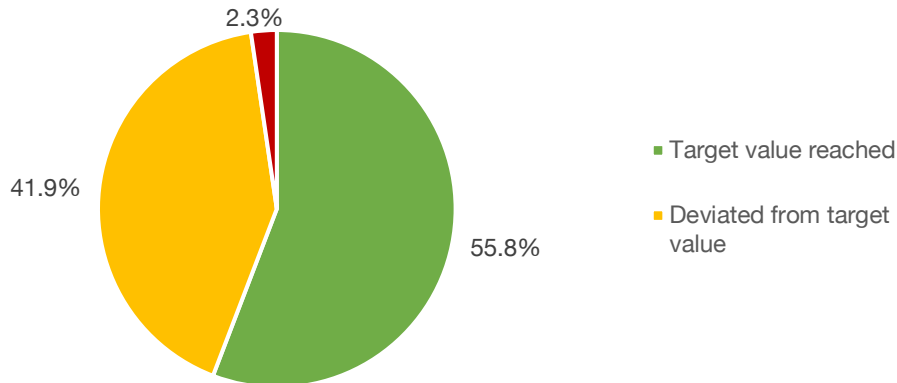


Figure 3: Share of implementation results for 43 planned restoration measures within MERLIN.

In the peatlands and wetlands cluster and the large rivers cluster, the majority of measures was implemented to reach the target value, while in the small streams cluster, almost 60% of implementations deviated from the target value (Figure 4).

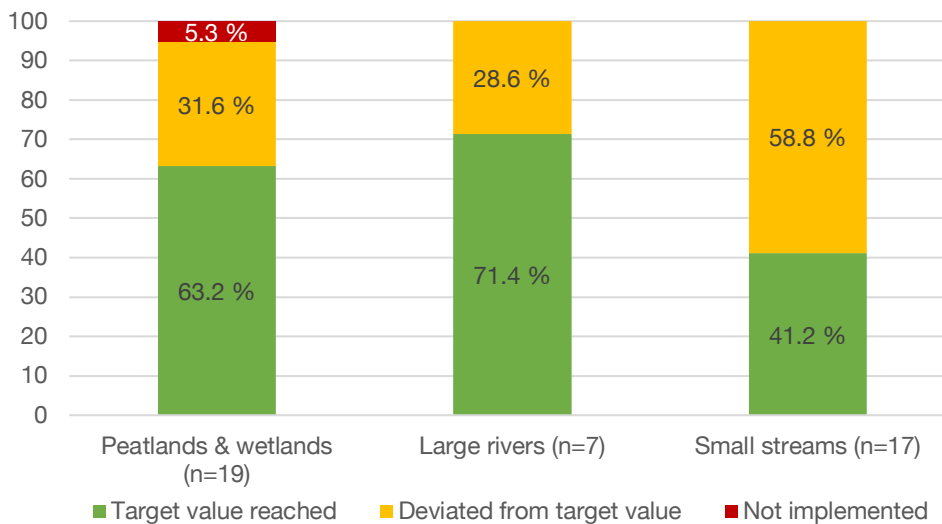


Figure 4: Share of measures per cluster where the proposed target value was reached (green), a deviation from the target value was recorded (yellow) or the measure was not implemented at all.

A measure implementation being recorded as "deviated from target value" does not necessarily mean that targets were not met. Instead, more than one-third of the 18 measures that were reported as deviation exceeded their target: a total of seven measures were implemented so that the target was exceeded by 17 up to 1025% (Figure 5). In eight cases, the measures could not be fully implemented to meet the proposed target (between 3% and 94% complete). Some of these measures are still being carried out, however, and will reach their target after the end of MERLIN. In three cases, measures could not be implemented at all in the way they were planned, but case studies resorted to the implementation of a similar measure (0% complete for the proposed measure; orange-striped bars in Figure 5).

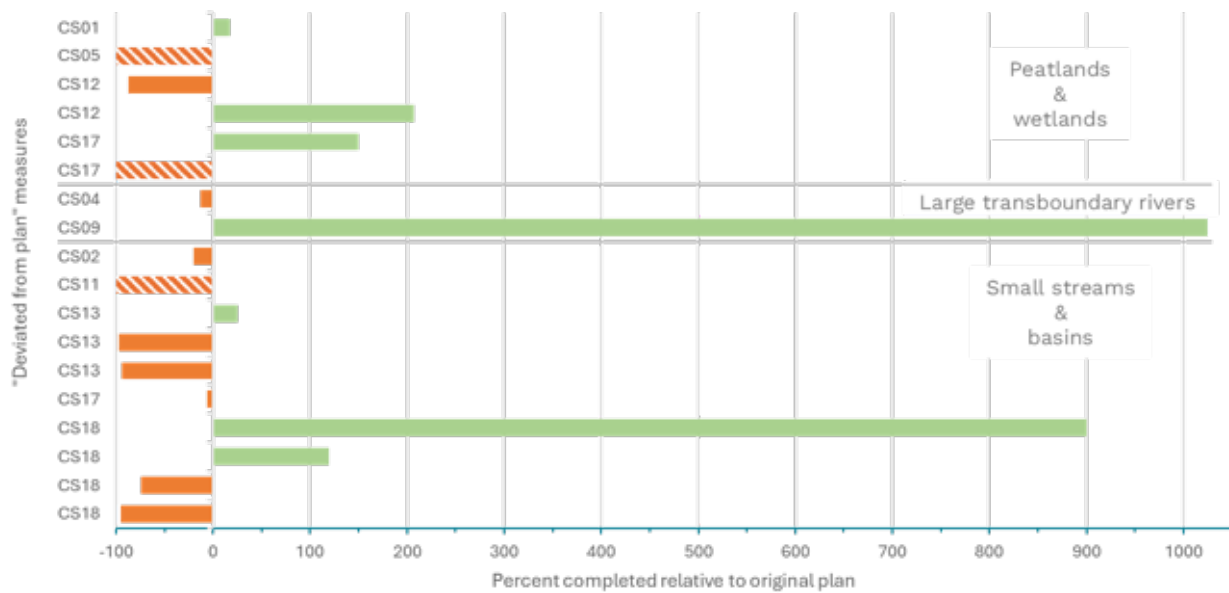


Figure 5: Deviation from the planned target value for those measures that were reported as "deviation from target value", in percent completeness. Orange striped bars refer to measures that were not carried out at all (therefore are at -100%) but were replaced by different measures that were implemented to target.

Reasons for overshooting the targets were mostly opportunistic adaptations that developed in the course of the project, e.g. more sites being realised due to enthusiasm of involved landowners or the facilitation of restoration works by external events, e.g. floods at the right time. Reasons for not meeting the proposed targets are more diverse, ranging from strong stakeholder opposition to administrative barriers to unforeseen external events. These challenges to implementation are discussed in the following Section 3.3.

In sum, these deviations amount to an overshoot of 107.8% in the restored land (planned: 4585.05ha, realised: 9524.314ha = more than double the original target) and 74.5% for restored river kilometres (planned: 69.4km, realised: 121.1km = about 75% more than planned) that was achieved by MERLIN restoration implementation.

3.3 Implementation challenges linked to measures

3.3.1 Challenges encountered during implementation

The challenges encountered by the case studies during planning and implementation of their restoration works can be sorted into six categories:

- Technical and Site-Related Challenges (e.g. complex hydrology, unstable soils, invasive species, site-specific constraints)
- Unexpected Ecological Conditions (e.g. unanticipated species shifts, habitat response, natural channel behaviour)
- Administrative and Permitting Delays (e.g. lengthy approvals, legal inconsistencies, compressed timelines)
- Coordination and Logistics (e.g. scheduling issues, partner coordination, seasonal access, supply shortages)
- External or Unforeseen Events (e.g. floods, droughts, storms, high water levels, global or economic disruptions)
- Other challenges

The most encountered challenge was external challenges and disruptions, encountered with 22 of the 42 measures (Table 2; CS17 counted separately for their peatland measures and small streams measures). This was followed by technical and site-related challenges, administrative and coordination and logistics issues. Only one case study, CS18 Ervidel river restoration (PT) encountered ecological challenges in one of their four restoration measures.

Most case studies encountered more than one challenge and typically encountered challenges in most or all of their individual measures.

Table 2: Number of measures implemented by the 16 implementing MERLIN case studies where different types of challenges were encountered. Case study 17 is listed twice for their peat and stream measures. The number in parentheses behind the case study number indicates the number of measures implemented by the case study.

Case studies (no. of measures)	Challenges to implementation					
	Technical and site-related	Ecological	Administrative	Coordination and logistics	External	Other
Peatlands & wetlands						
CS01 (2)	0	0	1	0	0	0
CS03 (2)	1	0	1	1	0	1
CS05 (2)	1	0	1	0	2	2
CS06 (6)	1	0	0	0	0	0
CS12 (3)	2	0	1	2	1	0
CS14 (1)	1	0	0	0	1	0
CS17p (2)	1	0	2	2	1	0
Small streams & basins						
CS02 (1)	0	0	1	1	0	1
CS11 (1)	1	0	1	0	0	0
CS13 (4)	3	0	1	4	3	2
CS15 (1)	0	0	0	0	1	0
CS16 (4)	4	0	3	3	4	0
CS17s (2)	0	0	0	0	2	1
CS18 (4)	4	1	0	2	3	0
Large transboundary rivers						
CS04 (2)	0	0	2	2	0	2
CS07a (2)	1	0	0	0	1	0
CS08 (2)	0	0	2	0	1	0
CS09 (2)	0	0	2	0	2	2
Total	20	1	18	17	22	11
Frequency (no. of CS encountering challenge)	11	1	12	8	12	7

3.3.2 Anticipated risks and plan B strategies

All case studies formulated anticipated risks in their implementation planning (described in Gerner et al., 2023) as preparing to encounter challenges is essential in restoration planning. Five case studies did not encounter any of the anticipated risks, while for the remaining 13 case studies, between 18% and 100% of anticipated risks occurred. This fostered adaptive management and strategic flexibility, with the majority of case studies solving these challenges by changing the timing of their measure (i.e., waiting for changes in weather or prices for materials), delaying but ultimately delivering the proposed implementation (Figure 6). The second most common solution was communication-related, i.e. earning trust and the willingness of stakeholders, particularly landowners who were directly affected by restoration works, followed by adding workload, e.g. adding a post-intervention management plan or revisiting the site to resow or cut down once more the targeted species in the area of intervention. Some anticipated risks did occur but could not be solved, these relate to larger-scale problems that cannot be tackled by individual research projects, e.g. the issue of low ecological river status even following barrier removal due to continued pollution or ongoing conflicts of interest between ecological restoration and aspects of, e.g., public security or economic strategic planning.

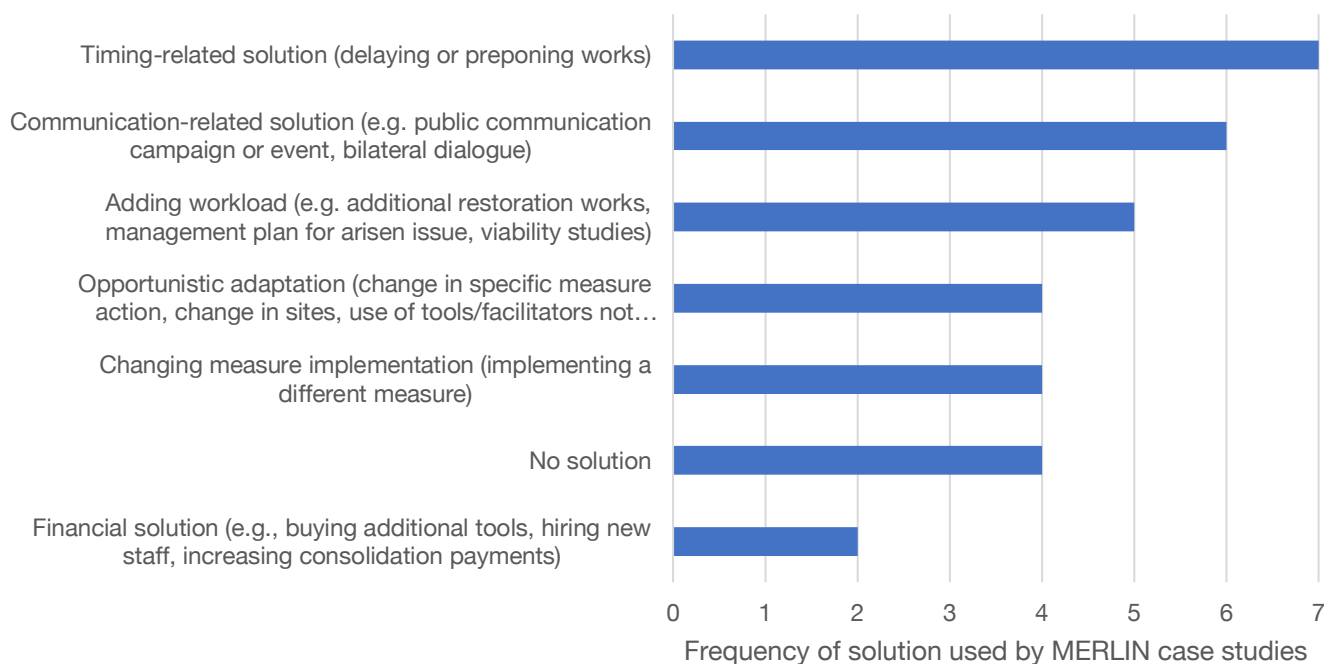


Figure 6: Categories of solutions MERLIN case studies opted for the solve the occurrence of anticipated risks.

