



Deliverable D4.9:
**Just Transformations –
Embedding stakeholder
engagement to mainstream
nature-based solutions in
freshwater ecosystems**

Imprint

The MERLIN project (<https://intervention-merlin.eu>) has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101036337.

Lead contractor: The James Hutton Institute

Lead authors: Alhassan Ibrahim; Rebecca Gray, Keith Marshall, Kirsty Blackstock

Supporting authors: Patricia María Rodríguez González, Sebastian Birk, Maria Ojanen; Paweł Trandziuk; Mateusz Stelmaszczyk; Ellis Penning; Axel Schwerk

Case study leads and section contributors: Miriam Colls; Arturo Elosegí (CS02 Deba Barrier Removal); Julian Rudziński; Paweł Trandziuk; Małgorzata Siuta; Karolina Lubowiecka (CS05 Kampinos Wetland Rewetting); Iris Kempter; Alice Kaufmann; Silke Drexler; Robert Tögel; (CS07a Danube Floodplain Restoration); Péter Kajner; Tamás Gruber (CS09 Tisza Floodplain Rewetting); Patricia María Rodríguez-González; Francisco Lourenço; Vera Henriques (CS12 Lima Floodplain Forest Restoration); Charlotte Neary; Ewan Lawrie (CS17 Forth Basin Restoration)

Case study leads providing data: Martin Noergaard; Linda Udclit; Annette Baattrup-Pedersen (CS01 Kvorning Wetland Rewetting); Daniel Thorell; Frauke Ecke; Karin Eklöf (CS03 Beaver River Engineering); Marieke de Lange; Backx, Joost; Tom Buijse (CS04 Room for the Rhine); Matea Jarak (CS06 Hutovo Blato Peatland Rewetting); Tamás Gruber (CS07b Danube Sidearm Reconnect); Iulia Puiu; Catalin Anton (CS08 Danube Floodplains Reconnect); Michael Gerisch; Elmar Fuchs; Marie-Isabell Lenz (CS10 Blue Belt Germany); Nadine Gerner; Svenja Karnatz (CS11 Emscher Basin Restoration); Leonor Santos; Maria Teresa Ferreira (CS13 Sorraia River Restoration); Tiina Ronkainen; Anna Kaisa Ronkanen (CS14 Komppasuo Peatland Rewetting); Yaron Hershkovic; Avital Katz; Tal Radner; Lihie luzon Beranen (CS15 Tzipori Basin Restoration); Marie Anne Eurie Forio; Boets Pieter; Peter Goethals (CS16 Upper Scheldt Restoration); Teresa Ferreira; Helena Barbosa; Angeliki Peponi (CS18 Ervidel River Restoration PT)

To be cited as:

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., Tögel, R., Kajner, P., Gruber T., Lourenço, F., Henriques, V., Neary, C., Lawrie, E., 2025. 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://project-merlin.eu/outcomes/deliverables.html>

Due date of deliverable: 31.08.2025

Actual submission date: 29.08.2025

Abbreviations and Acronyms

Acronyms	
CS	Case Studies
CSB	Case Study Boards
IUCN	International Union for Conservation of Nature
IPBES	The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
LIFE	Programme for the Environment and Climate Action
M&E	Monitoring and evaluation
MERLIN	Mainstreaming Ecological Restoration of freshwater-related ecosystems in a Landscape context: INnovation, upscaling and transformation
Nbs	Nature Based Solutions
NFM	Natural Flood Management
NGO	Non-Governmental Organisation
RSP	Regional Scalability Plans
SAT	Self-assessment tool
WFD	Water Framework Directive
WWF	World Wide Fund for Nature

MERLIN Key messages

- 1. The use of nature-based solutions (NbS) in freshwater restoration must ensure fair, active, and transparent involvement of diverse stakeholders, and balance the distribution of costs and benefits they incur.**
- 2. A synthesis of MERLIN NbS case study data, illustrated by six examples, shows that the way stakeholder engagement is designed and executed has critical implications for achieving such 'just transformations'. The analyses focused on representation, procedure, and distribution.**
- 3. Representation analysis shows that a broad range of stakeholders were engaged, but public-sector stakeholders often dominated, which may result from their traditional role in natural resource conservation and environmental protection.**
- 4. Initiatives like case study boards and workshops promoted active stakeholder involvement, but community groups were often less actively engaged, reinforcing public-sector representation.**
- 5. NbS benefits were generally well communicated and positively perceived, but there was limited clarity regarding costs, beneficiaries, and compensation schemes for affected stakeholders.**
- 6. It is important to address the power dynamics and politics of restoration while building trust amongst stakeholders to galvanise support. Community groups and sceptical stakeholders need to be fully engaged and given space to voice concerns and to constructively find solutions. This requires significant time and resources. It also requires willingness to compromise.**
- 7. Engagement and decision-making approaches should respond to different stakeholders' needs, while ensuring flexibility to involve a range of stakeholders properly.**
- 8. Capacity building for project leaders is critical to identify and address the root causes of opposition to NbS, low interest in participation and their implications for just transformations. This can help address low participation amongst some stakeholder groups.**
- 9. To enable early detection of gaps and timely corrective actions, stakeholder engagement should be planned from the outset with tools in place to systematically monitor and evaluate participation.**
- 10. Context is important, and each case study offers unique lessons, stressing there is no one-size-fits-all approach when implementing NbS within a just transformations framework**

MERLIN Executive Summary

This deliverable draws on the MERLIN case studies to examine **how ‘just transformations’ were addressed in the implementation of freshwater nature-based solutions (NbS)**, using stakeholder engagement as the main analytical lens. Just transformations here means addressing social equity issues, integrating diverse voices (**representation**), ensuring inclusive decision-making (**procedure**), and fairly distributing costs and benefits (**distribution**). **Stakeholder engagement is central to this:** who is involved, how they participate, and how benefits and costs are framed all influence the fairness of the transformative use of NbS in freshwaters.

An adaptive framework for analysing just transformations was created through multiple data sources, including systematic stakeholder mapping, monitoring and tracking levels of participation, gathering local perspectives, and applying the IUCN NbS Standard and local meeting records. The MERLIN case studies span diverse governance and freshwater settings across Europe – large rivers, small streams, and wetlands – illustrating how local context shapes just transformations.

The analysis reveals both progress and some gaps across the dimensions of just transformations. For **representation**, engagement reached a wide range of stakeholder types and sectors:

- Systematic stakeholder mapping was applied by all case studies to identify stakeholders and their attributes like influence and interests.
- Across all cases, 466 stakeholder organisations/types were identified and 344 engaged, though the public-sector dominated.
- Community groups are the least influential, while public actors are most influential.
- Opposing groups were not always involved, but some opponents used non-participation to resist NbS implementation. Sometimes projects struggled to also encourage participation from local people.

Procedurally, most projects adopted interactive means such as workshops and case study boards to ensure participation moves from informing to active roles like collaboration and empowerment. Public-sector actors dominated the active roles, with communities in less active roles.

The **distribution** of NbS benefits were widely recognised among stakeholder groups, but awareness of costs was lower, and processes for resolving trade-offs and providing compensation were often not clear.

- Strategic-level stakeholders were more aware of project costs than community groups.
- Focus was more on economic issues, though some addressed cultural or ecological values. Limited awareness and opposition are linked to how project objectives were communicated.
- Further consultations sometimes helped address negative perceptions, but approaches varied.

Six illustrative stories further highlight contextual factors that can shape just transformations using NbS. Together, with the wider analysis of all the case studies, they point to five key insights:

- **Power dynamics shape NbS:** some stakeholders withhold participation to resist change, public authorities dominate through their formal roles, and large landowners can hold disproportionate influence. These are often reinforced by policy frameworks that risk sidelining communities.
- **Building trust:** Trust can boost participation and support for NbS, but requires time, resources, and deliberate efforts. Existing structures offer a base but must be used flexibly and transparently to avoid excluding new stakeholders.
- **Costs and benefits:** Stakeholders value costs and benefits differently and assuming benefits are automatically understood is risky. Open dialogue about fears, grievances, and recognition of non-monetary costs and benefits is essential to increase support.
- **Sustaining engagement:** Since project timelines rarely align with lasting change, engagement should be framed with a long-term vision and clear succession plan to ensure continuity.
- **Context matters:** One-size-fits-all approaches cannot deliver just transformations. Land tenure, cultural values and governance systems are key influencing factors. Engagement should be fit-for-purpose with a clear rationale.

Several interconnected enablers, including incentivising participation and support for NbS, building trust, strengthening capacity and expertise, shared leadership and adopting local knowledge, are recommended to shape just transformations for freshwater NbS. The MERLIN approach offers a strong basis for future NbS practice.

These lessons apply to practitioners, policymakers and researchers. Just transformations in NbS should be planned from the outset, with engagement tailored to context and recognition of the links between representation, procedure, and distribution. Filling data gaps on decision-making outcomes, anti-discrimination measures and cost-benefit will strengthen both practice and analysis.

Content

1	Introduction	9
1.1	Purpose	9
1.2	Focus	9
1.3	Target audience	9
2	Contextualising just transformations in mainstreaming NbS?	10
2.1	Role of stakeholder engagement in promoting just transformations	10
2.2	Dimensions of just transformations and research questions	10
2.3	Methodology and data	12
3	Integration of just transformation findings across 19 case studies	13
3.1	Representation: Composition and patterns of stakeholders engaged in MERLIN case study activities	13
3.1.1	Approaches to stakeholder identification	13
3.1.2	Stakeholder types and engagement patterns	13
3.1.3	Diversity of stakeholders	14
3.1.4	Minority voices and influence	15
3.1.5	Measures to avoid bias and discrimination	16
3.2	Procedure: Procedures and practices for involving stakeholders	16
3.2.1	Opportunity for active involvement beyond tokenism	16
3.2.2	Adopting interactive and multiple mediums of communication	18
3.2.3	Establishing a feedback and grievance resolution mechanism	19
3.3	Distribution: Distributive implications for the case study stakeholders?	19
3.3.1	Understanding of associated costs and benefits	19
3.3.2	Procedures for identifying costs and benefits	20
4	Just transformations in action: Reflections on six freshwater NbS projects	22
4.1	Deba Barrier Removal (Spain): When river restoration meets cultural identity – Navigating local resistance and participatory Debate	22
4.1.1	Context and stakeholder landscape	22
4.1.2	Key issues that needed attention	22
4.1.3	Application of stakeholder engagement	22
4.1.4	Outcomes and benefits	23
4.1.5	Lessons Learnt	23
4.2	Kampinos Wetland Rewetting (Poland): Inclusive by design – Stakeholder networks and a commitment to communicate	24
4.2.1	Context and stakeholder landscape	24
4.2.2	Key issues that needed attention	24