3.4 Examples for measures and strategies

The 42 measures implemented within MERLIN represent the wide range of different measure types that can be taken and are appropriate to restore ecosystems holistically. These can include both the removal of barriers in one place (i.e., transversal barriers to the free flow of a river) and the introduction of barriers in another place (i.e., leaky dams or functional weirs to restore water retention to an area). It can also include rather unintuitive measures such as installing walking passages for cattle (to facilitate land-use change and subsequently enable re-wetting of an area) or the clear-cutting of a riparian woody zone (to free it from non-native invasive species). See below for three examples of MERLIN restoration measures and Hershkovitz & Birk (2026) for a description of all 42 implemented measures.

3.4.1 Renovating a weir for re-wetting (CS05 Kampinos wetland re-wetting, PL)

Located in the Kampinos National Park in Eastern Poland, CS05 aimed at holistically restoring the wet meadows and peatlands within the park by enabling water retention and restoring the natural flow regimes through re-meandering and side-channel connection of streams. This case study is a key example for adaptive management in the early implementation phase of MERLIN. One of three proposed measures was the "re-meandering and connection of channel and floodplains along 2 km". However, due to heavy opposition from local stakeholders, fearing for their agricultural lands, it was not possible to implement this measure as planned, despite continued and heavy efforts to find a compromise and common ground. In the end, the case study resorted to the implementation of a different measure in the more central, less conflict-prone area of the park. The case study instead re-wetted drained meadows and implemented protection from flooding in Brzozówka, which included creating seven agriculture access roads through wetland lowering and ditch clearing to divert flow from private agricultural plots into plots managed by Kampinos National Park (Figure 7).

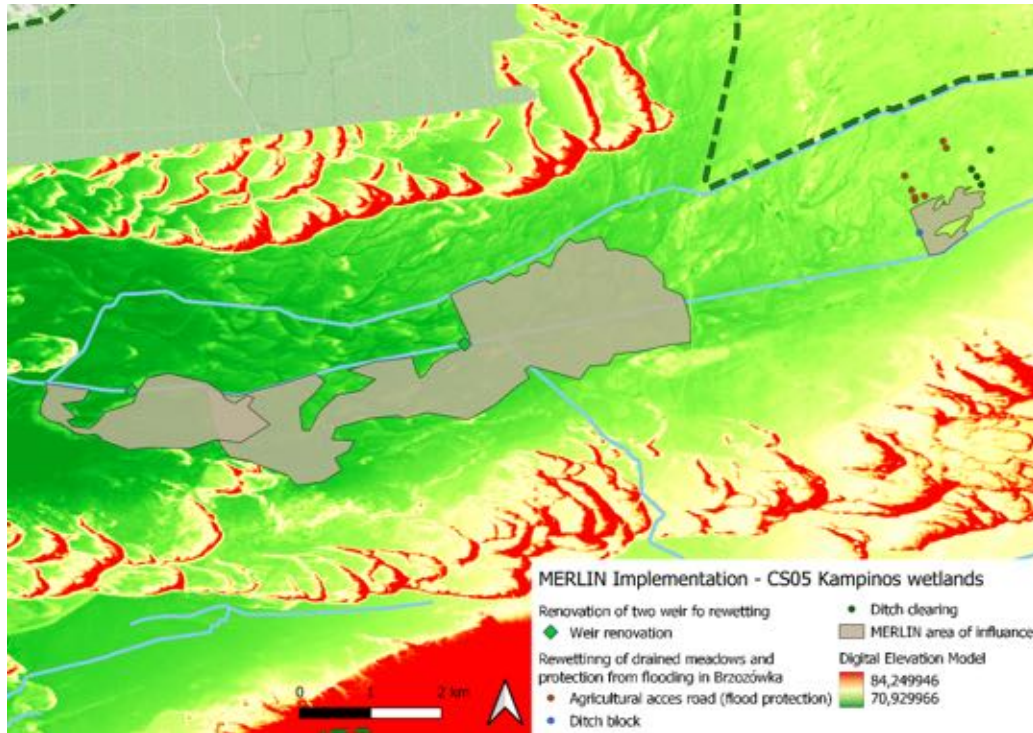


Figure 7: Map of intervention area and measure sites for CS05 Kampinos wetland rewetting (PL).

The second measure by CS05 was the renovation of two weirs responsible for the re-wetting of 6ha of peatlands. This was implemented as planned but the resulting re-wetted area was much larger than anticipated, covering 198ha.



Figure 8: Before (A) and after (B) renovation of the weir at Zamość, Kampinos National Park (PL). This restoration helped re-wetting 198ha of peatland.

3.4.2 Demolishing dams to restore free flow (CS02 Deba barrier removal, ES)

To minimise flood risk and improve mobility of migratory species in the river, CS02 aimed at removing small concrete dams in the Deba river basin in Northern Spain. The proposed measure was the demolition of 10 dams along a stretch of 25km of the main river stream running through the Gipuzkoa province in the Basque Country.

Next to the ecological restoration, the case study also aimed to educate and engage the local community to foster stewardship and participatory river maintenance.

While all involved authorities and many local residents were in favour of the restoration, one small group of residents formed opposition and tried to stop the works by publicly denouncing and spreading misinformation about the project. Despite repeated dialogue events this small group could not be convinced, and the project was implemented without their approval. This together with fluctuations in costs for the restoration and prolonged permitting procedures led to a delay in the implementation. To date, 8 out of 10 dams have been removed (Figure 9), but the remaining 2 are in the planning phase and will be removed after the end of the project.



Figure 9: Location of six dams (red dots) removed in the Deba river, Spain.



Figure 10: Before (A) and after (B) of the removal of one of 8 dams in the Deba river, Spain. This restoration helped restore 28km of free flow to the river.

3.4.3 Heavy machinery for side-arm reconnection and floodplain connection (CS07a Danube floodplain restoration, AT)

Using integrative planning that takes into account both ecology and navigation, CS07a showed that riverbank restoration is possible on an international ferry way and that good ecological status and good navigation conditions are not necessarily contradictory. Located in the east of Vienna, this case study aimed at restoring a stretch of the Danube that is heavily regulated by embankments and groyne structures. Restoration in this area has been going on for 20 years and has focused on removing the rigid artificial watercourse to allow more natural hydrological dynamics and a widening of the river to protect the riverbed from depth erosion. The proposed restoration within MERLIN was to remove artificial embankments and transversal structures to re-connect a historical side-arm and to re-wet the adjacent floodplain.

Continued stakeholder consultations and field visits led to very high approval rates amongst the involved stakeholders, despite the use of heavy machinery in the nature protection area.



Figure 11: Map of the area of intervention of CS07a Danube floodplain restoration (AT).

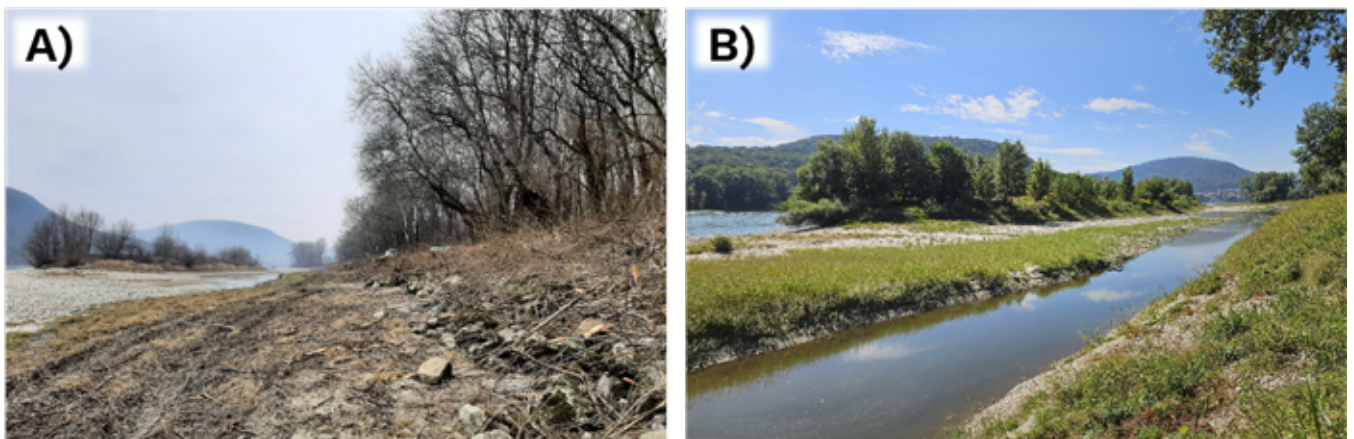


Figure 12: Before (A) and after (B) the removal of transversal structures to re-connect the Spittelauer Arm side-arm to the Danube, east of Vienna. This restoration helped restore natural river banks along 1km of the river and re-wetted 9.8ha of floodplain.

4 Monitoring indicators applied to MERLIN implementation

4.1 Coverage of impact indicators for MERLIN implementation measures

Monitoring of Green Deal Criteria (GDC) during implementation was reported by 17 MERLIN case studies (with CS17 counted twice for peatland and stream restoration), following the framework described in Schwerk et al. (2025). Across the ecosystem clusters of Peatlands and wetlands, Small streams and basins, and Large transboundary rivers case studies reported coverage of up to 13 Green Deal criteria (Table 3).

In total, 129 criterion entries were reported, with the Peatlands and wetlands cluster contributing the largest share (n=57), followed by Small streams and basins (46) and Large rivers (26). Environmental criteria dominate overall (57 entries). Biodiversity is the most frequently monitored criterion, reported by 16 case studies, while flood and drought regulation are covered by 11 and 13 cases, respectively. Although environmental coverage is broadly consistent across clusters, large river case studies generally report fewer environmental criteria than peatland and stream cases.

Table 3: Number of MERLIN case studies per cluster addressing each Green Deal criterion, aggregated across environmental, economic, and social domains. Totals are shown for Peatlands and wetlands, Small streams and basins, Large transboundary rivers and across all case studies (n = 17).

Green Deal criterion		Peatlands and wetlands (n=7)	Large Rivers (n=4)	Small streams (n=6)	Total (n=17)
Environmental	Biodiversity	6	4	6	16
	Climate	6	2	3	11
	Flood	6	2	3	11
	Drought	6	2	5	13
	Zero Pollution	5	1	3	9
Economic	Food Systems	3	1	3	7
	Energy	1	0	3	4
	Transport	1	0	1	2
	Circular	2	1	5	8
	Finance	6	3	5	14
	Green Growth	6	3	3	12
Social	Health	4	3	3	10
	Inclusivity	5	4	3	12
	Total	57	26	46	129

Economic criteria account for 47 entries, with ‘Financing the transition’ and ‘Green growth’ most frequently reported (14 and 12 case studies, respectively). Small streams and basins show the strongest engagement with economic dimensions overall, including exclusive coverage of energy-related criteria, whereas large rivers display limited coverage across most economic indicators. Social criteria are least represented (22 entries), with ‘Health and wellbeing’ reported slightly more often than ‘Inclusive participation’. Again, small stream case studies show higher coverage, while large river case studies consistently report the lowest integration of social dimensions (Figure 13).

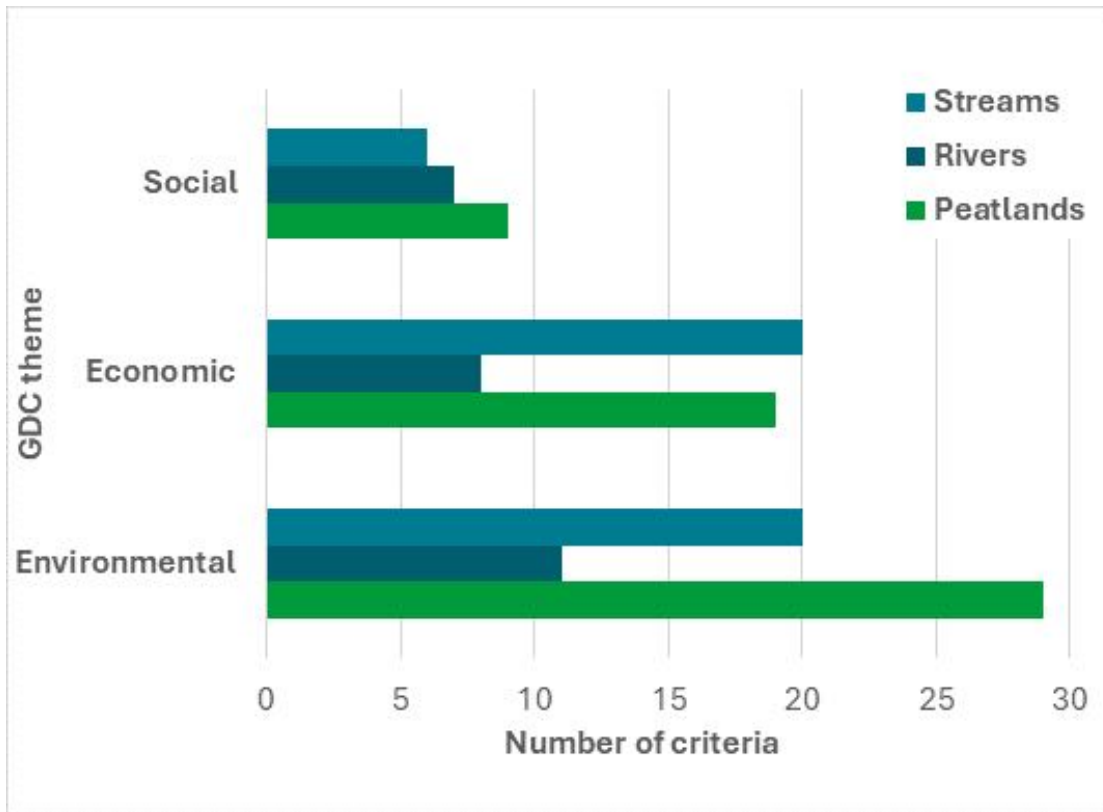


Figure 13: Distribution of Green Deal Criteria (GDC) monitored by MERLIN case studies during the implementation phase. For more information, see Schwerk et al. (2025).

Additional impact indicators beyond those included in the MERLIN monitoring framework (Schwerk et al., 2025) were reported for Small streams and basins (7 indicators) and Peatlands and wetlands (8 indicators), whereas no additional indicators were identified for Large transboundary rivers (Table 4). In Small streams and basins, these additional indicators are predominantly biodiversity-oriented (4 of 7), complemented by indicators related to inclusivity (2) and flood regulation (1).

In contrast, the Peatlands and wetlands cluster shows a markedly different emphasis. Here, zero-pollution indicators account for half of all additional indicators (4 of 8), followed by biodiversity-related indicators (3) and a single climate-related indicator. This cluster-specific pattern aligns with the broader Green Deal Criteria results: Small streams and basins place stronger emphasis on biodiversity and social dimensions, while Peatlands and wetlands foreground biogeochemical processes and pollution-related outcomes.

Table 4: Additional indicators reported by case studies in relation to the Green Deal Criteria (GDC), grouped by case study cluster; no additional indicators were reported for large transboundary rivers.

Cluster	Case study	Additional indicators	GD theme
Peatlands and wetlands	CS14 Komppasuo peatland rewetting FI	Static chamber measurements for greenhouse gas emissions	Climate
		Peat nitrogen (N), iron (Fe), phosphorus (P), and mercury (Hg) content	Zero Pollution
		Suspended solids, orthophosphate (PO ₄ -P) concentration, and pH in runoff	Zero Pollution
	CS17 Forth basin restoration UK	eDNA samples	Biodiversity
		Camera trap data	Biodiversity
		Soil samples	Zero Pollution
		Water quality samples	Zero Pollution
		Acoustic data	Biodiversity
	Small streams and basins	CS13 Sorraia river restoration PT	Number and proportion of native fish species upstream and downstream of retrofitted obstacles
Fish-based Index of Biotic Integrity (F-IBIP)			Biodiversity
CS15 Tzipori basin restoration IL		Sense of place	Inclusivity
		Sense of engagement	Inclusivity
CS16 Upper Scheldt restoration BE		Erosion assessment related to implementation of grass-flower strips	Flood
		Terrestrial invertebrate monitoring related to grass-flower strips	Biodiversity
CS18 Ervidel river restoration PT		Monitoring of riparian features (riparian vegetation)	Biodiversity

The high number of Green Deal indicators addressed across the MERLIN case studies demonstrates strong alignment with EU Green Deal objectives, with a clear emphasis on environmental outcomes, substantial but cluster-dependent integration of economic criteria, and comparatively weaker and less systematic incorporation of social criteria, particularly in large river case studies.

4.2 Direction of effects by indicator

This synthesis summarizes reported responses across rivers, streams, and peatlands, assessed against environmental, social, and economic indicators aligned with the Green Deal Criteria framework. The results reflect early to intermediate responses observed within the project timeframe and are based on reported assessments only; non-reporting does not imply absence of effects.

Across the three case study clusters, 118 Green Deal Criteria indicator responses were reported (Table 5). Overall, responses are strongly skewed toward positive outcomes: nearly 70% (83 responses) are classified as positive impacts (n = 54) or positive trends (n = 29). Neutral outcomes account for 17% (21 responses), while negative impacts are rare (n = 3, 3%). A further 9% (11 responses) could not yet be assessed due to insufficient evidence at the time of reporting.

Table 5: Distribution of Green Deal Criteria assessment responses by theme, indicator, and ecosystem cluster, showing the number of case studies classified as positive impact, positive trend, no impact, negative impact, or effects that cannot be assessed, with totals and overall percentages across all assessments.

Green Deal Criterion category	Green Deal Criterion	Positive impact	Positive trend	No impact	Negative impact	cannot be assessed yet
Environmental	Biodiversity (14)	12	1			1
	Climate (9)		4	3		2
	Drought (11)	7	2	2		
	Flood (9)	6	2	1		
	Zero Pollution (9)		4	3	1	1
Economic	Circular Economy (8)	1	3	3		1
	Energy (7)	3	1	2		1
	Finance (12)	8	3	1		
	Food Systems (7)	1	1	1	1	3
	Green Growth (10)	4	2	3		1
	Transport (3)		2			1
Social	Health (9)	3	3	2	1	
	Inclusivity (10)	9	1			
	Total (118)	54 (46%)	29 (25%)	21 (18%)	3 (3%)	11 (9%)
	Total Peatlands & wetlands	22	13	10	2	6
	Total Small streams	23	7	5	1	5
	Total Large transboundary rivers	9	9	6		

Across all clusters, reported indicator responses are dominated by **positive outcomes**, either as confirmed positive impacts or positive trends. **Social indicators** show the highest share of positive responses across all clusters, with positive impacts reported in 70% of peatland, 50% of rivers, and 60% of stream responses, indicating high reporting confidence for social effects.

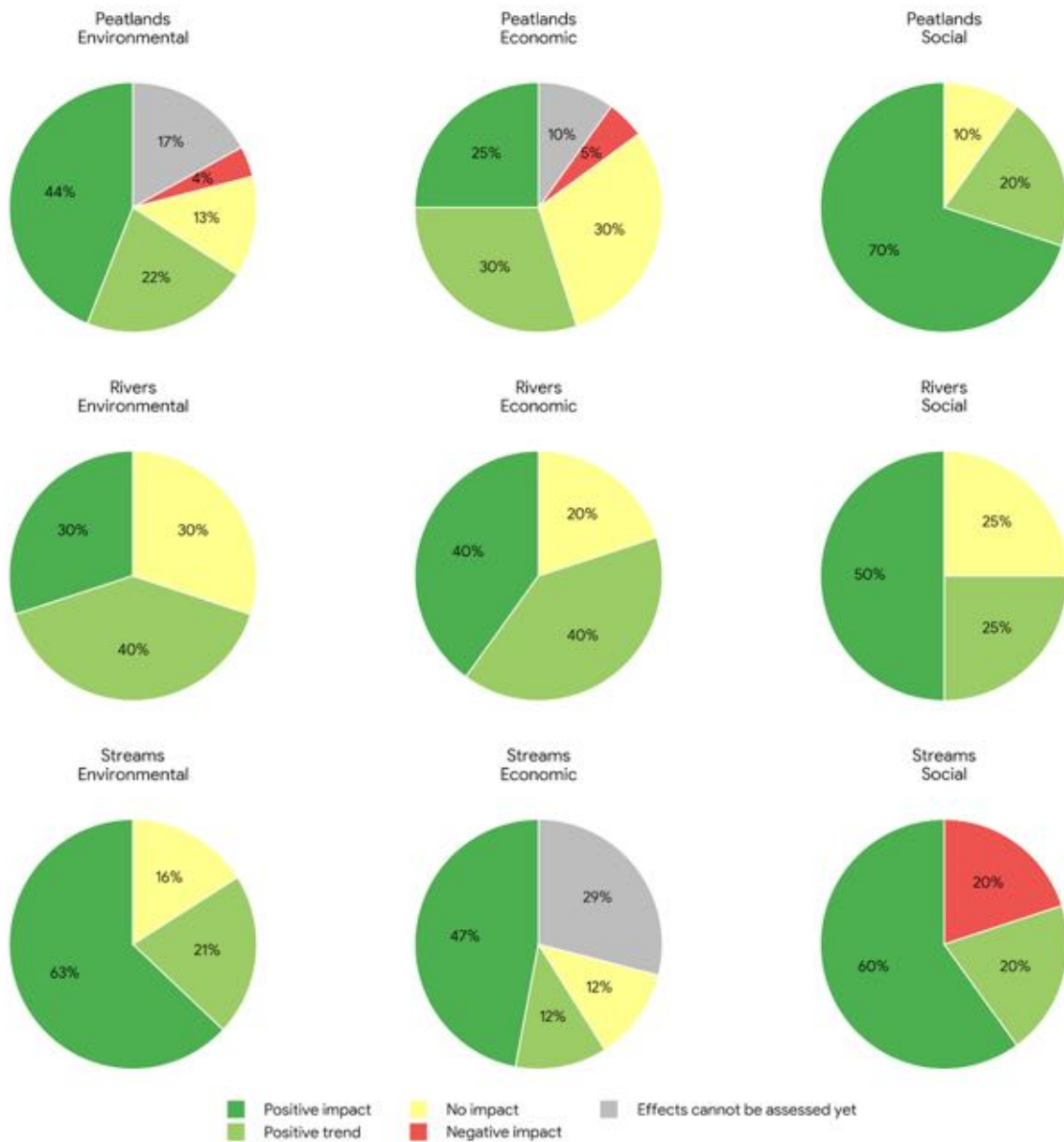


Figure 14: Distribution of assessed impacts across environmental, social, and economic themes for peatlands & wetlands, small streams & basins and large transboundary rivers. Pie charts show the proportional contribution of five impact categories: positive impact, positive trend with data uncertainties, no impact with data uncertainties, negative impact, and effects that cannot yet be assessed. Percentages are calculated within each system type and thematic domain based on the underlying indicator-level assessment.

Environmental responses are also largely positive, but more frequently accompanied by uncertainty, particularly in peatlands where 17% of environmental responses (such as climate regulation, biodiversity and zero pollution) could not yet be assessed, reflecting time lags in ecological recovery. Economic responses (such as food systems, circular economy or green growth) display the greatest heterogeneity, with small streams standing out due to a high share of unassessed responses (29%), despite nearly half of responses indicating positive impacts, suggesting active but still inconclusive reporting.

Negative impacts are rarely reported and confined to specific domains, occurring only in peatland environmental responses (4%) and small stream social responses (20%). For example, one case study reported

a negative response on agricultural land use and livestock farming (“food systems”), as restoration measures reduced the effective grazing area and limited livestock use. This reflects a trade-off in which ecological objectives were achieved at the expense of agricultural and economic functionality.

Overall, the response patterns indicate a consistently positive signal across clusters, with most reported indicators showing either confirmed positive impacts or positive trends. Positive responses dominate in all domains, particularly for social indicators, where positive impacts account for 50–70% of reported responses, and negative responses remain rare. While uncertainty persists for some environmental and economic indicators, especially in peatlands and streams, the overall distribution of responses suggests that MERLIN implementation measures are widely perceived by case studies as delivering beneficial effects within the project timeframe, with few reported adverse outcomes.

4.3 Early signals vs delayed outcomes

Although many of these responses reflect early or intermediate dynamics rather than final outcomes, the consistently high share of positive trends across environmental, economic, and social indicators suggests that MERLIN interventions are already steering systems in a favourable direction within the project timeframe. At the same time, the presence of indicators classified as neutral or not yet assessable highlights that several effects remain emergent and contingent on longer-term monitoring, underscoring the importance of sustained post-project assessment to confirm and consolidate these early positive trajectories.

Note that the analysis captures where case studies stood at the time of reporting but cannot distinguish early-stage effects from more mature outcomes or assess how impacts evolve over time.

4.4 Monitoring conducted after the end of MERLIN

A follow-up analysis examined whether monitoring of the Green Deal Criteria would remain sustainable beyond the MERLIN project lifetime, across the 16 implementation case studies. The evaluation tracked continuity at the GDC level post-implementation, classifying outcomes as continued, discontinued, or uncertain. Results are summarised by clusters (rivers, streams or peatlands) and by GDC theme, with counts reported for each category.

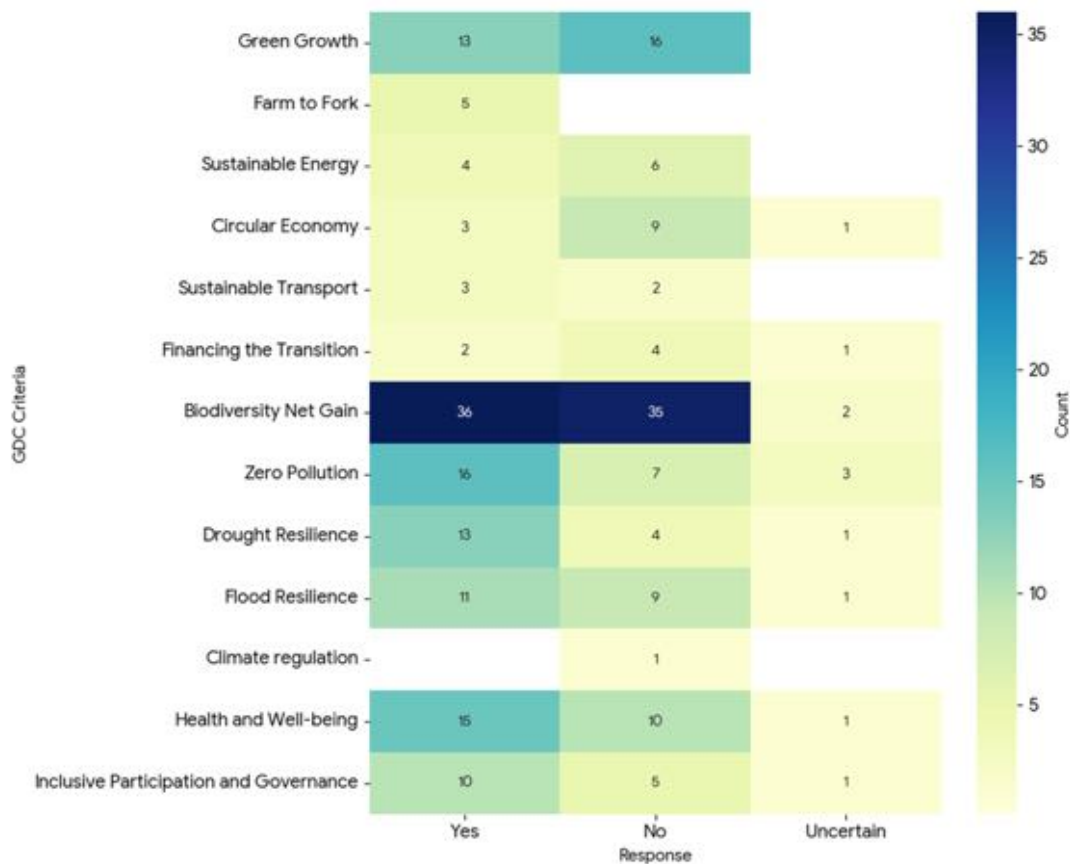


Figure 15: Heatmap showing the response counts of Yes/No/Maybe attributions per Green Deal criteria category (as provided by the case study partners), ranked from highest to lowest positive applicability.