4.2.3	Application of stakeholder engagement	24
4.2.4	Outcomes and benefits.....	25
4.2.5	Lessons learnt.....	25
4.3	Danube Floodplain Restoration (Austria): Trust and fairness in stakeholder boards – Balancing inclusion with sectoral gaps	25
4.3.1	Context and stakeholder landscape	25
4.3.2	Key issues that needed attention.....	26
4.3.3	Application of stakeholder engagement	26
4.3.4	Outcomes and benefits.....	26
4.3.5	Lessons learnt.....	26
4.4	Tisza Floodplain Rewetting (Hungary): Restoring with memory – Trade-offs, compensation, and long-term engagement	27
4.4.1	Context and stakeholder landscape	27
4.4.2	Key issues that needed attention.....	27
4.4.3	Application of stakeholder engagement	28
4.4.4	Outcomes and benefits.....	28
4.4.5	Lessons learnt.....	28
4.5	Lima Floodplain Forest Restoration (Portugal): Negotiating restoration in a patchwork landscape – Inclusivity and trade-offs.....	28
4.5.1	Context and stakeholder landscape	28
4.5.2	Key issues that needed attention.....	29
4.5.3	Application of stakeholder engagement	29
4.5.4	Outcomes and benefits.....	30
4.5.5	Lessons learnt.....	30
4.6	Forth Basin Restoration (UK): Building on continuity – expanding existing networks to find common ground	30
4.6.1	Context and stakeholder landscape	30
4.6.2	Key issues that needed attention.....	31
4.6.3	Application of stakeholder engagement	31
4.6.4	Outcomes and benefits.....	32
4.6.5	Lessons learnt.....	32
5	Discussions: Implications for taking just transformation approach.....	33
5.1	Review of findings for research questions.....	33
5.2	Lessons for taking just transformation in nature-based solution....	34
5.2.1	Power dynamics and politics – a key challenge for taking just transformations approach.....	34
5.2.2	Building trust and navigating stakeholder relationships	34
5.2.3	Embracing open and diverse definition of cost and benefits	35
5.2.4	Sustaining engagement beyond the intervention lifecycle	35
5.2.5	Context matters.....	35
5.3	Recommendations: Towards a transformative change	36

5.3.1 For future NbS interventions 37

5.3.2 For policy makers and funders 37

5.3.3 What are the implications for future researchers? 38

6 Conclusion 39

1 Introduction

The European Green Deal and Biodiversity Strategy calls for large-scale ecological restoration to tackle interlinked climate, biodiversity, and socio-economic crises. In this context, Nature-based Solutions (NbS) have gained global recognition, including by the UN and IUCN, as integrated approaches that support both ecosystem integrity and human well-being. By working with natural processes, NbS are therefore defined as:

“actions to protect, conserve, restore, sustainably use, and manage natural or modified terrestrial, freshwater, coastal, and marine ecosystems, which address social, economic, and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services, and resilience and biodiversity benefits” (UNEP, 2022).

The H2020 project, ‘[MERLIN](#) – Mainstreaming Ecological Restoration of freshwater-related ecosystems in a Landscape context: INnovation, upscaling, and transformation’ brings this vision to life across Europe by restoring freshwater ecosystems, including rivers, wetlands, peatlands, and floodplains, drawing on freshwater NbS from Case Studies (CS) across Europe (Annex 1). These projects demonstrate NbS¹ implementation through the lens of transformation – going beyond usual norm – to effect societal changes guided by the IUCN Global Standard for NbS. For instance, the Standard advocates for NbS implementation process and outcomes to be just, inclusive, transparent and balance trade-offs (IUCN, 2020).

This deliverable responds to the call for just and inclusive implementation of NbS. We refer to this imperative as ‘**just transformations**’ and apply it to NbS case studies, examining who is involved in decision-making, procedure of involvement and issues of distributions of cost and benefits.

1.1 Purpose

The purpose of this deliverable is to synthesise experiences from MERLIN’s freshwater NbS interventions and explore how justice considerations – representation, procedure, and distribution – were addressed in practice. It draws out the key lessons on how these justice dimensions shaped implementation on the ground, highlight common challenges and opportunities across diverse contexts, and provide insights for mainstreaming NbS in ways that are socially inclusive and equitable.

1.2 Focus

This task focuses on **stakeholder engagement processes** across MERLIN’s 19 freshwater NbS case studies². The emphasis on stakeholder engagement reflects its central role in enabling just transformations, ensuring inclusive, representative, and equitable governance. The analysis first draws on all 19 MERLIN NbS interventions (Chapter 3) and provides six case study narratives (Chapter 4) of stakeholder engagement unfolded and the implications for justice. Although the assessment of the case studies does not provide a verdict on whether the interventions were just nor not, it offers some points of reflection in terms of implications for mainstreaming NbS in a just and equitable way.

1.3 Target audience

The target audience for this deliverable is EU and national policymakers, practitioners, and researchers involved in the mainstreaming NbS. As NbS concept keeps gaining ground across policy, practice and science, it is imperative to ensure they are socially just. Frameworks like the IUCN Global Standard for NbS emphasise inclusive governance, equitable benefit-sharing, and the fair management of trade-offs. Drawing on MERLIN’s case study experiences, this report provides lessons to inform the practical, scientific, and policy aspects of designing and implementing NbS in ways that support just and equitable transformation.

¹ While most projects used the term restoration locally, all the projects were encouraged to ensure their projects aligned with the IUCN Global Standard for NbS. Moreover, most projects assessed their measures against the IUCN Self-Assessment Tool (SAT) twice during MERLIN and identified areas needing improvement through optimisation plans (Buijse et al., 2022).

² We acknowledge that earlier MERLIN deliverables referred to 18 case studies; however, this deliverable uses 19, as Case Studies 7a and 7b are treated separately given they are led by different partners in different countries. Also, while the focus is on all 19 case studies, data submission across the case studies varies as some case studies did not report on some datasets.

2 Contextualising just transformations in mainstreaming NbS?

In the context of mainstreaming freshwater NbS, transformations are understood as systemic changes in governance, values, and decision-making that support the widespread and sustainable adoption of NbS (Carmen et al., 2024). These transformations go beyond technical interventions to include complex social dimensions, such as shifting mindsets, fostering interactive learning, and navigating resistance. **Transformations are considered “just”** when they actively address social equity by ensuring that decision-making processes are inclusive (procedural justice), that diverse stakeholder voices are represented (representational justice), and that the costs and benefits of NbS are fairly distributed (distributional justice) (Bennett et al., 2019; Cousins, 2021; Lopes et al., 2021).

Just transformations is not only about ensuring positive environmental outcomes, **but also about preventing interventions from exacerbating or entrenching existing inequalities**. It means embedding principles of fairness, legitimacy, and participation throughout NbS design and implementation (Boyland et al., 2022; Whitt, 2022). This approach aligns with global standards, such as the IPBES framework (Chan et al., 2019) and the IUCN Global Standard for NbS (IUCN, 2020), emphasising the need for participatory processes and trade-off negotiation. Importantly, international policies and conventions, such as the Aarhus Convention and the EU Green Deal, increasingly mandate real opportunities for stakeholder involvement in environmental making decisions, re-affirming just transformations as legal and ethical imperative (Pound et al., 2025).

2.1 Role of stakeholder engagement in promoting just transformations

Just transformations in NbS is not only about ensuring positive environmental outcomes but also about preventing interventions from deepening existing inequalities, addressing the existing ones and fostering improved social outcomes. Designing and implementing NbS interventions involve ensuring diverse knowledge and perspectives are represented, shaping governance procedures to enable deeper involvement, and redistributing costs and benefits equitably. **Therefore, achieving just transformations in NbS fundamentally depends on the quality and depth of stakeholder engagement**. Literature shows that improving stakeholder engagement, by broadening diversity, fostering trust, and ensuring transparent and equitable processes, is essential for fair and effective NbS implementation (Ibrahim et al., 2025; van der Jagt et al., 2023). These ideas are core aspect of the IUCN Global Standard for NbS (Cohen-Shacham et al., 2025; IUCN, 2020) and the EU guideline for co-producing NbS (European Commission: Directorate-General for Research and Innovation et al., 2023). Major barriers to mainstreaming NbS often stem from stakeholder-related challenges, such as lack of collaboration, mistrust, unclear compensation, and uncertainty about outcomes (Dorst et al., 2022; Han & Kuhlicke, 2021; van der Jagt et al., 2023).

Meaningful stakeholder engagement ensures that individuals, communities, and organisations affected by NbS have genuine opportunities to participate in implementation and to benefit from outcomes (Gionfra et al., 2023; Ibrahim et al., 2025; Kiss et al., 2022). Such engagement fosters procedural fairness, incorporates diverse worldviews and lived experiences, and supports more equitable outcomes, especially for marginalised or traditionally underrepresented groups. Co-producing knowledge and embedding engagement in governance structures are key strategies for delivering NbS that are not only ecologically sound but also socially inclusive (Boyland et al., 2022). Establishing a clear rationale for engagement at the outset is critical, as it guides the identification of relevant stakeholders and the selection of tailored participation methods (Ibrahim et al., 2025). Ultimately, integrating diverse knowledge systems and values into NbS design and implementation is essential for achieving both social justice and transformative as well as sustainable outcomes (Gionfra et al., 2023; Pound et al., 2025; Tallent & Zabala, 2024; van der Jagt et al., 2023; Zingraff-Hamed et al., 2020).

Building on this understanding, this deliverable treats stakeholder engagement as a central and practical entry point for analysing just transformations within the MERLIN project. Instead of approaching just transformations as an abstract concept, we focus on its three key dimensions: which stakeholders were involved in decision-making, how participation took place, and how the sharing of benefits and burdens was negotiated.

2.2 Dimensions of just transformations and research questions

There is no single way to address just transformations in the context of NbS as there are various frameworks that offer conceptual guidance (Anguelovski, 2022; Boyland et al., 2022; Cousins, 2021; Mabon et al., 2022; Wijsman & Berbés-Blázquez, 2022). But learning from these frameworks, our approach explores three core dimensions of just transformations:

- 1 Representative Justice** – Valuing diverse knowledge systems, cultural perspectives, and the rights of marginalised groups across sectoral, administrative scales and territories.

- 2 **Procedural Justice** – Ensuring meaningful participation and decision-making power for all affected stakeholders.
- 3 **Distributional Justice** – Enabling all stakeholders to help define costs and benefits, so outcomes reflect diverse perspectives.

Based on these dimensions, the overarching research question is: **How does the MERLIN project’s approach to stakeholder engagement in freshwater NbS shape and support just transformations?** This research question defines the overall aim of the deliverable. To address this aim, presentation of findings is structured around three specific questions, each corresponding to one of the above dimensions.

- 1 What are the composition and patterns of stakeholders engaged in MERLIN case study activities?
- 2 What are the procedures and practices for involving stakeholders?
- 3 What are the distributive implications for the stakeholders?

To analyse representation (Figure 1), the focus is on ensuring that a broad spectrum of stakeholders have the genuine opportunity to participate, so that diverse voices and perspectives shape both the definition of problems and the development of solutions (Wijsman & Berbés-Blázquez, 2022). True representation is not just about inviting stakeholders to the table, but about actively recognising and elevating diverse voices who are affected by decisions to ensure their interests are fully considered in decision-making (Lopes et al., 2021; van der Jagt et al., 2023; Wijsman & Berbés-Blázquez, 2022). Fostering appropriate representation helps prevent the tendency of making decisions on behalf of stakeholders without their input or consent. Making decisions for rather than with stakeholders’ risks overlooking their needs, values, and knowledge, which can lead to solutions that are ineffective, lack legitimacy, or even deepen existing inequalities (Pound et al., 2025). Inadequate representation undermines trust and increases the likelihood of resistance or conflict, ultimately jeopardising the success and sustainability of NbS. Moreover, establishing clear stakeholder mapping mechanisms helps avoid biases and increase the transparency of the process, provided that those affected and their interests and values are clearly defined (Ibrahim et al., 2025; Tallent & Zabala, 2024).