Figure 15 indicates that nearly half of all Green Deal indicators will not be monitored beyond the lifetime of MERLIN (108 of 250). Environmental indicators show the greatest durability, with 76 expected to continue post-project, compared to 56 that will be discontinued and 7 with uncertain status. Biodiversity indicators account for roughly half of all environmental indicators that will remain monitored. This comparatively high level of continuity highlights the central role of environmental metrics in restoration assessment and their strong linkage to mandatory regulatory reporting.

Table 6: Reported continuation of monitoring by cluster and Green Deal category beyond MERLIN lifetime, showing the number of indicators for which monitoring is confirmed to continue (“Yes”, 131), has been discontinued (“No”, 108), or remains uncertain (“Uncertain”, 11).

Cluster	Green Deal Criteria	Continued monitoring		
		Yes (n=131)	No (n=108)	Uncertain (n=11)
Large Rivers	Economic	5	1	1
	Environmental	10	0	7
	Social	5	1	2
Peatlands and Wetlands	Economic	19	28	0
	Environmental	18	21	0
	Social	15	7	0
Small Streams	Economic	6	8	1
	Environmental	48	35	0
	Social	5	7	0

Monitoring continuity varies significantly across ecosystem types, driven by distinct operational contexts. Large river case studies (n= 32 indicators) demonstrate a high rate of persistence (20 continued) but exhibit the highest level of ambiguity, with 10 indicators classified as 'uncertain'. This suggests that while monitoring intent exists, the necessary institutional or funding arrangements often remain unsecured. Peatland & wetland case studies (n= 108) show a sharp dichotomy with zero reported uncertainty; outcomes are nearly evenly split between continued and discontinued monitoring. This reflects decisive planning but points to a limited capacity to sustain efforts post-project. Small streams (n= 110) display the highest stability, with 59 indicators maintained and only one classified as uncertain, representing the most definitive post-project decision-making landscape.

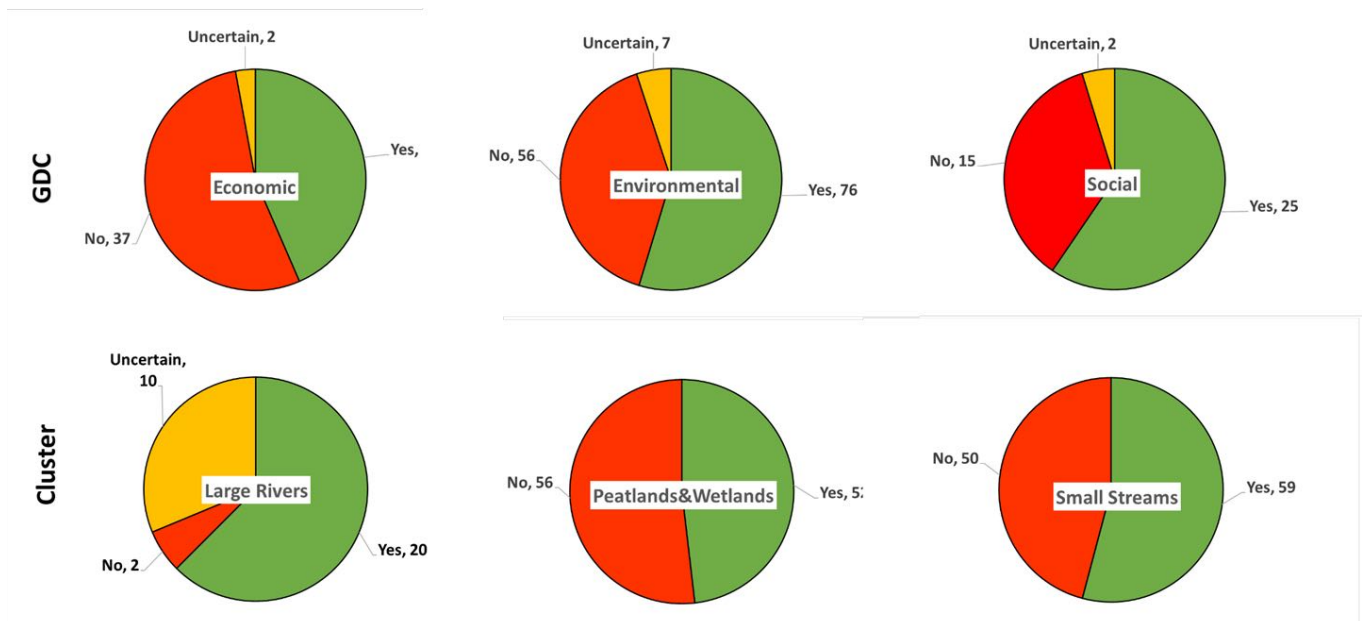


Figure 16: Post-MERLIN monitoring outcomes by restoration cluster (top row) and Green Deal Criteria (GDC) theme (bottom row). Pie charts show the number of indicators reported as continuing to be monitored (“Yes”), discontinued (“No”), or uncertain (“Uncertain”) following the end of the MERLIN project. Numbers in parentheses indicate total indicator counts for each cluster or theme.

An **assessment of barriers** to post-MERLIN monitoring helps explain the observed ecosystem-specific differences. Although sample sizes limit statistical generalisation, discontinuation patterns are clearly structured by ecosystem type rather than randomly distributed. In total, 111 indicators were reported as not monitored after MERLIN, with most discontinuation occurring in peatland and wetlands, particularly the ‘economic’ and ‘environmental’ sectors. In these clusters financial constraints dominate. Lack of funding accounts for 42% of discontinued indicators, while a further 39% were classified as “not applicable” (i.e. not relevant anymore and thus will not be monitored further) in the post-project context. Together, these factors explain more than 80% of discontinuation, indicating a high sensitivity of peatland monitoring to resource availability. In small streams, discontinuation is driven primarily by personnel constraints (46%) and legacy monitoring gaps (that is, monitoring did not stop because MERLIN ended, but because no robust, long-term monitoring system was in place to begin with). By contrast, discontinuation in large rivers is rare (n = 4) and is exclusively linked to feasibility challenges associated with spatial scale and coordination (“upscaling”), with no financial or staffing barriers reported.

Table 7: Distribution of barriers to continued monitoring after the MERLIN project. The data highlights cluster-specific concentrations of financial and personnel constraints, as well as the strategic phasing out of indicators (“Not applicable”).

Barrier to post-MERLIN monitoring	Peatlands and wetlands	Large transboundary rivers	Small streams and basins	Total
Lack of financial resources	24		2	26
Lack of Personal resources	2		23	25
Regulatory limitations	3			3
Not applicable	22	1	13	36
Upscaling	1	2	3	6
Not previously monitored			8	8
To be decided	1	10	1	12
Total	53	13	50	116

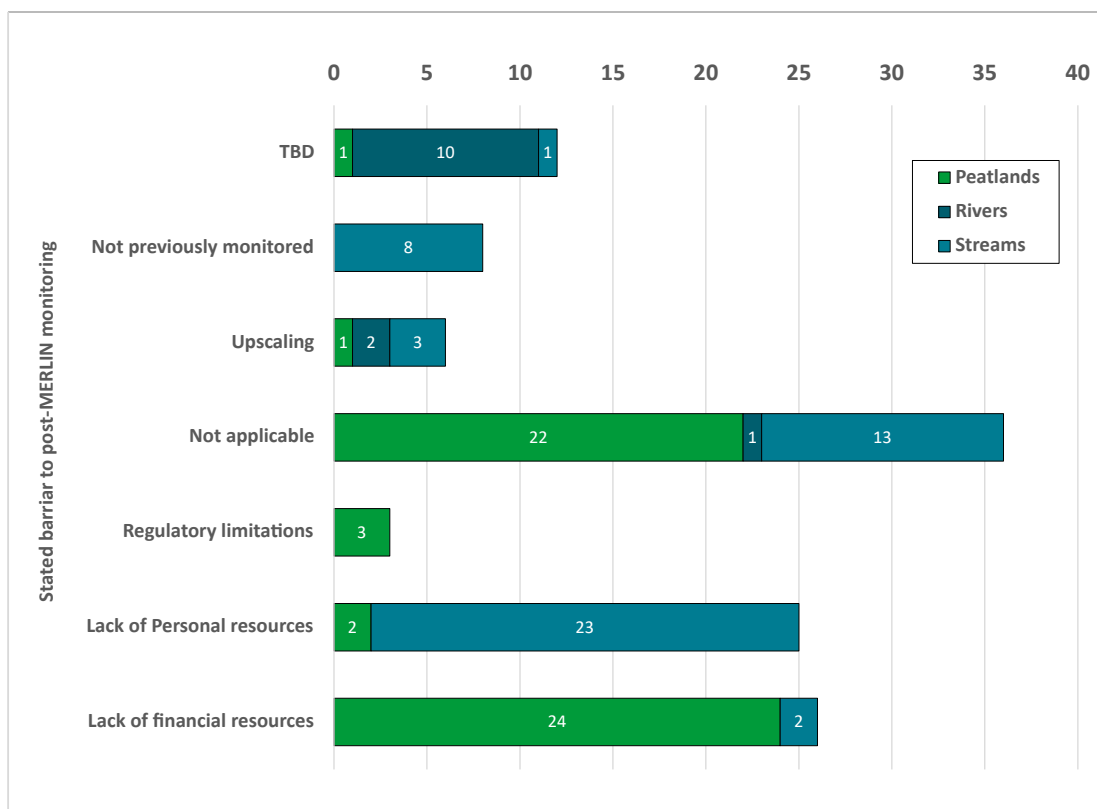


Figure 17: Distribution of stated barriers to post-MERLIN monitoring across peatland, river, and stream case studies. Horizontal stacked bars indicate the absolute number of responses per barrier category, with contributions from each cluster shown cumulatively. TBD=to be decided.

4.5 Data availability and monitoring gaps

Across clusters, the barriers to post-MERLIN monitoring are systematically shaped by the restoration context. Nearly one-third of discontinued indicators are marked 'not applicable,' representing strategic decisions to phase out metrics that have fulfilled their diagnostic purpose. This classification identifies monitoring that was successful during the MERLIN project but is no longer necessary for long-term assessment—confirming that the project enabled targeted data collection specifically tailored to the restoration phase.

In contrast, structural barriers are highly cluster-specific: financial constraints predominantly affect peatlands, personnel shortages are concentrated in small streams, and upscaling-related challenges are unique to large rivers and small streams. Overall, these results indicate that while continued monitoring beyond MERLIN is feasible, its success is context dependent. Although over half of all indicators are expected to continue, the drivers of discontinuation vary markedly across clusters. These patterns should be evaluated considering the limited availability of implementation records across system types; given the small sample sizes, these findings should be viewed as indicative rather than statistically representative.

5 Restoration investment overview

Restoration implementation within MERLIN took place in highly diverse financial contexts. Case studies differed not only in the scale of their restoration ambitions, but also in how individual MERLIN-funded measures were embedded within broader, often long-term restoration initiatives. Understanding the role of MERLIN therefore requires looking beyond absolute project budgets and examining the wider funding landscapes in which MERLIN-supported actions were situated.

The following sections describe (i) the overall composition and scale of funding sources mobilised by the case studies over their full restoration trajectories, and (ii) the perceived influence of MERLIN on securing, structuring, or diversifying restoration funding. Rather than assessing financial efficiency or leverage in a quantitative sense, this analysis documents how MERLIN funding interacted with other public and private sources, and how case study partners experienced its role within their broader investment portfolios.

5.1 Funding sources and funding mix (MERLIN vs other sources)

In many cases, the MERLIN budget formed only a part of a much larger, longer-term investment scheme aimed at restoring areas that extend well beyond the specific implementation measures financed through MERLIN. Accordingly, total cumulative restoration investments over the full lifetime of the initiatives span several orders of magnitude (Figure 18). Most case studies cluster in the lower to mid-range investment classes, with the largest share falling between €2 million and €10 million, followed by initiatives with less than €2 million in total cumulative investment. Fewer cases are situated in the higher investment brackets, with comparatively limited representation in the €10 million–€100 million range and only a small number of initiatives exceeding €100 million.

This distribution highlights the pronounced heterogeneity of restoration trajectories across peatlands, small streams, and large river systems. Importantly, high cumulative investment levels are not confined to a single ecosystem type but occur across clusters, reflecting long-term, multi-phase restoration programmes rather than project-scale interventions.

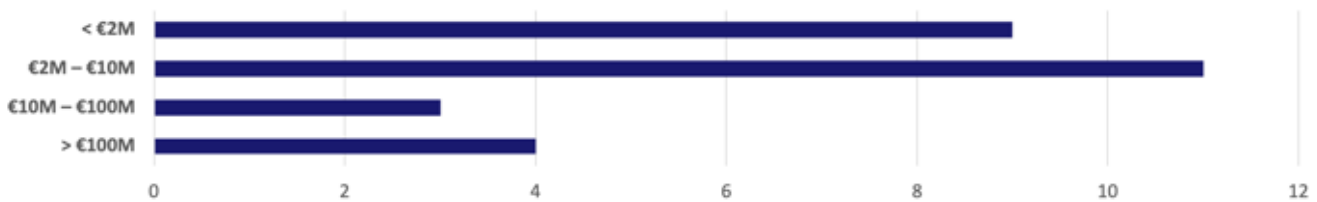


Figure 18: Distribution of total cumulative restoration investments across MERLIN case studies. Investment ranges reflect lifetime cumulative expenditures and illustrate the wide heterogeneity of restoration trajectories across ecosystem types.