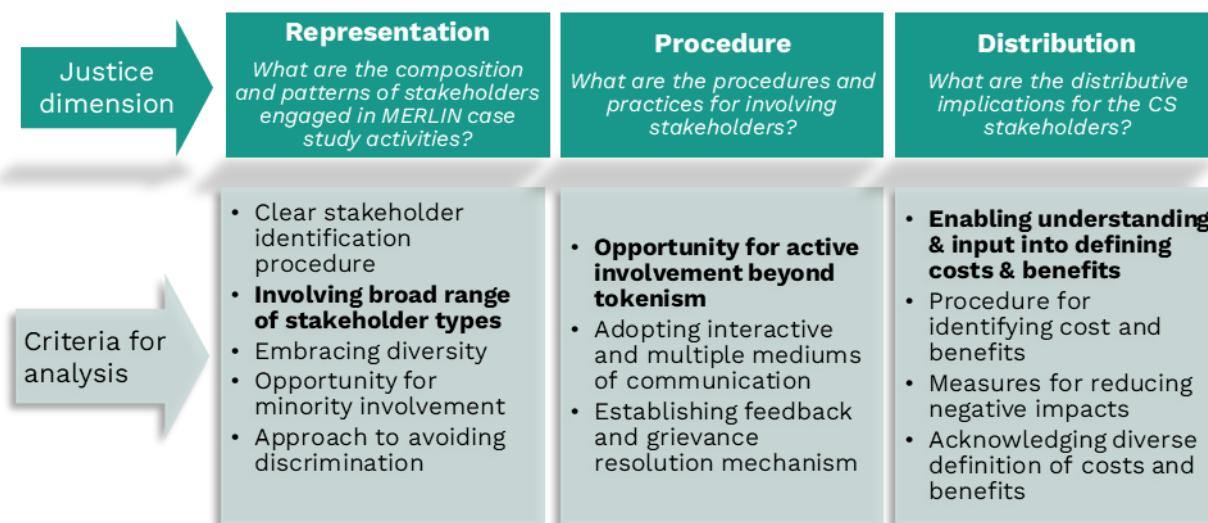


Figure 1. Justice dimensions, associated research questions and criteria for analysis. Note: The bold bullet points represent the ultimate goals of just transformations, while the other bullets describe steps for assessing progress toward achieving these goals.

Procedural justice requires active, meaningful participation with real influence and not just tokenistic inclusion (Figure 2). Avoiding tokenism means recognising diverse knowledge systems and addressing power asymmetries through deeper engagement (Wijsman & Berbés-Blázquez, 2022). Effective initiatives adopt multiple, interactive communication methods to reach a broad range of participants (Tallent & Zabala, 2024). Although participation levels should vary based on stakeholder needs, capacities, and context (Ibrahim et al., 2025), the spectrum of participation (IAP2, 2018), ranging from informing to shared decision-making and empowerment of marginalised groups, offers a flexible approach to procedural justice as it helps assess the position of different stakeholder groups on the spectrum. The IUCN Global Standard for NbS also highlights the importance of feedback and grievance mechanisms that enable participants to raise concerns and influence outcomes (IUCN, 2020).

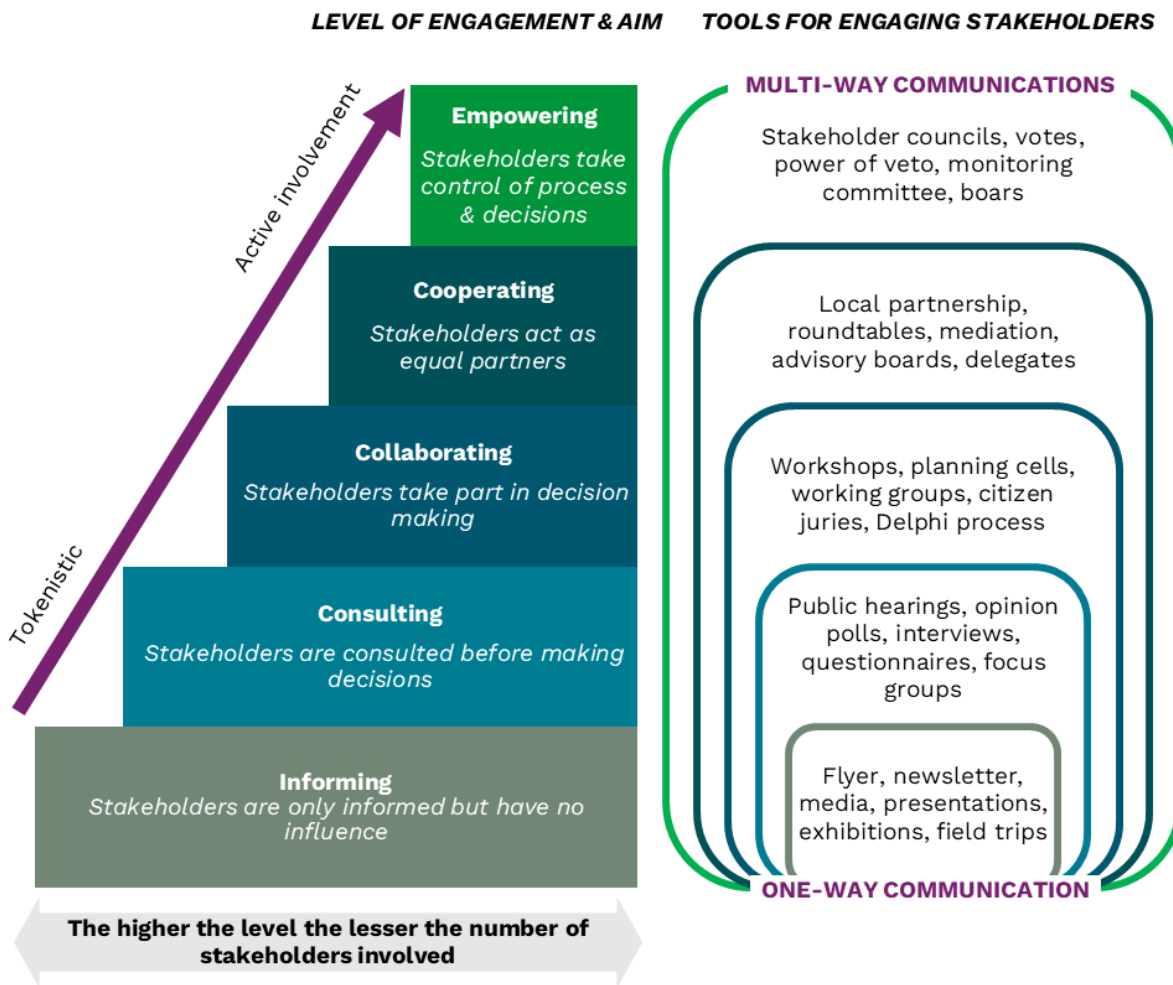


Figure 2. Ladder of stakeholder participation used to assess procedural dimension of just transformations. Source: Developed by authors based on Grygoruk and Rannow (2017); Ibrahim et al. (2025); Kiss et al. (2022).

While some studies frame **distributive justice** as the allocation of costs and benefits among groups (Anguelovski, 2022; Lopes et al., 2021; Wijsman & Berbés-Blázquez, 2022), our emphasis is on whether the process of defining costs and benefits itself is distributed – so that all stakeholders can meaningfully shape these definitions and the resulting outcomes reflect diverse knowledges and perspectives (Mabon et al., 2022; van der Velde et al., 2021). One way of achieving this is ensuring that stakeholders have adequate knowledge of what the costs and benefits of NbS entail (Huxham et al., 2023). This approach is limited; however, scholars increasingly stress the importance of avoiding unintended negative consequences, particularly for already vulnerable groups, and call for deliberate measures to anticipate and reduce such risks (Walker et al., 2024; Whitt, 2022). Moreover, stakeholders interpret costs and benefits differently. Some prioritise financial returns, while others value cultural, emotional, or procedural outcomes. This highlights the need for pluralistic and context-sensitive definitions (Carmen et al., 2024; Wijsman & Berbés-Blázquez, 2022).

2.3 Methodology and data

This report draws on multiple stakeholder engagement data across the 19 MERLIN case studies to answer the three research questions. These include stakeholder mapping data, inclusivity tracker, self-assessments against the IUCN NbS Standard, local survey findings, records local stakeholder meetings and project documentation, previously gathered through MERLIN activities. The approach was pragmatic and focused on extracting the most relevant findings for this deliverable, ensuring the analysis was both efficient and avoided placing additional demands on project teams or stakeholders.

A more detailed account of data sources, processing, analytical methods and limitations is provided in Annex 2 for transparency and review purposes. In brief, structured data were compiled and analysed to identify cross-case patterns, while open-text survey responses and project notes were thematically reviewed to highlight key dynamics and illustrate lessons. The findings are presented as cross-cutting insights across the dimensions of just transformations, complemented by six in-depth case narratives.

3 Integration of just transformation findings across 19 case studies

This section provides an overview of just transformations across the three key dimensions outlined in Section 2.2 – representation, procedure, and distribution – addressing the three research questions in a concise manner. The results in this section reflect all 19 case studies, though the level of detail varies depending on the availability and completeness of data for each case study (see Annex 5 for details).

3.1 Representation: Composition and patterns of stakeholders engaged in MERLIN case study activities

This section presents findings on the types and patterns of stakeholders engaged in MERLIN’s freshwater NbS interventions, highlighting why representation is essential for just transformations. As mentioned in Section 2.2, genuine representation ensures that diverse voices, including those of minority and traditionally or previously underrepresented groups, are actively involved. Here, we assess representation by examining how stakeholders were identified, who was recognised and engaged, the extent of stakeholder diversity, the recognition and inclusion of marginalised voices, and the measures taken to prevent bias or discrimination.

3.1.1 Approaches to stakeholder identification

Before assessing who was represented, it is important to understand how stakeholders were initially identified and mapped, since this foundational step determined who had the opportunity to be involved and whether engagement could be considered truly representative. Eighteen (18)³ case studies used a common stakeholder mapping template–based guidance by Ibrahim and Blackstock (2021) to identify relevant stakeholders. This structured tool guided case studies in establishing a rationale for engagement, describing the system in which stakeholders operated, including spatial scale, biophysical and socio-economic characteristics, and governance structures, and categorising stakeholders by types, scales, and sectors. The approach allowed case studies to clearly define boundaries and generate a structured list of stakeholders. Many case studies went further, detailing each stakeholder’s roles, interests (Annex 9), and levels of influence and whether stakeholders support or oppose the interventions.