As shown in Figure 19, EU-level public funding plays a central role across the case studies, being relevant for 14 cases, followed by national public funding (11 cases) and regional public funding (7 cases). Private funding was reported for six case studies, while philanthropic foundations and NGO funding each appeared in one case. Most case studies combined multiple funding sources, with access to up to four distinct funding streams (Figure 20b), whereas only four cases relied on a single source. Overall, restoration initiatives are characterised by a strong reliance on EU funding, complemented by varying degrees of funding diversification. Currently secured funding horizons extend from 2026 up to 2050.

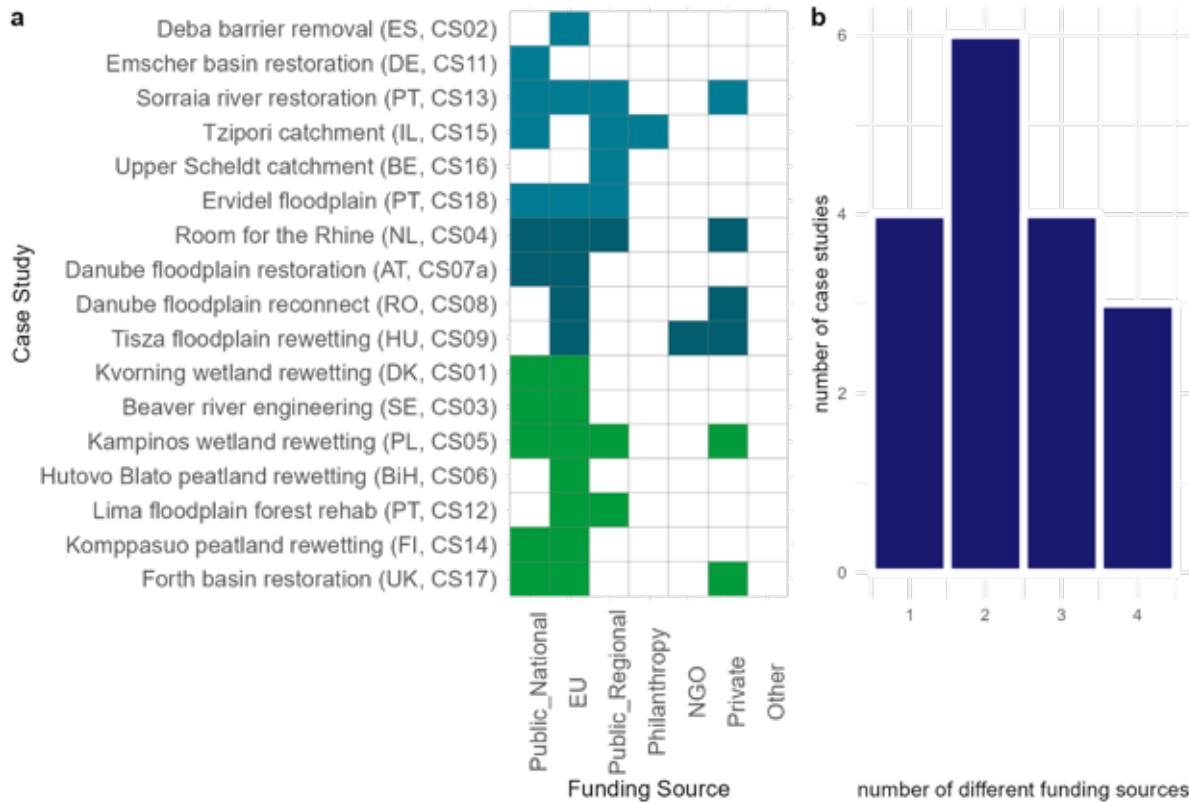


Figure 19: a) Mixture of funding sources per case study and b) Histogram of number of case studies per number of different funding sources.

Building on this funding landscape, several case studies reported changes in the composition of funding sources over time, highlighting MERLIN’s role within broader funding portfolios rather than as a dominant contributor to total cumulative investment volumes. CS12 (Forth basin restoration, UK), for example, used MERLIN funding as match funding to leverage additional government and business investment. CS05 (Kampinos, PL) and CS07a (Danube floodplain restoration, AT) similarly reported additional private and regional funding sources alongside public investment, with MERLIN accounting for less than 5% of total restoration expenditure. Other cases (CS09, CS15, CS17) noted the emergence of private, philanthropic, or EU-level funding over time, while long-term financing continues to rely primarily on regional or national public sources.

Two case studies replied that there was no follow-up budget available, but most case studies have follow-up funding available (Figure 20). Most case studies managed to secure a relevant follow-up budget from different sources, with 11 case studies reporting secured funding of more than 100,000€.

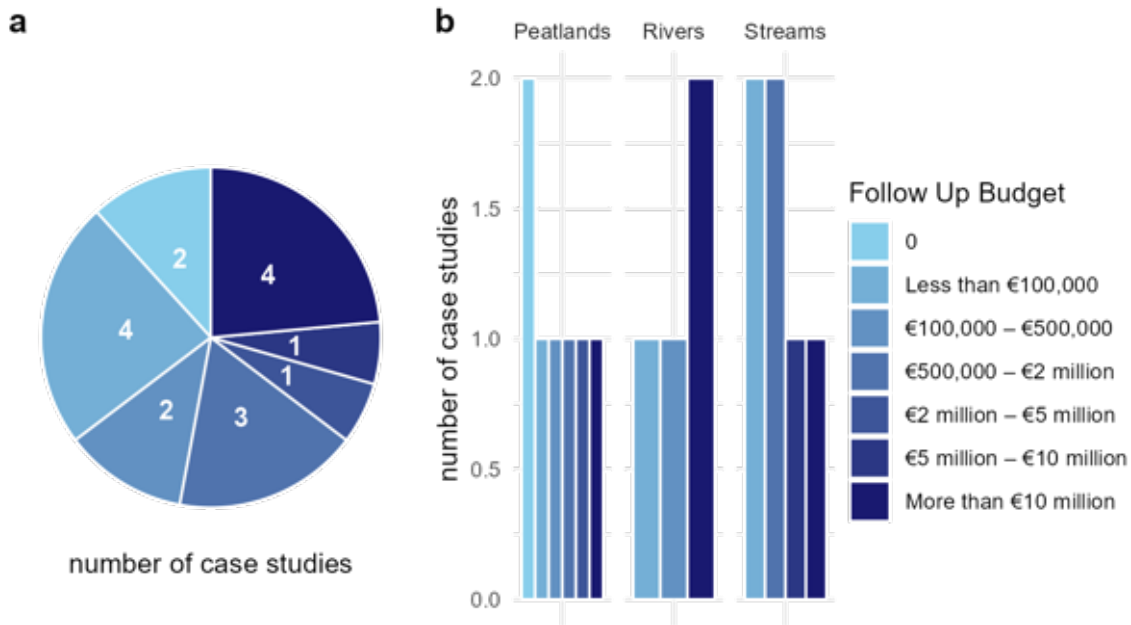


Figure 20: Approximate total budget of follow-up restoration projects for which case studies have already secured funding or approved investment, for all case studies (a) and per cluster (b).

5.2 The influence of MERLIN to restoration funding

The relative share of MERLIN funds of the total restoration budgets was less than 5 % for 7 case studies, while MERLIN funds made up between 5 and 50 % for most case studies. Three case studies resourced most of the funding from MERLIN (CS02, CS06 and CS09). CS01 described the MERLIN contribution as “insignificantly small”, whereas CS04 specified that the investment of third parties was not known.

Case studies were divided almost evenly into three categories regarding whether MERLIN made a difference to the source and/or scope of funding secured for restoration (Figure 21). Strong funding influence was reported primarily by peatland and river case studies, indicating that MERLIN enabled either access to additional funding sources or an expanded funding envelope in these systems. By contrast, the six case studies reporting no influence on secured funding explained this mainly by the presence of alternative funding streams already in place (e.g. national programmes), ongoing independent exploration of private funding, or low-cost interventions where additional financing was not a limiting factor. Overall, the responses suggest that MERLIN’s funding relevance was context dependent and more pronounced in peatland and river restoration than in stream cases.

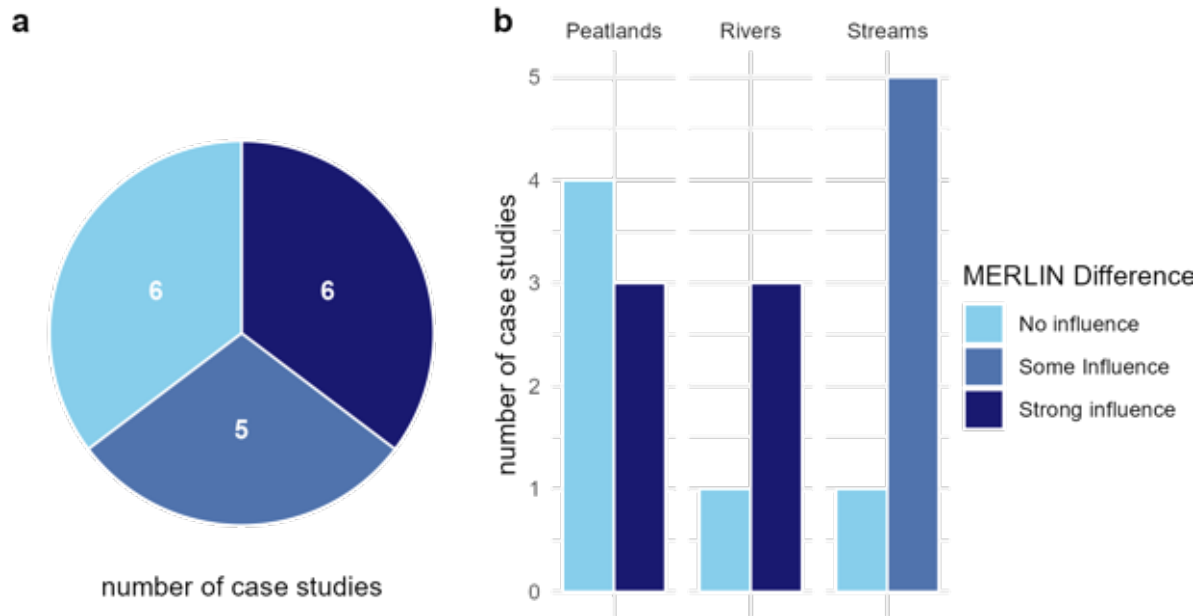


Figure 21: Reported influence of the MERLIN project on the source and/or scope of funding secured for restoration across case studies. (a) Overall distribution of case studies reporting no influence, some influence, or strong influence of MERLIN on secured funding. (b) Distribution of reported MERLIN funding influence by ecosystem cluster (peatlands, rivers, and streams).

Five case studies reported that MERLIN had some influence mention various benefits: CS02 (Deba barrier removal, ES) reports the increase in visibility of the measures, support of the technicians implementing the measures, and an increase of the willingness of politicians to engage in further restoration actions. CS13 (Sorraia river restoration, PT) explains that:

"In the specific case of the Sorraia Valley (PT), the water is managed by an association with its own funding. EU projects help the association be more innovative and collaborative while enabling the possibility of showing farmers efficient NbS."

CS 18 (Ervidel floodplain, PT) replied similarly, emphasizing the benefits of demonstrating NbS to farmers.

Among the case studies indicating MERLIN having had a strong influence on their projects, CS06 (Hutovo Blato peatland rewetting, BiH) reports that MERLIN was their only source of funding and CS07a (Danube floodplain restoration, AT) reports that implementation of measures would have otherwise been delayed or cancelled. CS08 (Danube floodplain reconnect, RO) describes the contribution of the MERLIN project as follows:

"MERLIN has made a meaningful contribution to the restoration initiative by supporting the creation of a diverse mosaic of habitats that enhances ecological connectivity and resilience along the Danube. The project also strengthened the monitoring of ecological and hydrological effects, providing valuable data for assessing long-term restoration outcomes. In addition, MERLIN offered an important learning opportunity for authorities, allowing them to become more familiar with the approval and permitting procedures specific to large-scale ecological reconstruction projects. This experience has improved institutional readiness and will facilitate smoother implementation of future restoration efforts."

Case studies reporting strong influence also frequently mention that MERLIN provided a stable operational background and provided a continuity that made restoration attractive to stakeholders. This enabled the establishment of an amiable network of local stakeholders, increases awareness and facilitates upscaling. CS17 (Forth basin restoration, UK) summarises their experience as:

"MERLIN has given the restoration work we are doing on the Allan Water and River Devon kudos. The Partnership between Forth Rivers Trust, Nature Scot, James Hutton, UKCEH and Stirling University has given the project strength and allowed us to spread our message wide. We have managed to deliver on a larger scale, which has allowed us to win awards and attract private finance."

In addition to current funding structures, case studies reflected on how their engagement with funding diversification has evolved, including learning effects associated with MERLIN participation. Figure 22 illustrates the distribution of case studies across four stages of engagement with diversified funding strategies. CS07a (Danube floodplain restoration, AT) identified themselves as committed to diversification and reported that a local water-supplier was found as co-funder in another restoration project. In their own words, CS08 (Danube floodplain reconnect, RO) reported:

"We are actively engaging with corporate partners who share our commitment to conservation and sustainable water management. These collaborations are part of broader collective action and water stewardship initiatives that aim to protect and restore riverine ecosystems along the Danube. Through these partnerships, companies contribute financial resources and long-term support for habitat restoration, biodiversity conservation, and climate resilience measures. This approach strengthens the link between ecological objectives and responsible business practices, ensuring that restoration efforts are both environmentally and economically sustainable".