Besides this structured approach, case studies indicated through the IUCN self-assessment tool that other approaches were used to identify stakeholders. For instance, across Kvorning wetland rewetting (CS01, Denmark), Deba barrier removal (CS02, Spain) and Kampinos wetland rewetting (CS05, Poland), stakeholder identification was based on prior consultations, social assessments, or questionnaire surveys. On the other hand, cases like Beaver River Engineering (CS03, Sweden) and Hutovo Blato peatland rewetting (CS06, Bosnia and Herzegovina) demonstrated more informal approaches to stakeholder identification. This reflects a degree of variability in methodological rigour and transparency across the case studies. Nonetheless, there is a general trend towards early and proactive stakeholder mapping, even though its application and comprehensiveness varied between cases.

3.1.2 Stakeholder types and engagement patterns

Based on the stakeholder mapping data, a total of 466 stakeholder organisations/groups were identified (Figure 3). These were grouped under four stakeholder types: public sector, private actors, NGOs, community groups, with a small proportion classified as “others.” The majority around 53% (248 stakeholders) belonged to the public sector. The remaining stakeholders were distributed among private stakeholders (16%), community groups (15%), NGOs (12%), and a small share of others (4%).

Regarding distribution across different NbS clusters, small streams and basins featured the highest number of stakeholders (53%) and was especially dominated by public and community group stakeholders (e.g. CS02 and Tzipori basin restoration (CS15, Israel). Peatland and wetland cases presented good involvement from NGOs and private actors (e.g. Komppasuo peatland rewetting (CS14, Finland). In large transboundary rivers, the public sector (59%) was the most dominant, the rest mainly were distributed (16% each) between private and NGOs.

Descriptions from the IUCN Global Standard gives further nuanced understanding of these stakeholder types. Case studies described the stakeholders as including local landowners and farmers (e.g. CS01 and CS13), municipal and regional authorities (e.g. CS02 and CS05), scientific and research institutions (e.g. in CS12), national environmental and water agencies (notably in CS10 and CS16), NGOs, civil society groups, and business actors.

Although a wide array of stakeholders was identified, not all were engaged. The engagement ladder log shows that 17% did not participate. In the 2023 local stakeholder survey, 23% of respondents reported no involvement.

³ One case study did not have stakeholder mapping data (See Annex 5)

Those who were involved entered at different points: 28% before MERLIN began⁴ (highlighting continuation and early involvement), while 23% joined in 2022 and 14% in 2023, suggesting many stakeholders came on board later.

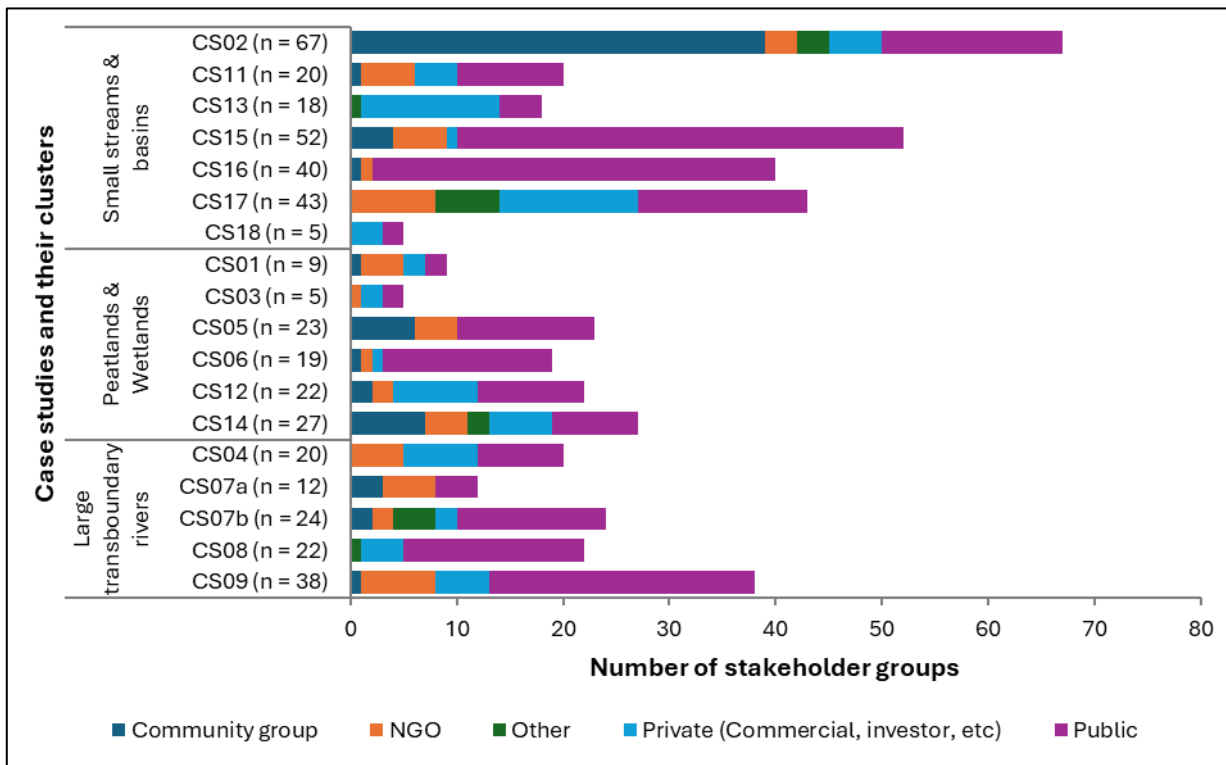


Figure 3. Stakeholder types identified across the case studies. Note: CS17 belongs to two clusters - peatlands & wetlands and small streams & basins - but, for the purpose of this deliverable it's grouped under the latter.

In terms of stakeholder types, the engagement ladder log shows that 68% of involved stakeholders came from the public sector, followed by NGOs (12%), the private sector (12%), and only 7% from local communities. This points to a disproportionate pattern of engagement, where community groups and other non-state actors were notably underrepresented relative to the public sector (despite 33% of the public sector stakeholders falling under non-participating).

As part of the project design, each case study was expected to form a Case Study Board (CSB) to guide implementation. Based on inclusivity tracker, an average of 159 stakeholders were engaged in CSBs each year, representing about 37% of the total stakeholders identified. Over half of the CSB members were public sector actors, while the remainder included private sector stakeholders (14%), NGOs (13%), and community groups (15%). Community group involvement was relatively limited and concentrated in a few case studies, namely CS01, CS05, CS07a, CS08, CS12, and CS15.

3.1.3 Diversity of stakeholders

The stakeholder mapping data demonstrates that case studies engaged a relatively wide range of stakeholder types, including public institutions, private companies, NGOs, and community groups. As noted earlier, there were noticeable imbalances in representation. Community groups, in particular, were less frequently and less fully involved across the project. While limited involvement of community groups and other stakeholders does not necessarily indicate deliberate exclusion, participation was possibly influenced by multiple factors. For instance, the Deba Barrier Removal (CS02, Spain) noted that all identified stakeholders were invited, yet only a few decided to participate. This may reflect limited interest, competing priorities, or lack of awareness about NbS. However, it could also be that some groups may not have been adequately informed, possibly due to limitations in project resources.

Diversity was also reflected in the broad spectrum of sectors across the case study clusters. As shown in Figure 4, the most represented sectors were public administration and professional activities (31%), followed by

⁴ Some of the case studies were building on previous projects. Therefore, some stakeholders were “already involved” at the time of the stakeholder mapping because they emerged from projects preceding MERLIN. C10 didn’t have stakeholder mapping as the project occurred at the Federal level.

conservation (14%), agriculture (12%), and research and education (11%). Other moderately represented sectors included water supply and sanitation (10%), and recreation and tourism (3%).

While there are evident imbalances in the representation of stakeholders across different sectors, it is more likely shaped by the landscape and ecological context of the case studies (Annex 7), which primarily focus on river basins, wetlands, and peatland ecosystems. Naturally, sectors such as public administration, conservation, land-use planning, and agriculture are involved in NbS interventions, as they have direct responsibilities and objectives for undertaking restoration, water governance and environmental protection. The prominence of research and education institutions potentially reflects MERLIN’s project structure and emphasis on knowledge co-production. Conversely, the low involvement of sectors such as energy, manufacturing, and mining may stem from their limited operational footprint within the selected landscapes, which are often rural, protected, or agriculturally oriented rather than industrial. Moreover, limited involvement of certain sectors could be attributed to the interventions’ focus on site levels rather than the broader landscape, which may have necessitated engaging a wider range of sectors such as downstream water users.

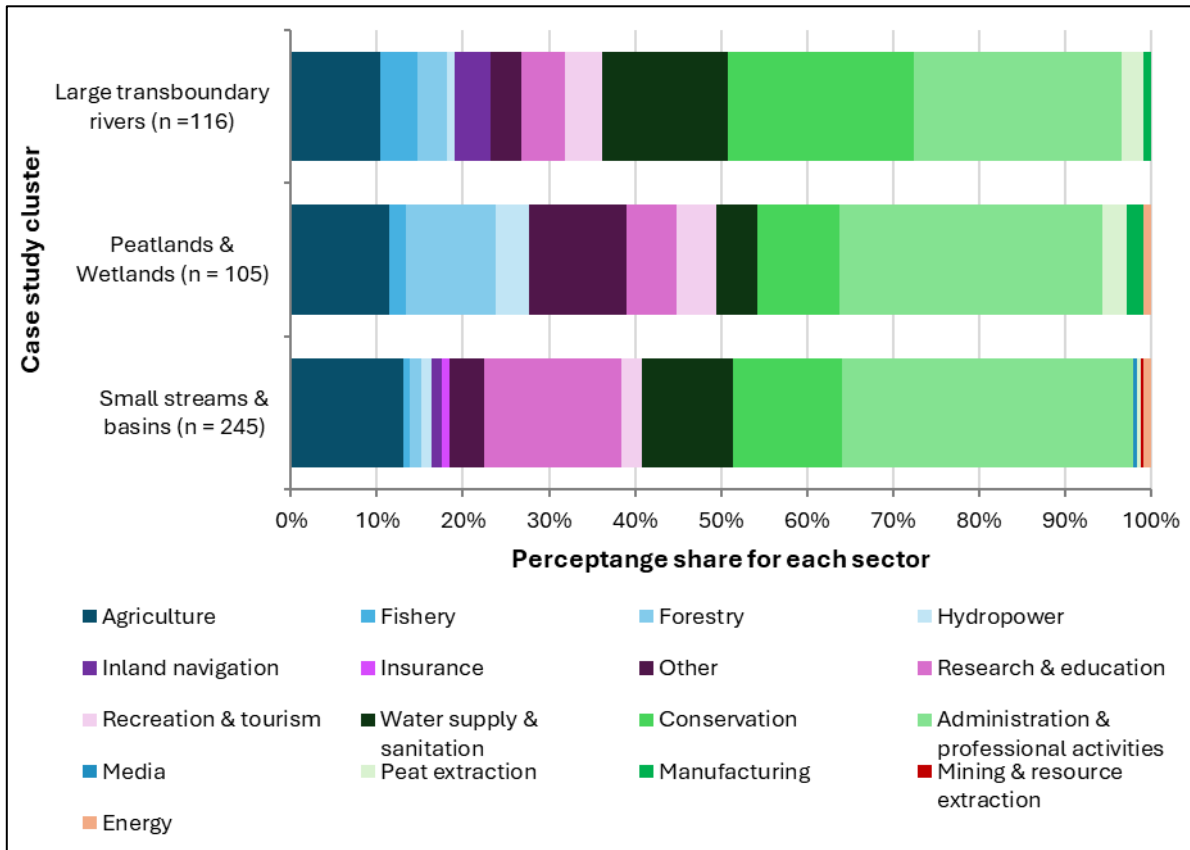


Figure 4. Categories of sectors identified across the freshwater sectors

Some case studies offered additional evidence of knowledge and demographic diversity. For example, CS02 involved local schools and addressed the cultural heritage of dams. In Sorraia River Restoration (CS13, Portugal) and Ervidel River Restoration (CS18, Portugal), farmers were directly involved in project design, linking ecological goals with agricultural livelihoods. Emscher Basin Restoration (CS11, Germany) incorporated citizen science approaches, and Lima Floodplain Forest Restoration (CS12, Portugal) brought in scientific institutions as co-complementers. Despite these positive examples, most case studies did not explicitly identify, or target underrepresented social or cultural groups.