CS18 (Ervidel floodplain, PT), which signalled willingness to diversification, commented:

"We are actively searching for new funding and funding partnerships. Until now, we have had only exploratory conversations towards potential applications and funding opportunities. Based on the experience from the MERLIN case study, EDIA submitted an application to the "Redeem - Resilience in Desertification and Drought for the Mediterranean" project, under the fifth Call of the Interreg Euro-Med Program, having proposed a pilot area for nature-based solutions (NbS) implementation."

Also, CS17 (Forth Basin Restoration, UK) mentioned that they were exploring new types of funding beyond traditional public grants. CS15 (Tzipori catchment, IL) described MERLIN as an eye-opener towards private finance and CS16 (Upper Scheldt catchment, BE) reported that they were looking at other international funding programs apart from national/local funding.

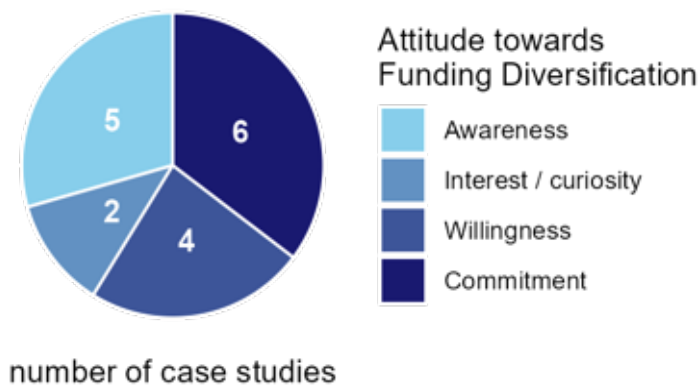


Figure 22: How MERLIN has changed the case studies' attitude towards funding diversification, with **Awareness**: "We recognize that future restoration plans may require additional funding sources, but we have not yet explored this further", **Interest/curiosity**: "We have started to explore the topic (e.g. reading, attending a webinar, informal talks with partners) but without any concrete follow-up", **Willingness**: "We are actively exploring options (e.g. asking for guidance, joining training, developing ideas), but no formal engagement has been made yet", **Commitment**: "We are actively engaging with new funding actors (e.g. partnerships, proposals, hiring new profiles, or setting up structures for collaboration)".

6 Participatory and sectoral aspects of implementation

6.1 Successes and challenges of participatory process reported during implementation

This section summarises the outcomes of participatory and sectoral approaches undertaken across the case studies. Overall, stakeholders reported 5 participatory measures as having worked particularly well, which were most frequently reported in the peatland cluster. At the same time, 6 participatory activities were identified as difficult to implement due to different reasons.

6.1.1 What did go well during the participatory implementation process and why?

As shown in Figure 23, positive experiences most frequently related to building trust and high-quality relationships (15 instances) and knowledge exchange and mutual learning (11 instances). The prominence of **trust-building** is reflected in many of the open-text responses to the survey questionnaire. In peatland case studies, stakeholder boards and reference groups played a key role in fostering long-term relationships. For example, CS01 reported that the case study board offered a collaborative approach, complemented by the engagement with residents, farmers, NGOs and municipal actors within a shared landscape strategy created “a stronger sense of ownership”. Similarly, CS07a noted that an already established stakeholder board enabled joint decision-making to be “much easier than 20 years ago”, highlighting the cumulative value of long-standing relationship building.

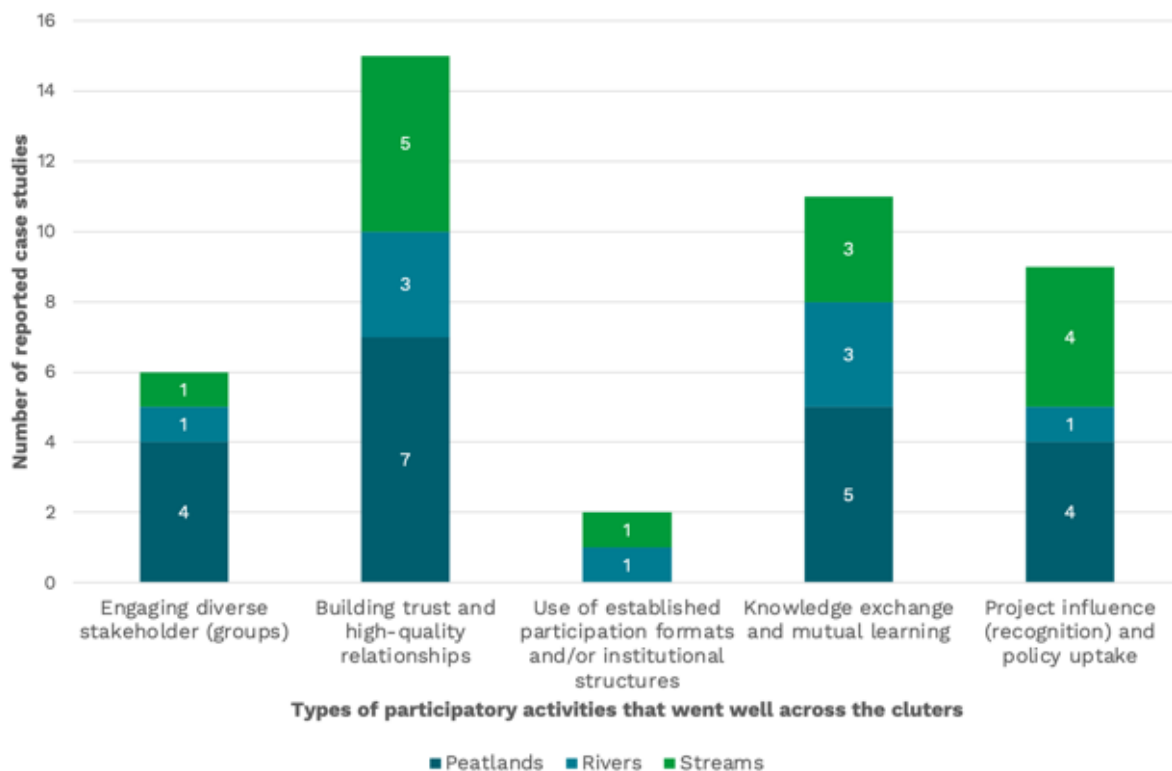


Figure 23. Participatory activities reported as going well across case studies.

Knowledge exchange and mutual learning was often achieved through practical and interactive formats. Field visits and excursions (e.g. CS04, CS11), public surveys (CS05), and short training courses (CS12) allowed stakeholders to combine local knowledge with scientific and technical expertise. In CS12, for instance, “the organized workshops always had quite a positive participation”, which together with a bioengineering course enabled stakeholders, particularly livestock owners, to actively shape and adapt planned interventions, contributing to positive reception of restoration measures.

Project influence (recognition) and policy uptake notably emerged in case studies where engagement extended beyond the local level. Strong involvement of public administrations in CS02 facilitated administrative procedures and dissemination of project outcomes, while CS14 and CS17 demonstrated how structured, yet

targeted engagement (e.g. small sectoral meetings followed by cross-sectoral roundtables), led to recognition by regional and national authorities and requests for expert input into broader policy processes.

6.1.2 What was difficult and why?

Despite the positive aspects of participation, the case studies identified some bottlenecks to engagement, which are coded into six categories. As shown in Figure 24, the most frequently cited challenges related to technical, contextual or project-design issues (7 case studies) and stakeholder-related challenges such as attitudes, behaviours and social dynamics (6 case studies).

The technical, context/external or project-design design challenges that affected participation commonly arose due to circumstances beyond the control of the project teams. For example, CS01 highlighted how the Covid-19 pandemic coincided with the start of the large, spatially extensive, overarching project involving numerous landowners. The pandemic required a shift to online engagement, which significantly complicated coordination and relationship-building. Similarly, CS04 and CS15 noted that the time required to establish a functioning stakeholder community exceeded what was realistically possible within the four-year project timeframe, particularly where restoration planning and implementation progressed rapidly. CS17 also noted that it was difficult to engage larger number of volunteers in rural catchments due the small number of populations compared with towns and cities.

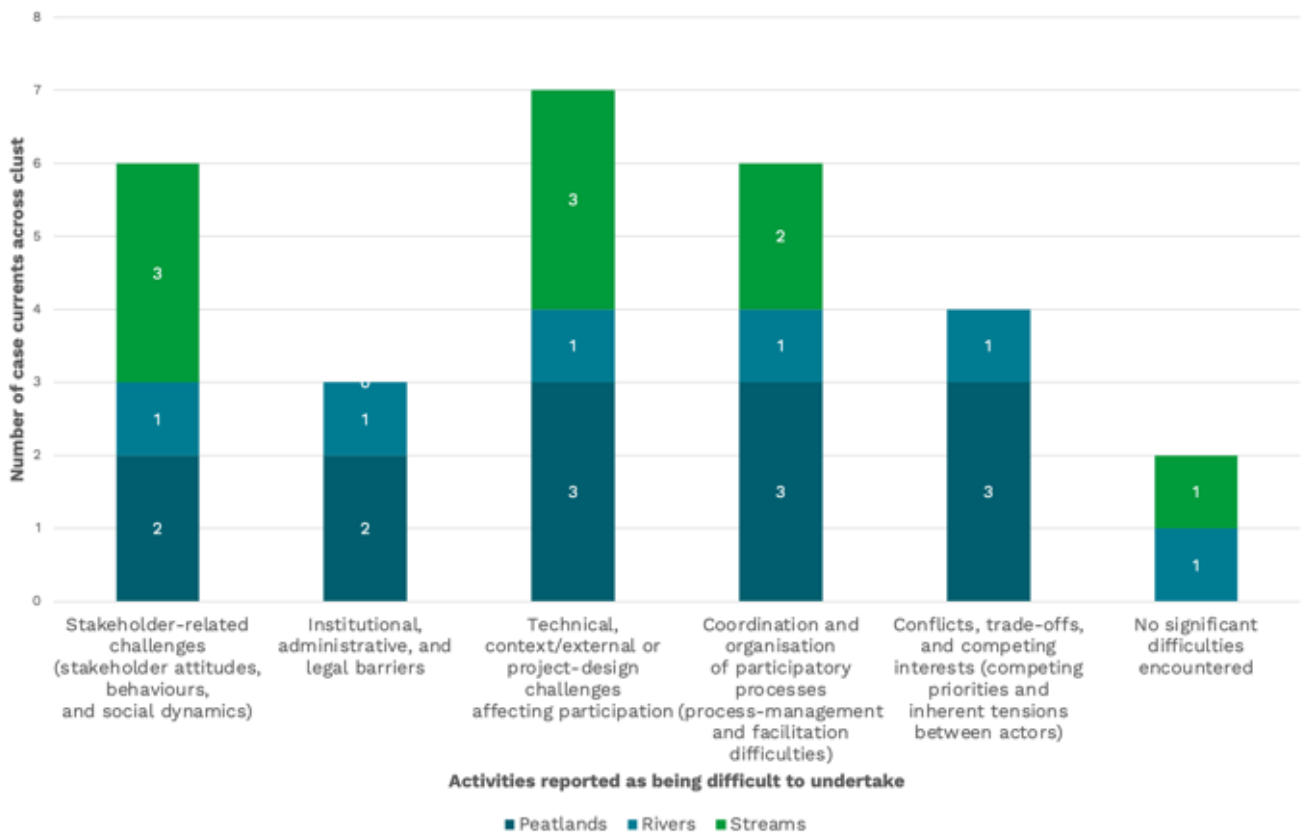


Figure 24. Participatory issues reported as being difficult across case studies

Stakeholder-related challenges often reflected reluctance, mistrust and in some cases opposition. In CS05 Kampinos wetland rewetting (PL), long-standing tensions and lack of trust between local communities and park authorities made communication and participatory activities particularly difficult, indicating historically embedded mistrust. In other cases, such as CS02 Deba barrier removal (ES) and CS13 Sorraia river restoration (PT), misinformation and day-to-day workload of landowners reduced sustained participation, with CS02 describing this as sense of 'denialism'. Case studies working closely with farmers (e.g. CS16 Upper Scheldt restoration BE and CS17 Forth basin restoration UK) also noted that some stakeholders felt uncomfortable or intimidated in mixed, cross-sectoral settings, highlighting the need for smaller, sector-specific meetings and careful framing of discussions.

Challenges linked to **coordination and participatory process management** were also highlighted, appearing in six case studies (CS01, CS12, CS17, CS04, CS13, CS17). The case studies noted practical difficulties in scheduling

meetings and workshops that different stakeholder groups could attend, particularly when balancing the representation of different groups such as landowners, public authorities and other actors (e.g. CS12 Lima floodplain forest rehab PT). CS13 Sorraia river restoration (PT) also said landowners' participation was scarce due to their limited time.

A smaller but important set of difficulties related to **institutional, administrative and legal barriers**. In CS03 Beaver river engineering (SE), obtaining permission for artificial beaver dams proved challenging due to legislative constraints and the absence of clear registers to known beaver dams planned to be demolished. CS08 described lengthy negotiations with authorities who were unfamiliar with certain restoration approaches, while CS09 flooding an area as a restoration measure needs a complete acceptance from affected landowners, which was nearly impossible.

Finally, where **conflicts or trade-offs did** emerge (CS05, CS06, CS14, CS09), they were often tied to landownership and decision-making authority. In CS14 Komppasuo peatland rewetting (FI), for example, birdwatching towers for nature observation was installed in response to local stakeholders' preference for recreational infrastructure. However, this was later removed due to landowner concerns about long-term liability and maintenance, illustrating how private ownership can constrain participatory outcomes even in otherwise constructive processes.

6.2 Actor and sectoral involvement in MERLIN implementation

While case studies provided responses to the kind of sectors engaged, there was no detailed information on the kind of actors (public, private, NGO, etc) that these sectoral engagements belonged to, neither was there adequate information on the nature and intensity of engagement. Three sectors were particularly well-represented (Figure 25) with **water managers** occurring in nearly all the case studies. Where specified, water managers included local and regional water management authorities (CS05 Kampinos wetland rewetting, PL), water boards and floodplain authorities (CS04 Room for the Rhine NL), basin authorities (CS13 Sorraia river restoration PT), and environmental agencies such as the Scottish Environmental Protection Agency (CS17 Forth basin restoration UK).

Nature organisations included local and national-level NGOs, angling associations involved in freshwater restoration (CS03 Beaver river engineering, SE), nature managers (CS08 Danube floodplain reconnect, RO). In CS17 Forth basin restoration (UK), several nature organisations were reported as being involved alongside other sectors, including the Forth Rivers Trust, the RSPB (Royal Society for the Protection of Birds) and the Woodland Trust, as well as river trusts and conservation bodies participating in stakeholder meetings and events. Nature Scot was also mentioned as the main implementation partner. The **agricultural sector** was reported for example in CS05, CS13, CS16 and CS18. In a small number of cases, agricultural policy actors were also mentioned, such as representatives from the Scottish Government attending events linked to CS17.

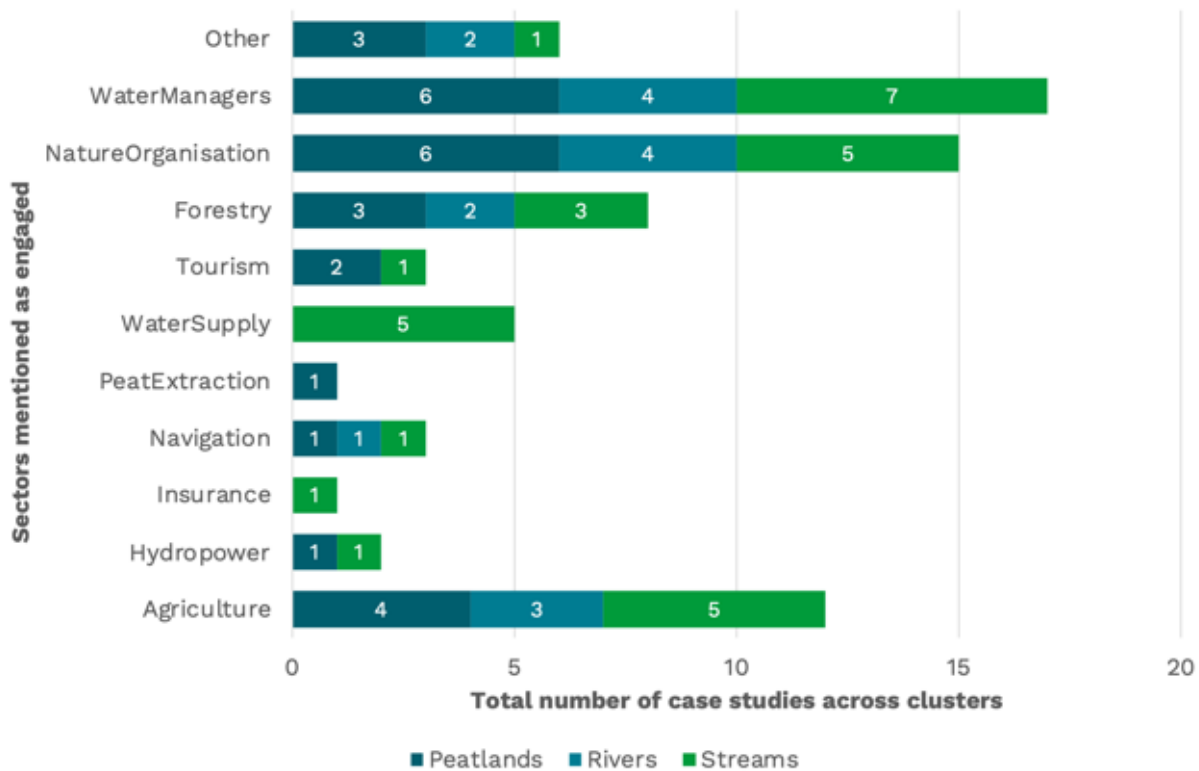


Figure 25. Number of case studies that engaged various sectors across the 3 clusters

Forestry actors reported often included local forestry associations (CS13 Sorraia river restoration, PT) and forest managers identified as relevant stakeholders due to their influence on catchment conditions (CS02 Deba barrier removal ES). In the three case studies where **Tourism** sector was present (CS06, CS12, CS15), they were mainly because restoration sites had recreational or visitor-related relevance. Where specified, the heterogenous group of "other" stakeholders (CS12, CS14, CS17, CS04, CS08, CS16) municipalities and local authorities, civil protection services, infrastructure operators, research institutions and universities, as well as private companies such as mining or infrastructure-related organisations. Small stream cluster had the most diversity, appearing across all the sectors.

6.3 Was there any cross-sectoral collaboration?

Twelve case studies mentioned there were cross-sectoral engagement, four in each cluster, with CS01, CS05, CS06, CS11, CS16, CS18 indicating no cross-sectoral involvement. Most case studies did not provide detailed information on interactions between sectors or what exactly collaboration achieved. Nevertheless, collaboration commonly involved a combination different sectors participating in the same event or being members of board or committee instead of them having to independently work together. Water management, agriculture, nature organisations, forestry, infrastructure operators and researchers not commonly highlighted in this regard.

CS13 (Sorraia river restoration, PT) provided a more detailed context on how collaboration evolved, although it primarily described coordination within the agricultural sector rather than between different sectors. In this case, farmers regularly exchanged experiences and discussed shared challenges through the farmers' association, which supported collective decision-making and trust-building among land managers. The association is described as open to engage with public authorities and academic partners. CS13 exhibits confidence that their approach could increase probability of adopting and scaling up of successful practices within the local community due to land managers openness to new knowledge and innovative approaches.

Clearer means of collaboration was reported in CS09 (Tisza floodplain rewetting, HU), where local water management, agricultural, forestry and nature conservation stakeholders were regularly consulted together through joint workshops and field trips. In some cases, cross-sectoral collaboration was linked to formal platforms or events. Moreover, CS17 (Forth basin restoration, UK) described cross-sector engagement as occurring during roundtable meetings for the Regional Scalability Plan and at the MERLIN Day event. This included participation of infrastructure actors such as Network Rail, nature organisations such as Forth Rivers Trust,

agricultural land managers, water managers, research institutes and public authorities, as well as coordination through the Allan Water Steering Group.

Half of the case studies (CS02, CS03, CS04, CS07a, CS08, CS14) reporting cross-sectoral collaboration confirmed it occurred but described the occurrence by reaffirming and mentioning the sectors involved in Section 6.2 without further details. For instance, CS02 Deba barrier removal (ES), water managers were reported to have collaborated with multiple sectors throughout the project, acting as a link across different stakeholder groups. CS03 Beaver river engineering (SE) stated that an NGO (Anglers) and forest companies were involved together in a reference group, while CS04 Room for the Rhine (NL) reported dialogues between water managers and nature organisations, as well as between nature organisations and agriculture, but what this collaboration achieved was not stated.

6.4 What the dataset adds beyond existing MERLIN deliverables

The main added value of this dataset lies in its ability to compare what worked well and what was difficult across case studies, based on the coding of free-text responses, something that was not of particular relevance in existing MERLIN deliverables.

While key enabling factors such as trust-building, stakeholder diversity and knowledge exchange have already been identified and discussed in D4.9 (Ibrahim et al., 2025), this dataset adds clarity on the spread and recurrence across different case studies and ecosystem contexts. In other words, it does not introduce entirely new themes but makes visible how frequently and in which combinations of case studies these factors were reported, allowing for a more comparative perspective.

Similarly, the data provides a good overview of challenges to participatory implementation across all case studies. Challenges related to coordination, stakeholder dynamics, institutional barriers or technical constraints can be examined across cases in a consistent way. This level of comparability across the full set of case studies is not readily available in existing MERLIN deliverables, where challenges are often described in depth, but in only few case studies used as examples.

Nevertheless, the dataset on participation has clear limitations. It does not capture the specific participatory activities that led to particular enablers, nor does it provide detailed information on the types of stakeholders involved, the levels at which they were engaged, or the number of stakeholders within each sector. As such, the data should be understood as providing an overview rather than an in-depth analysis of participatory processes.

For a more detailed understanding of the nuances of participatory design, mediums, levels of engagement as well as local stakeholder perceptions, D4.9 remains essential as it integrates quantitative and qualitative insights and case study narratives in greater depth, offering contextual explanations of how and why participatory processes unfolded differently across contexts.

7 Case study reflections on MERLIN implementation

This section synthesises case study partners’ reflections on how MERLIN contributed to restoration practice at the local level. Drawing on complementary qualitative and quantitative inputs, it examines whether and how MERLIN supported wider implementation and upscaling, what partners identify as key achievements and exemplary aspects, which lessons were learned during implementation, and how influential MERLIN was perceived to be across different dimensions of restoration work. Taken together, the results indicate that MERLIN’s contribution was strongest in **reinforcing the conditions for effective implementation** (including capacity, stakeholder engagement, learning, and legitimacy) while playing a more limited role in reshaping strategic objectives or acting as a primary driver of additional funding.

7.1 Support for wider implementation and upscaling

The case studies indicate that MERLIN contributed to effects beyond individual implementation sites (Figure 26). These effects were most often described in terms of the extension of restoration actions to additional areas, alongside increased awareness, legitimacy, and political support. References to partnerships, learning, replication, and financial leverage were less frequent, while only one case (CS01 Kvorning wetland rewetting DK) reported limited upscaling due to context dependency. Overall, the figure suggests that MERLIN’s contribution to wider implementation was primarily associated with tangible spatial expansion, supported by enabling social and institutional conditions in a subset of cases.

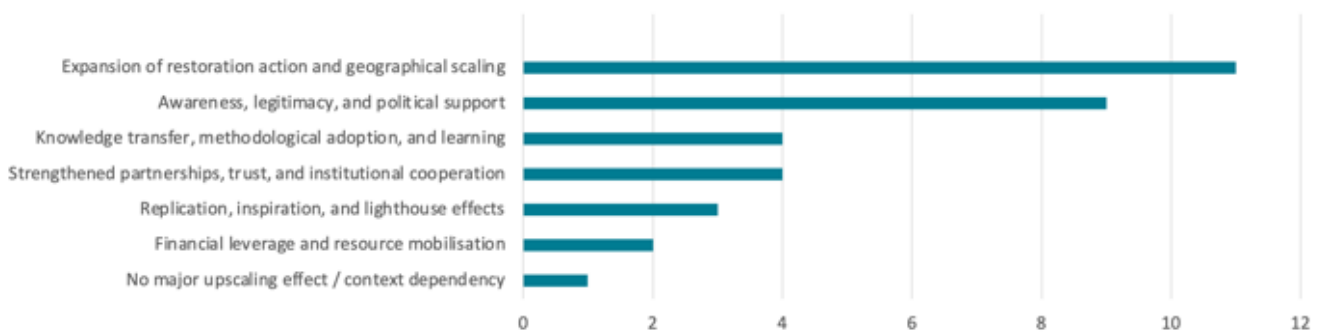


Figure 26: Frequency of upscaling pathways reported by case study partners in response to how MERLIN supported wider implementation beyond individual project sites.

7.2 Points of pride and lighthouse aspects

To capture different perspectives on case study success, partners were asked two complementary questions. *Points of pride* reflect aspects that case study partners themselves consider particularly meaningful based on their direct experience of planning and implementing restoration activities. *Lighthouse aspects* capture elements that partners perceive as exemplary or relevant beyond their own site, including features that could inspire, inform, or be taken up in other contexts. Together, these two perspectives distinguish between internally valued achievements and outward-oriented relevance, while drawing on a shared set of underlying dimensions of success.

Figure 27 shows how often different aspects were mentioned as points of pride, in comparison to lighthouse aspects. Stakeholder relationships and community engagement are prominent in both points of pride and lighthouse aspects, indicating their importance for partners’ own experience and for perceived relevance beyond the case. Ecological achievements and outreach and visibility are mentioned more often as points of pride, suggesting these aspects are especially salient in partners’ own assessment of success.

By contrast, innovation and adaptive problem-solving and cross-sector partnerships are more frequently highlighted as lighthouse aspects, indicating that these are more often seen as relevant or transferable to other contexts than as central sources of pride. Upscaling and policy influence appear in both framings but more often as points of pride, while knowledge creation and long-term learning are mentioned relatively rarely overall.

Overall, the figure suggests that partners tend to associate pride with visible and locally experienced outcomes, while lighthouse aspects more often reflect elements seen as useful or informative for others. This distinction may also relate to the extent of internal learning within the case studies: achievements that required partners to move beyond their established ways of working—for example by engaging unfamiliar stakeholder groups or exploring new financing options—appear particularly salient as “lighthouse” elements, even if they are less

immediately visible on the ground. This outward-facing relevance is further reflected in the fact that six MERLIN case studies have received public awards, indicating recognition of their exemplary character beyond the immediate project context.