3.14 Minority voices and influence

Although the mapping data included information on stakeholder types and level of influence, it did not clearly identify specific minority groups in terms of ethnicity, gender, or age. Nevertheless, a review of stakeholder influence levels (Annex 10) provides some insight into patterns of underrepresentation. Public stakeholders were most frequently rated as highly influential, with 52% receiving a score of “high” or “very high”. Among private stakeholders, 38% were similarly rated. In contrast, among the 22 community group stakeholders whose level of influence was rated, only 36% were rated as having high influence, whereas the majority were classified as having medium (28%) or low influence (36%). Although the dataset is not comprehensive enough to support

definitive claims, these proportions suggest that community groups were underrepresented in terms of influence. As noted earlier, their involvement in formal decision-making bodies, such as CSBs, was also limited.

Some case studies initiated proactive efforts to engage marginalised groups in a general sense. For instance, CS02 and CS12 included schools, which could provide a pathway for engaging younger demographics. However, such approach was not adopted by many case studies.

3.1.5 Measures to avoid bias and discrimination

Only a few case studies provided explicit documentation of anti-discrimination measures. The clearest example comes from CS06, where WWF's equality and inclusion policies were actively applied. In other cases, measures to ensure inclusive engagement were embedded within existing national or organisational processes. For example, the Forth basin restoration (CS17, UK) operated under formal procedures for transparency and participation, while Upper Scheldt restoration (CS16, Belgium) and Ervidel river restoration (CS18, Portugal) reported having grievance mechanisms in place. In several case studies such as Blue Belt (CS10, Germany) and CS11, participation was described as open to all interested or affected parties, and structured according to criteria such as jurisdiction, expertise, or sector. However, these general principles did not necessarily translate into mechanisms that actively prevented unintentional exclusion or bias.

3.2 Procedure: Procedures and practices for involving stakeholders

This section aims to assess the opportunities for active involvement and how this has evolved over the course of the MERLIN project through understanding how the participation of various stakeholder groups was organised, the degree to which they engaged with the intervention and the forms of engagement activities that case studies chose to employ.

3.2.1 Opportunity for active involvement beyond tokenism

Based on the case studies' application of the engagement ladder log (Figure 5), we gained some insight into how involvement had changed throughout MERLIN years (2021-2024). Initially, most stakeholders became involved at the non-participating or informing levels and were not well represented at a collaboration, consultation or cooperation level. Just 15 stakeholders were at the empowered stage at the start of MERLIN. Current levels (as of 2024 when this data was collected – Figure 6) show a great deal of development. Just 63 stakeholders are considered non-participating compared to 125 initially. Those at an informing level remain relatively high which is to be expected as some stakeholders will be willing to listen and be updated but moving to a more active role can be challenging. Several stakeholders have moved to a collaboration level, increasing from 16 to 54. Thirty-four stakeholders sit at an empowerment level currently, compared to an initial 15.

The data on desired levels of involvement show that many case studies don't see empowerment as necessary with all stakeholders, instead highlighting that some stakeholders may need to reach the informing level, and others a collaboration level. A total of 258 stakeholders (67%) were already considered to be engaged at the level that is felt appropriate by the case study teams. Meanwhile, 64 stakeholders were identified as needing to move up one level of engagement, 39 stakeholders require a two-level increase, 21 stakeholders require three levels, and just 3 stakeholders (1%) have 4 levels to progress before reaching the desired level of involvement.

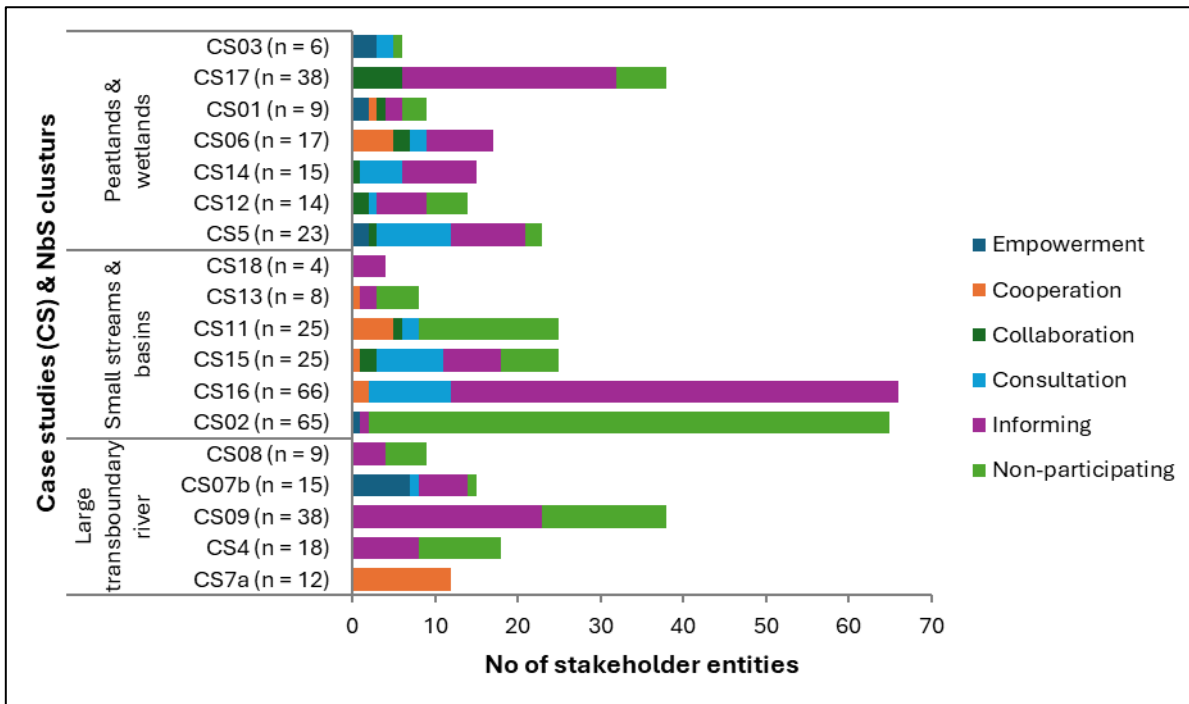


Figure 5. Initial (2021) levels of stakeholder involvement based on the engagement ladder log

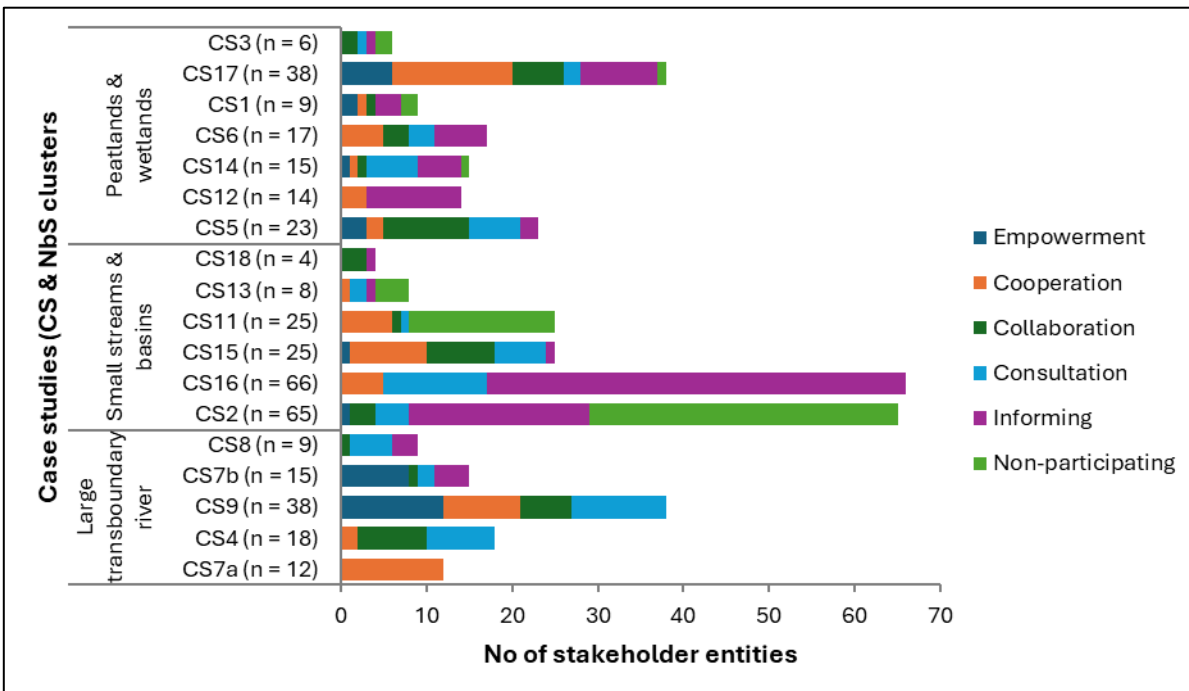


Figure 6. Current (2023-2024) levels of stakeholder involvement based on the engagement ladder log

Across all six levels of engagement, public stakeholders have been the most represented at all stages of the intervention, accounting for more than 50% of stakeholders at each level (Figure 7). Community groups, NGOs and private stakeholders show a relatively similar proportion across all levels, with community groups being the most represented at a consultation level and NGOs at a cooperation level, although these differences are relatively small. Private stakeholders have a relatively even spread, with no single level standing out. Initially, private stakeholders were the most represented at an informing and non-participation levels. This suggests that whilst the number of private stakeholders has remained relatively stable, they have become more actively engaged over the intervention.