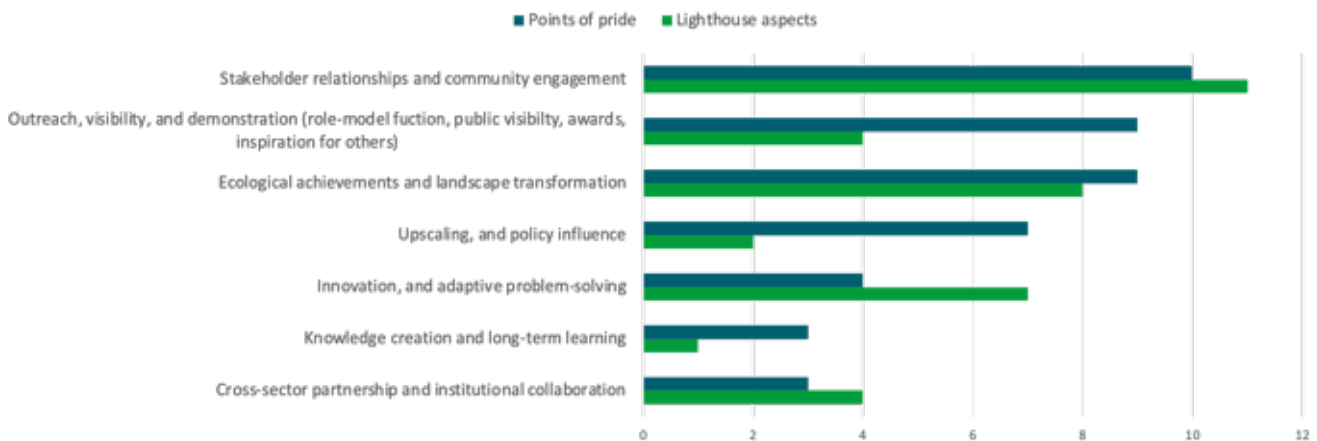


Figure 27: Frequency of mentions of different success dimensions by case study partners, distinguishing between points of pride and lighthouse aspects.

7.3 Lessons learned reported by case studies

As shown in Figure 28, the lessons learned reported by case study partners are strongly concentrated on social and organisational aspects of implementation. Stakeholder engagement and communication clearly dominate, followed by the importance of structured planning and adequate organisational capacity. In contrast, lessons related to ecological processes, administrative constraints, adaptive flexibility, and funding are mentioned less frequently. Overall, the figure indicates that partners primarily frame successful restoration in terms of how projects are organised, led, and embedded in their social context, rather than in terms of technical or financial factors alone.

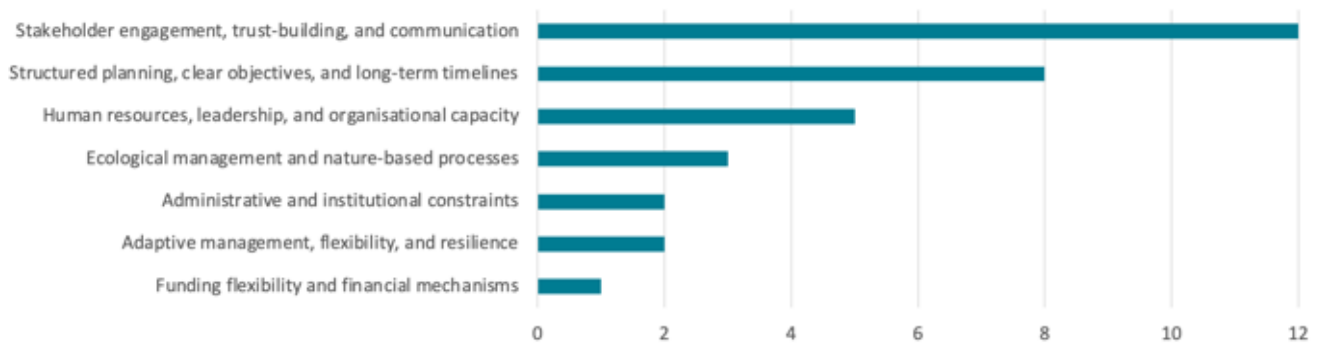


Figure 28: Frequency of lessons learned reported by case study partners, grouped by thematic category.

7.4 Perceived influence of MERLIN across dimensions

Building on the qualitative insights reported above, case study partners were asked to assess the perceived influence of MERLIN across key dimensions of their restoration work using a five-level scale. The results, summarised in Figure 29, reflect partners’ self-reported assessments of where MERLIN most strongly contributed to their activities.

Overall, partners reported the strongest influence of MERLIN on internal capacity, indicating that participation in the project substantially supported the development of skills, knowledge, and collaborative networks within case study teams. Stakeholder engagement and methods and tools also received relatively high ratings, suggesting that MERLIN played an important role in strengthening participation and governance arrangements, as well as in introducing or reinforcing practical frameworks, tools, and monitoring approaches at the case level.

Perceived influence on visibility and legitimacy was moderate, indicating that MERLIN often helped increase the profile of restoration activities or their acceptance in policy and public contexts, though this effect was less

pronounced than capacity-building or methodological support. In contrast, partners reported more limited influence on strategic direction, suggesting that while MERLIN contributed to ongoing work, it less frequently reshaped core restoration goals, scope, or timing that were often defined prior to project involvement. Funding leverage received the lowest average ratings, indicating that direct facilitation of additional financial resources was perceived as a comparatively weaker contribution of MERLIN across cases.

Taken together, the pattern shown in Figure 29 suggests that MERLIN’s perceived influence was strongest in reinforcing the how of restoration (through capacity, engagement, and practical tools) rather than in redefining strategic orientations or acting as a primary driver of additional funding.

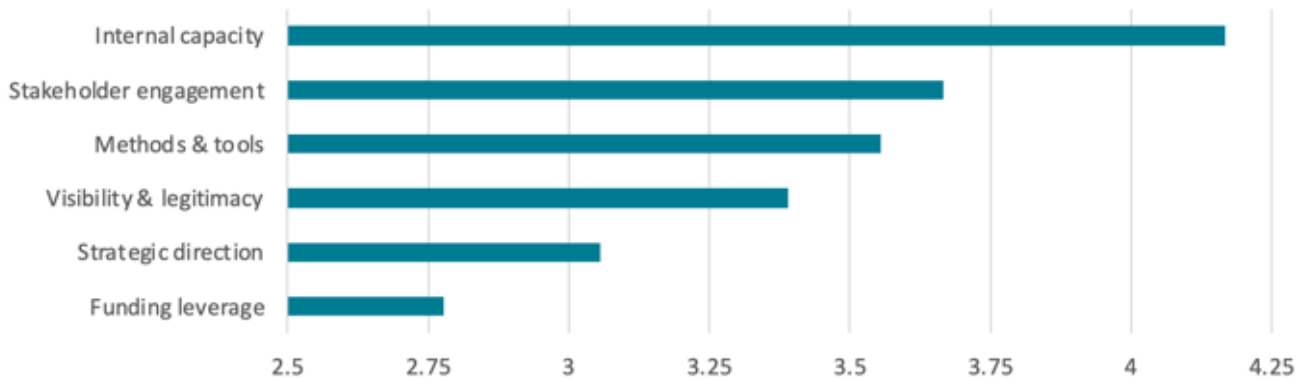


Figure 29: Average self-reported influence of MERLIN across key dimensions of restoration work, based on a five-level scale (1 = not at all, 5 = very much).

8 Concluding remarks

This deliverable set out to provide a structured and transparent account of restoration implementation within MERLIN. Across 16 case studies and 42 implemented measures, it documents what was planned, what was delivered, how implementation unfolded in practice, and which immediate outcomes, challenges, and adaptations were encountered along the way. In doing so, D2.5 establishes a shared empirical reference point for understanding restoration implementation across a highly diverse set of ecological, institutional, and socio-economic contexts.

A central message emerging from this documentation is that implementation rarely follows linear plans. Deviations from initial targets, adaptive redesign of measures, and context-specific problem-solving were the norm rather than the exception. Far from indicating failure, these adaptations reflect the realities of implementing restoration in complex socio-ecological systems and underline the importance of flexibility, learning, and locally grounded decision-making. The consistently high levels of completed implementation, frequent target overshoots, and early positive signals across many monitoring indicators demonstrate that meaningful restoration progress can be achieved even under such conditions.

At the same time, the report highlights important constraints. Incomplete cost reporting, uneven monitoring continuity, and capacity limitations—particularly beyond the lifetime of project funding—point to structural challenges that extend beyond individual case studies. These constraints are not unique to MERLIN, but emblematic of wider issues facing restoration initiatives across Europe.

Importantly, this deliverable is intentionally descriptive. It does not aim to evaluate effectiveness, rank success, or derive prescriptive conclusions. Instead, its value lies in making implementation experiences comparable across cases, surfacing recurring patterns, and providing a robust evidence base for reflection and synthesis. In this sense, D2.5 should be read as a foundational document.

The analytical interpretation of these patterns, the assessment of what enables or constrains success, and the extraction of cross-case lessons for upscaling and policy design are addressed in Deliverable D2.6. Together, D2.5 and D2.6 form a complementary pair: this report documents what happened during MERLIN implementation, while D2.6 reflects on what can be learned from it for the future of large-scale freshwater ecosystem restoration in Europe.

9 References

- Birk, S., Weigelt, C., Borgwardt, F., Kail, J., 2025. Freshwater restoration effects on biodiversity and ecosystem services: A Delphi survey. *Restor. Ecol.* 33 (1), e70119. <https://doi.org/10.1111/rec.70119>.
- Gerner, N., Alatalo, I., Andrzejewska, A., Anton, C., Baattrup-Pedersen, A., Barndão, C., Birk, S., Boets, P., Colls, M., Correia, F.L., de Lange, M., Dias, H., Drexler, S.-S., Duarte, G., Ecke, F., Eklöf, K., Ferreira, T., Fonseca, A., Forio, M.A., Geerling, G., Gruber, T., Hering, D., Hershkovitz, Y., Jägerud, L., Jarak, M., Kajner, P., Karnatz, S., Katz, A., Kaufmann, A., Kempter, I., Nørgaard, M.N., Portela-Pereira, E., Provan, N., Puiu, I., Rodríguez-González, P.M., Rudziński, J., Sá, L., Santos, L., Schneider, A., Sime, I., Smis, K., Sommerhäuser, M., Streater, H., Thorell, D., Tögel, R., Trandziuk, P., Udklit, L., Wilińska, A., 2023. MERLIN Deliverable 2.3: Case study implementation plans. EU H2020 research and innovation project MERLIN, 211 pp. <https://doi.org/10.5281/zenodo.7683899>.
- Hershkovitz, Y., Birk, S. (2026). MERLIN case study restoration measures implementation data (D2.5 Annex) [Data set]. Zenodo. <https://doi.org/10.5281/zenodo.18405265>.
- Ibrahim, A., Gray, R., Marshall, K., Blackstock, K., Rodríguez-González, P.M., Birk, S., Ojanen, M., Trandziuk, P., Stelmaszczyk, M., Penning, E., Schwerk, A., Colls, M., Elosegí, A., Rudziński, J., Siuta, M., Lubowiecka, K., Kempter, I., Kaufmann, A., Drexler, S.-S., Kajner, P., Gruber, T., Lourenço, F., Henriques, V., Neary, C., Lawrie, E., 2025a. Just transformations – embedding stakeholder engagement in mainstreaming nature-based solutions within freshwater ecosystems. EU H2020 research and innovation project MERLIN Deliverable D4.9, 49 pp. <https://doi.org/10.5281/zenodo.17105029>.
- Schwerk, A., Carvalho, L., Spears, B., Williamson, J., Pott, L., Kajner, P., Okruszko, T., Ádám, S., Baattrup-Pedersen, A., Balogh, P., Bañares, I., Barbosa, H., Beranen, L.L., Boets, P., Cardoso, S., Colls, M., Duarte, G., Ecke, F., Ecker, T., Elosegí, A., Eklöf, K., Erős, T., Ferreira, M.T., Forio, M.A., Fuchs, F., Gerisch, M., Gerner, N., Goethals, P., Grossman, M., Grygoruk, M., Henriques, V., Hershkovitz, Y., Ibrahim, A., Jarak, M., Karnatz, S., Katz, A., Kelderman, S., Kempter, I., Lourenço, F., Michelitsch, S.S., Mutinova, P., Olszewska, J., Ónodi, G., Parada-Santiago, N., Payne, R., Peponi, A., Pickard, A., Portela-Pereira, E., Provan, N., Puiu, I., Rankinen, K., Ratner, T., Rodríguez-González, P.M., Ronkainen, T., Ronkanen, A.-K., Santos, L., Schneider, A., Scricciu, A., Segurado, P., Tallósi, B., Trandziuk, P., Udklit, L., Birk, S., 2025b. Manuscript and policy briefing evaluating success of large landscape-scale restoration. EU H2020 research and innovation project MERLIN Deliverable D1.6, 135 pp. <https://doi.org/10.5281/zenodo.17104291>.

Annex: MERLIN case study restoration measures implementation data

The MERLIN implementation dataset, archived on [Zenodo](#), provides a structured, case-study-level compilation of qualitative and quantitative information on the planning, delivery, and early outcomes of restoration measures implemented within the MERLIN project. For each of the 16 case studies, the dataset documents planned and implemented measures (including deviations), long-term restoration vision and progress, spatial quantification of implementation, monitoring coverage across European Green Deal criteria, participatory and sectoral aspects, implementation challenges and adaptive responses, and restoration financing and cost structures. The dataset further captures post-project learning and legacy elements, including perceived upscaling effects, lessons learned, and adoption of MERLIN tools, and forms the empirical basis for the implementation reporting in this deliverable.

The MERLIN implementation dataset is archived on Zenodo as:

Hershkovitz, Y., Birk, S. (2026). MERLIN case study restoration measures implementation data (D2.5 Annex) [Data set]. Zenodo. <https://doi.org/10.5281/zenodo.18405265>.