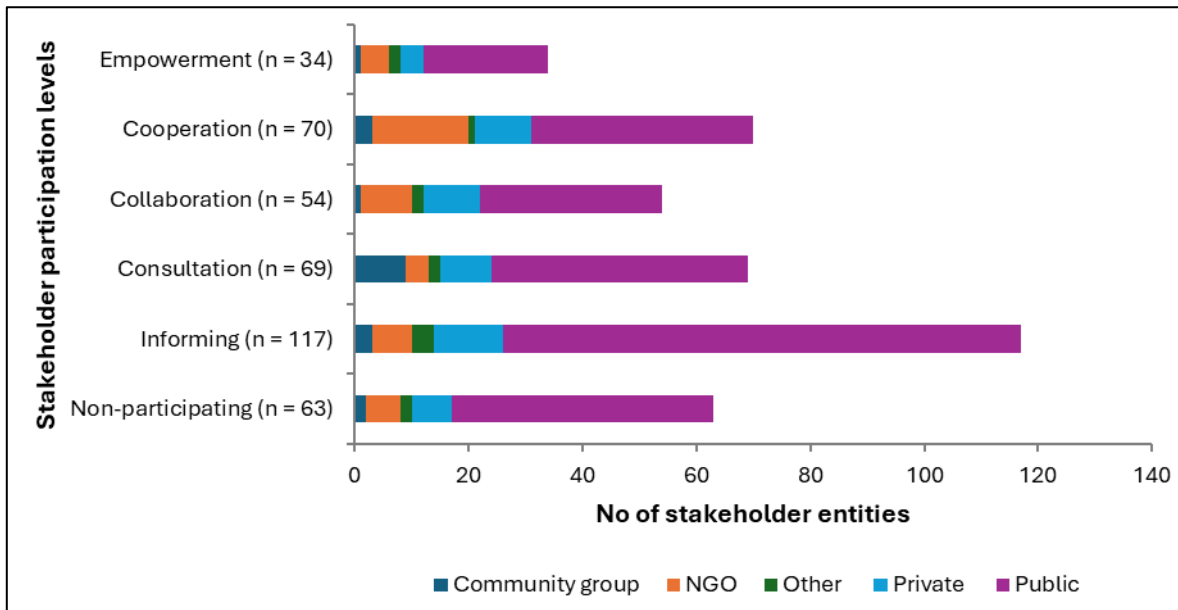


Figure 7. Position of stakeholder groups on the engagement ladder log

3.2.2 Adopting interactive and multiple mediums of communication

From an ‘informing’ perspective, a range of actions (Annex 11) have been carried out across almost all case studies. First, website visit counts offered a window into the visibility and outreach associated with each case study. While it does not in itself confirm participation or engagement, it reflects the degree to which information may have been accessible to the public, a foundational element of procedural justice. All case studies had online information available by at least MERLIN Year 3 (2024), although the number of visits varied greatly between case studies. The data collected suggests that while web-based visibility was strong in a few cases, its use across the MERLIN case studies was uneven and, in some cases, possibly not aligned with the intervention’s procedural justice aims, such as creating opportunities for informed participation. Moreover, in cases with high traffic, it remains unclear if visitors were seeking MERLIN-specific information or more general information hosted on intervention or organisation websites. Second, participation in information sessions provides stakeholders with access to information and opportunities to engage directly with interventions. Across both the peatlands and wetlands, and the small streams clusters, participation was sustained over time, with strong engagement reported in these sessions. In contrast, participation in the large river cluster was more modest, with some case studies reporting no data at all. The composition of stakeholder types participating in the information sessions was not clearly documented.

Further insights into the stakeholder engagement activities or ‘actions’ that have been carried can be obtained by looking at the engagement ladder log completed by case study leaders. The data shows that small stream cluster case studies carried out the most variety of actions and large rivers the least. All clusters identified presentations, workshops, working groups, focus groups and field trips as their most frequent actions. This indicates the emphasis that case studies placed on developing interactive engagement with stakeholders. Case studies highlighted that meetings and workshops improve the understanding and inclusion of stakeholders and allow for the benefits of restoration activities to be presented and discussed. Some case studies went beyond these methods of engagement; CS11 is integrated digital tools (using ArcGIS), another (CS10) has introduced an independent mediator to host meetings with stakeholders, while multiple case studies have created stakeholder boards that will outlast the intervention.

Many case studies put emphasis on the importance of education that specifically targeted young people. Five case studies (CS02, 04, 07, 12 & 13) included plans to target schools and community groups within the next two years and provide integrated courses and educational material to universities in the region within the next decade. More broadly, education was considered essential across most case studies. Another case study (CS15) plans to offer at least two leadership courses/workshops, and to have a minimum of 80 local stakeholders leading at least 30 sustainable initiatives by the end of 2026. Four case studies identified citizen science opportunities as an important part of strengthening understanding and connection to the environment. Case study 11 has a project called ‘CrowdWater’ in which participants observe streams to better understand the ways that climate is having an impact. This information is then being disseminated via an app. Other case studies have plans to follow suit in developing initiatives which can both raise awareness and increase environmental education levels. The use of citizen science by some case studies indicates a degree of active engagement in

implementation or monitoring activities, suggesting there is an opportunity for co-ownership and empowerment of local stakeholders. Engaging with local stakeholders was emphasised as important across all case studies due to the need for local knowledge. One case study (CS04) felt that the best results come by talking to a person who knows the area and what exactly is going on.

To move stakeholders up the engagement ladder log, ideally towards an ‘empowered’ level, it’s important that their expected roles are extremely clearly defined. Different stakeholders tend to have roles relating to a subset of engagement activities and cannot all be expected to participate in decisions-making processes. However, it’s important that all stakeholders are informed about the overall processes and given the opportunity to get involved if they choose to. According to the local stakeholder survey, 55% of respondents felt that decision-making was “fair and just, without prejudice”, while 33% indicated they “did not know”. This suggests a significant level of uncertainty among stakeholders regarding how decisions are made. Aside from an outlier, Room for the Rhine (CS04, Netherlands) which have noted two stakeholders are willing to take on further responsibility, it seems unclear for the majority of case studies which stakeholders plan to take on a bigger role in terms of leading or coordinating after MERLIN concludes. This lack of clarity needs to be addressed by case studies as soon as possible.

3.2.3 Establishing a feedback and grievance resolution mechanism

Processes to encourage participation generally involve some level of consultation. Both formal consultations with stakeholder boards and local residents reflect the way that some case studies used structured mechanisms for deeper involvement. Ten case studies have been doing consultations with their boards during MERLIN years, of these most held 2-3 consultations, only seven case studies reported formal consultations with the general public, and just three of these case studies held them consistently.

A limited number of case studies has used questionnaire surveys to gather feedback, one case study (CS05) acknowledged having a formal complaints and grievances system with the ability to submit to each ‘responsible institution’, CS18 agreed upon a procedure between key stakeholders. CS06 also mentioned they have WWF procedures for reporting grievances. Generally, there is a lack of evidence as to the effectiveness of these procedures.

Overall, the way that stakeholders have engaged has undoubtedly evolved over the last 5 years. Although it is fair to acknowledge that active engagement remains limited in some areas, it is also important to recognize that for some stakeholders, this is appropriate. Not every stakeholder is required to take an active role to support NbS measures, instead, the needs of every stakeholder should be considered individually. A huge variety of stakeholder engagement activities have been carried out, illustrating the diverse opportunities for stakeholder to become involved with the process. Whilst this is incredibly positive, there is a need to ‘keep the ball rolling’ on NbS measures post MERLIN to avoid stakeholder fatigue.

From a practical perspective, tracking engagement is crucial. This should be done from the start of the intervention and regularly updated to better understand how effective engagement has been as well as how and why stakeholder views have changed. Additionally, it is important to highlight the time and resources required to carry out effective stakeholder engagement. Adequate staff time needs to be put aside, external mediators/voices should be brought in where appropriate, and conflict resolution skills are essential to manage the flow of engagement.

3.3 Distribution: Distributive implications for the case study stakeholders?

This section aims to understand how issues of costs and benefits related to the interventions were approached (see case studies examples in Section 4). This refers not just to monetary costs and includes wider impacts on stakeholders. There is a need to understand if the costs and benefits of NbS implementation are clearly identified, and if participatory processes were used to understand who gained and who lost. This is important when seeking a just transformation (Section 2) to ensure decision making is distributed among interested stakeholders.

3.3.1 Understanding of associated costs and benefits

The various data collection exercises did not explicitly ask for details on the processes for identifying the distribution of costs and benefits across different stakeholders. Therefore, this summary refers simply to their awareness about the distribution of costs and benefits, and whether stakeholders understood the outcomes. Case study leaders generally reported positively in relation to the identification and awareness of benefits, and there was a general awareness of the need to engage with stakeholders to balance the economic, social, and ecological costs and benefits fairly. However, it seems less consideration was given to understanding the costs associated with the NbS and identifying those impacted.

Results from the local survey (2023) show that in general the case studies address the societal challenges identified by stakeholders across different sectors. Some respondents noted that a narrow or inadequate understanding of the cost-effectiveness of interventions may inhibit wider support for funding, and a lack of stakeholder awareness of costs and benefits might impact long-term engagement.

3.3.2 Procedures for identifying costs and benefits

The IUCN global standard for NbS asks that interventions adopt processes that can accommodate multiple views. Most case studies reported collaborative approaches to identifying NbS benefits and this was considered more effective when relevant stakeholders were identified and engaged across geographical scales and sectoral domains. This approach also facilitates the identification of the spatial (local or diffuse) and temporal (impacts seen now, or over time) aspects of different costs and benefits. This was particularly the case for the large river and transboundary case studies where stakeholders identifying regional costs and benefits at a strategic level would tend to have a different set of considerations to those implementing place-based interventions. The extent to which stakeholders upstream and downstream of an intervention were included in discussions about impacts (positive or negative) on them was not reported. However, 69% of those responding to the local survey felt that decision-making processes had been fair and just, without prejudice to particular stakeholders or sectoral issues (Figure 8).

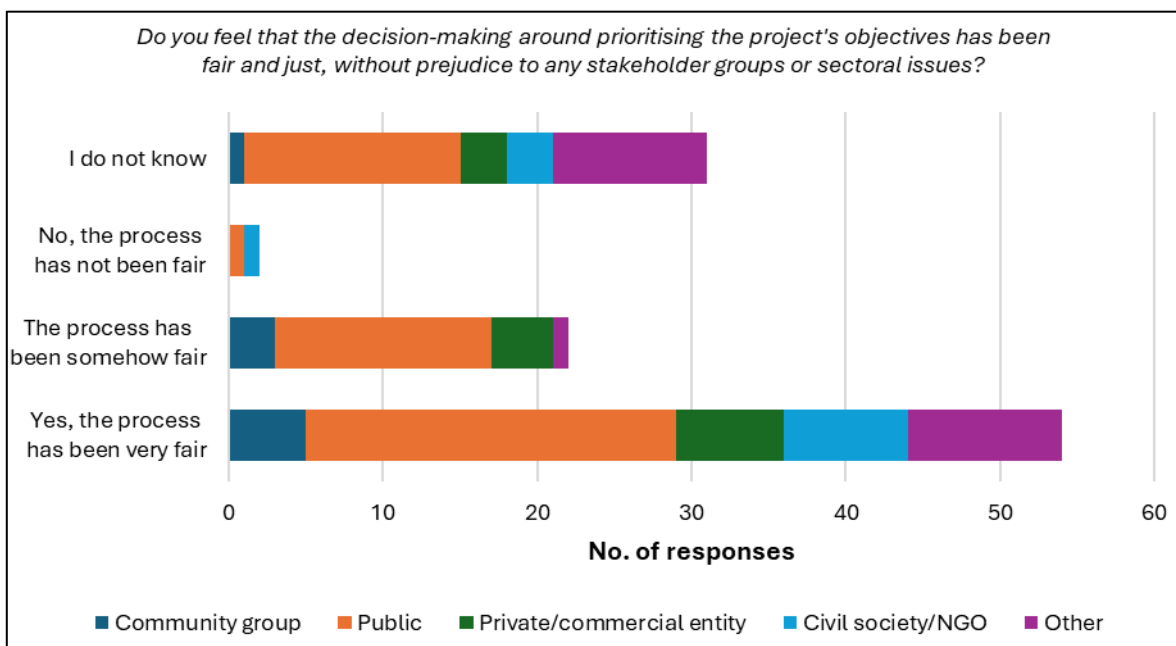


Figure 8. Local stakeholders' views on fairness of decision making around prioritising project objectives (Based on stakeholder survey collected in 2023)

For discussions to be deemed successful, the rationale for the NbS interventions and its intended outcomes should be evident to all stakeholders. One case study explicitly stated that processes considering costs and benefits should have the capacity to add the perspectives of new stakeholders benefiting from or impacted by the intervention as the intervention develops. Tools considered appropriate for cost-benefit analysis involving different stakeholders, with correspondingly different values, included participatory mapping of restoration priorities, long term planning and collaborative development of monitoring and evaluation tools. Many of the interventions are well represented by public sector organisations tasked with realising benefits aligned with addressing societal challenges. However, in other cases, it appears that the private sector interests, and local stakeholders (land managers, communities), are underrepresented in discussions to identify costs and benefits, and associated decisions around addressing trade-offs, however, the need to recognise the multiple values (e.g. heritage and environment) underpinning different definitions of costs and benefits was frequently referred to.

Benefits and costs were often framed in relation to high level stakeholder (e.g. government or sectoral representatives) perceptions. However, in some cases, awareness of the costs and benefits perceived by those individuals affected (e.g. land-managers) was overtly recognised as necessary. This occurred both in larger interventions where there was recognition of the different scales at which stakeholders were involved (strategic regional and local scale intervention), and in the smaller scale interventions where stakeholders straddled the regional (e.g. government bodies) and local scales (e.g. landowners and communities).

In some cases [e.g. Danube Floodplain Restoration (CS07a, Austria), Deba Barrier Removal (CS02, Spain)], it was the high-level stakeholders who were involved in discussions, and in the case of the Upper Scheldt restoration (BE), MERLIN-led workshops were used to identify costs and benefits. Overall, it appears that there is a distinction between those who are involved in identifying costs and benefits at the strategic level or at large scales and the engagement of local level stakeholders and the costs and benefits that they work with. The former reportedly follow more formal processes such as strategic planning and designing effective monitoring and evaluation processes. The latter may be more variable in their approaches, reflecting the types of riverscapes and specific stakeholders involved. At the smaller intervention scale, the costs and benefits tended to be identified in relation to those private landowners directly involved, particularly actions to mitigate potential impacts, as was the case in the Forth Basin Restoration (CS17, UK), Sorraia River Restoration (CS13, Portugal), and Ervidel River Restoration (CS18, Portugal). CS17 reported general support from the public and non-farmers but emphasised their targeted relationship-building with landowners, who hold critical roles in facilitating or resisting interventions. This suggests awareness of different levels of burden or benefits arising from an intervention. We believe it was likely exhibited by other case studies, and this is something to reflect on when planning future interventions.

Trade-offs were only mentioned in some cases. For example, the Tisza Floodplain Rewetting (CS09, Hungary) addressed distributive justice directly indicating that restoration measures were going to benefit most farmers and the broader public, while transparently acknowledging that two farmers faced adverse effects (from higher groundwater), reflecting attention to uneven impact even within more widely supported outcomes. Distributional conflicts were flagged in some case studies (e.g. the Deba barrier removal) where tensions emerged between residents who saw activities as negatively impacting cultural identity and others who prioritised the re-establishment of ecological processes. This tension shows how the ecological goals of restoration can clash with cultural priorities, raising deeper distributive issues.

Most case studies have developed monitoring, evaluation and risk mitigation plans of various forms with several adopting broadly accepted approaches (e.g. as described under the Water Framework Directive), or those already developed by intervention stakeholders such as the WWF. Risk management is often considered at a strategic level, and in some cases refer to long term (e.g. 20-50 year) adaptation and optimisation plans. For example, the Tisza floodplain rewetting (HU) intervention identifies both risks and mitigation actions throughout their implementation, optimisation, and Regional Scalability Plans. Comprehensive approaches like this may provide the basis of sharing the benefits and burdens (e.g. restoration outcomes, access, risks) equitably among stakeholder groups.

4 Just transformations in action: Reflections on six freshwater NbS projects

This section presents six MERLIN case study narratives on just transformations, with a focus on stakeholder engagement. It further highlights pivotal issues and decision points that reveal how issues of representation, procedure, and distribution shaped, enabled, or at times challenged the NbS implementation process.

4.1 Deba Barrier Removal (Spain): When river restoration meets cultural identity – Navigating local resistance and participatory Debate

4.1.1 Context and stakeholder landscape

This case study (Figure 9) sought to remove up to ten barriers to free-flowing rivers, restoring flow to 25 km of channel. The Deba Basin covers 518 km² and the total main channel length is 58 km. Currently the waterbodies being targeted need to improve their ecological status and historically there were serious floods that damaged buildings in the urban centres. The channel is highly modified with barriers in place from past industrial development that depended on waterpower. Although the barriers are no longer used for energy production; they are seen as part of the area's cultural heritage and have protected status. The main stakeholders involved in wider catchment include the rural land sector (mainly forestry but some agriculture); the hydropower sector operating hydropower dams in the wider basin and the many public administration agencies and departments.

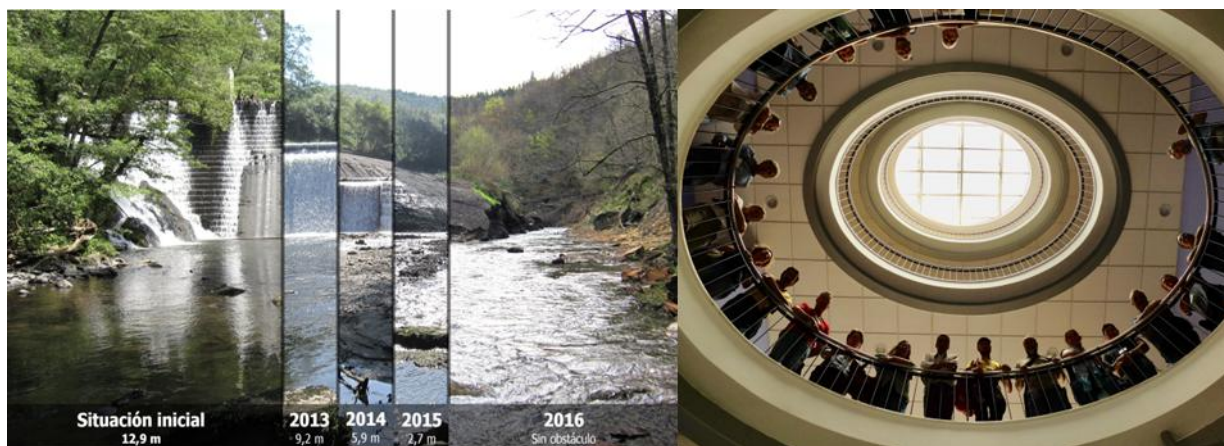


Figure 9. Dam removal in Basque Country (Left) and first field visit of the Small Streams and Basins group of MERLIN (Right), bringing partners together to exchange knowledge and perspectives. Photo: Miriam Colls

4.1.2 Key issues that needed attention

The case study proponents (the researchers from University of the Basque Country and the Provincial Council of Gipuzkoa (body responsible for managing river ecosystems) believed strongly in the benefits arising from the barrier removal. Barrier removal responds to four major societal challenges: a) disaster risk reduction, b) environmental degradation and biodiversity loss, c) human health, d) climate change mitigation and adaptation. However, in the town of Soralue, some residents felt the industrial river landscape gave a sense of place. More generally, the residents are disconnected from the river and do not have a sense of stewardship for the Deba. Despite information sessions, some residents and stakeholders were not persuaded by the arguments that barrier removal would benefit them. The case study highlighted that the legislation around barrier removal was ambiguous and there was a conflict between protecting cultural heritage and the natural environment.

4.1.3 Application of stakeholder engagement

There was a detailed stakeholder identification at both 'local' (settlement residents) and 'strategic' (regional organisations) level as it was important to deal with both formal organisations and the residents living where barriers may be removed. There was a lot of focus on working with strategic stakeholders at the start, with meetings with local stakeholders (over 50 community organisations were identified) to follow. The implementing partner is the Hydraulic Department of the Gipuzkoa Provincial Council, one of the main public authorities (together with the Basque Water Agency) responsible for river ecosystem management and restoration in Gipuzkoa. As such, the stakeholder with the highest influence and interest in the restoration actions is already part of the core case study team.

In the high Deba (Alzola and Elgoibar) and low Deba (Begara, Oñati and Arrasate) communities, both the local councils and residents agreed to barrier removal, but opposition was reported in Soralueze. Sixteen types of engagement were used during 2022 - 2023. These ranged from information: newsletters, flyers, media communication, exhibitions; consultation: questionnaires, interviews, mediation, focus groups, roundtables, workshops and potentially active involvement through the Case Study Board, voting and mediation. However, most of these took place after the proposed barrier removals were identified, which may explain why respondents to the local stakeholder survey felt that they were informed about the intervention but not consulted; and one was concerned that the intervention was not responding to the concerns of the local communities. Evidence that barrier removal would deliver the benefits was requested; including evidence that barrier removal would not create flooding threats at times of intense rainfall. By 2023, the case study partners reported that there was a campaign to discredit the scientific rationale for barrier removal, making it impossible to calmly discuss the removal of barriers in the middle Deba. Things became further complicated when the Basque Government's Department of Culture opposed removal on the grounds of cultural heritage. The conflict was later solved by the Basque Parliament, who decided that the organisation giving legal protection to a heritage site (in our case the municipalities) could later remove it. An agreeable solution was found whereby the barriers were modified to allow flow but retained sufficient parts of the impoundment to allow cultural heritage interpretation. Nevertheless, the opposing citizens became even more active and launched campaign against the dam removal. In 2023-2024, strategic engagement among public authorities became the central focus to enable implementation of barrier removals. In parallel, MERLIN partners began working with schools to raise awareness about the impacts of barriers and the benefits of free-flowing and healthy rivers. Recently, and despite unanimous approval by the City Council to remove two of the four barriers, pressure from pro-dam citizens led the main opposition party to call for a referendum on dam removal. At the time of writing this report, it seems that the Provincial Council will proceed with barrier removal during September 2025. The MERLIN partners are now working with schools to raise awareness of effects of barriers and the benefits of free-flowing and healthy rivers.

4.1.4 Outcomes and benefits

The close involvement of the Basque Country Water Agency provided the means to upscale the learning and focus on other parts of the region where local opinion was less divided. Overall, most of the barriers have been removed in rural areas where there was less conflict. The case study partners reported a change in levels of participation over the course of the intervention, moving from most participants being 'non-participants' to being informed or consulted; and small number moving to collaboration. However, those stakeholders representing community groups generally remained 'non-participants' or 'informed' i.e. on the lower rungs of the engagement ladder log. It remains unclear if the polarised debate in the middle Deba has been resolved and if the opposing minority of residents recognised the benefits of removal in other sections of the Deba.

Currently, four barriers have been removed (Mendaro, Bergara, Arrasate, and Elgoibar) restoring 18.5 km of free-flowing river. These interventions have delivered several reported benefits. Barrier removal reduced flood risk upstream and was thought to decrease the overall flood risk to the settlements, although further monitoring is needed to see what happens with different discharge intensities. There were reductions in some pollutants, which contributes to decreasing GHG emissions. The case study also reported improved attractiveness and suggest that reduced stagnant water areas would result in less mosquitoes, what in turn would contribute to health and well-being. In the Upper and Lower Deba, both the ecological status and ecological quality ratio for benthic invertebrates improved after the barrier removal, whereas in the middle Deba River things did not change beyond normal inter-annual variations caused by differences in weather patterns, unrelated to the dams. Therefore, in most cases, the anticipated benefits of barriers removal seem to be demonstrated, although often more data are needed to be confident of long-term trends. There are further plans to improve the riparian zones and add to the overall biodiversity and amenity of the restored stretches, benefitting residents.

4.1.5 Lessons Learnt

This case is an excellent example of needing to be aware of, and prepared for, local resistance, particularly if restoration may change local landscapes and impact on 'sense-of-place'. It is difficult to resource stakeholder engagement at multiple sites and levels, whilst also delivering the restoration works if you are a small team; and conflict resolution professionals may be required if things become heated. Earlier and more meaningful engagement with the residents may have helped, but only when both sides are willing and able to compromise. While evidence and demonstration can support decision-making, more data alone is not always enough to win hearts and minds. Therefore, stakeholder engagement requires patience, perseverance and the ability to adapt your plans in response to community concerns.

4.2 Kampinos Wetland Rewetting (Poland): Inclusive by design – Stakeholder networks and a commitment to communicate

4.2.1 Context and stakeholder landscape

The “Kampinos WetLIFE” intervention (Figure 10) aims to improve the 6,000 ha of wetlands within Kampinos National Park, Poland. To achieve this, they are carrying out a number of restoration measures including the restoration and reconnection of wetlands, watercourse naturalisation, and increasing the ecological resilience of Natura 2000 habitats. The intervention has 23 stakeholders currently involved; they are primarily considered ‘local’ or ‘municipal’ however stakeholders at all scales are involved. Of these stakeholders, nine were identified as supportive, eight neutral and three were opposed, indicating a complex initial governance landscape.



Figure 10. Kampinos wetlands. Photo: Julian Rudziński

4.2.2 Key issues that needed attention

One of the challenges identified by case study partners was around the difficulties in communicating with, and gaining the support of stakeholders given their diverse interests. Restoration activities were often perceived by local communities as the cause of spring flooding and therefore, detrimental to local residents and farmers. Whilst this dispute was primarily due to a misunderstanding of the process of water flow through the park and the effects of anthropogenic changes taking place, it was important to find a way to address these concerns with stakeholders as they were raised.

4.2.3 Application of stakeholder engagement

To combat this communication challenge, a number of steps were taken. Firstly in 2023, a Case Study Board known as the Coordinating Council of the UNESCO biosphere reserve was established. The council is composed of representatives of the Kampinos National Park, local and regional governments, the Marshal's Office of the Mazowieckie Voivodeship (the highest-level administration), the Regional Directorate for Environmental Protection, the Regional Water Management Board, the Warsaw City Forests, residents of the Kampinos Forest, scientific institutions and non-governmental organisations. The purpose of this council was to create a platform for decision making that considered both local and expert knowledge. Within this council a working group has been created to specifically deal with public expectations and try to solve the previously mentioned stakeholder uncertainties. Beyond this, a further four working groups have been established that will continue to meet once the MERLIN project has finished. Smaller group meetings known as ‘kitchen table meetings’ have also been planned. The purpose of these engagements is twofold: to allow direct communication between landowners and public administrations and to create a space to deliver information and hold consultations that directly support decision making.

This commitment to effective communication can be further illustrated in two ways. Firstly, Kampinos National Park employees are undergoing training around conflict resolution and facilitation of stakeholder dialogue to ensure that the aforementioned meetings allow for substantive discussions in which both sides listen to the other and find a solution to the problem together. Secondly, the Kampinos listed the “continuous education of stakeholders” one of their most important objectives, and as such one measure they are implementing is the adaptation of the educational and recreational infrastructure of the park to meet the needs of people with disabilities (through the PEFRON intervention “Protected area, accessible area”). This is to ensure that no one is

excluded from the restoration conversation, and everyone is granted the same access to enjoy the nature of the park.

4.2.4 Outcomes and benefits

Intervention coordinators acknowledged that working with stakeholders fostered stronger relationships by encouraging two-way knowledge sharing, resulting in greater acceptance of measures as they are co-constructed directly with the people who are being impacted by them. Through the strengthening of stakeholder relationships, the Kampinos National Park has been able to conduct a large-scale public consultation to create a map of areas at risk of spring flooding in order to more effectively direct water to areas of natural value and away from populated areas. This allows stakeholders to highlight the ways they specifically are at risk, hopefully allowing a sense of proactivity around future climate related risks that are causing stakeholders a lot of concern.

4.2.5 Lessons learnt

The Kampinos case study has been able to create a Case Study Board with wide representation and flexible membership, demonstrating a procedural commitment to diversity and inclusion. Through this, they have gained the ability to co-create solutions that benefit both people and nature that are more widely accepted by the public. Their ongoing workshops and planning networks, including efforts for accessibility (e.g. for disabled users), show how engagement mechanisms can and should be adapted to reach as many stakeholders as possible.

4.3 Danube Floodplain Restoration (Austria): Trust and fairness in stakeholder boards – Balancing inclusion with sectoral gaps

4.3.1 Context and stakeholder landscape

The Danube is an international waterway (Figure 11) of economic and cultural importance that has been managed to enable the transport of goods for centuries. Navigational needs remain, and challenges due to flooding and drought need to be addressed to maintain this function, alongside addressing other societal challenges. This riverbank and floodplain restoration intervention applies adaptive management processes to address multiple ecological, navigational, and riverbed pressures, with a focus on flood and drought mitigation and biodiversity net gain. It aims to show how this might be resolved by restoring natural processes to improve riparian habitat connectivity, navigational access, fish migration, and other ecosystem services. The project involves the restoration of more than 900 m of riverbank behind an island, a so called “back channel” by removing of ripraps. This creates shallow water zones beside the mainstream of the Danube and affects 10.8 hectares of floodplain along the Danube East of Vienna, applying adaptive management processes to address multiple ecological and navigational aspects with a focus on biodiversity net gain as well as flood and drought mitigation. Regional scalability plans (up to 2050) involve extending work to include 17 km of main stem bank restoration, 38km of tributary reconnection, and removal of redundant grey infrastructure.



Figure 11. Danube Austria MERLIN Day event. Photo: Joselyn Arreanga

The “Integrated River Engineering Intervention” has been underway on this section of the Danube for approximately 25 years, headed by the Austrian Waterway Management Company (Viadonau) and its stakeholder board, and previous restoration interventions have sought to maintain “good ecological status” under the WFD. In 2017 a stakeholder board was formed to oversee an expanding catalogue of measures related to challenges for the Danube east of Vienna. This board has formalised procedures, and inclusive processes have promoted trust between key stakeholders. The stakeholder board currently contains 12 national or regional representatives from across environmental, fishery and navigation sectors cutting across public bodies, eNGOs, and private sector interests. The Regional Scalability Plan identifies 20 stakeholders, 19 of whom were already involved prior to MERLIN’s involvement. Eleven of these are national level stakeholders, eight regional, and one trans-national. In terms of stakeholder types, seven are public sector, five represent NGOs, eight represent community groups, however no private bodies are represented. They are collectively responsible for the governance, regulation, funding, and implementation of intervention activities.

4.3.2 Key issues that needed attention

While there is high-level strategic agreement around existing management guidance for this section of the Danube, and both an advisory board and advocacy group are actively involved, no clear information was provided about the impacts of their engagement processes. Issues related to the scale of the intervention make it difficult to gauge what the practical expectations for inclusivity and sectoral diversity should be, and some affected communities are reportedly not represented. Despite Case Study Board respondents being satisfied with actions to include wider relevant stakeholders there was a perceived lack of new engagement via MERLIN involvement. Questions remain around whether additional community representation and local actors’ participation is needed, and how this might be undertaken (e.g. tourism providers east of Vienna are being considered for future involvement). Furthermore, some stakeholders were unsure of the processes used to underpin decision-making.

4.3.3 Application of stakeholder engagement

In order to upscale successful restoration interventions, the “Future Danube Plan” acknowledges the need to develop working relationships with new stakeholders and adapt to policy developments such as the European Green Deal. To complement this, the intervention has been engaging with related initiatives including LIFE IP IRIS and DANUBE4all, and a major hydropower provider working upstream of Vienna, to learn from their experiences of carrying out restoration work. The Case Study Boards report satisfaction with procedural fairness, representation and inclusion, exhibited by the stakeholder forum overseeing the restoration measures. Over the course of the intervention from 2017 to 2023 these stakeholders became increasingly engaged as equal partners, responsible for decision-making, and using a variety of tools to do so.

While the stakeholder mapping exercise only identified the twelve organisations already involved wider dissemination of plans included information sessions with a further 28 participants in Years 2 and 3 of MERLIN.

4.3.4 Outcomes and benefits

Decision-making processes were considered inclusive and fair, and any management guidance was reportedly agreed by affected stakeholders. As a result, there was high level awareness of scale, scope, and costs (although some were unsure of availability of funding), and sectoral concerns were addressed. However, they did not find that alignment with societal criteria was applicable in their case, which may represent an issue for achieving a just transformation. As such, there is scope for including a wider range of stakeholder perspectives.

Effective engagement led to robust monitoring and evaluation plans with clear timeframes and responsibilities, and mechanisms to address risks, however continued engagement will be required to facilitate implementation over the long term and capture emerging lessons to allow adaptive responses to improve NbS implementation on the Danube.

Long term involvement and collaborative working by key stakeholders has allowed them increased ownership of decision-making. This has afforded them the ability to look ahead and identify the value of developing and adapting their engagement processes as efforts to further their NbS objectives continue, at both regional and site level scales.

4.3.5 Lessons learnt

Continuing to develop the regional scalability plans over time offers the opportunity to broaden meaningful engagement across scales and build the capacity to adapt and expand engagement processes. One benefit of this would be for sectoral policy frameworks that could usefully benefit from increased multi-stakeholder collaboration. Key to this are processes that allow all stakeholders to feel involved at a level appropriate to their needs, and where possible to contribute to decision-making at scales relevant to them.

4.4 Tisza Floodplain Rewetting (Hungary): Restoring with memory – Trade-offs, compensation, and long-term engagement

4.4.1 Context and stakeholder landscape

The Tisza River Basin (Figure 12) in eastern Hungary is a deeply modified landscape, where the Tisza and its tributaries have been regulated and drained, and habitats fragmented over centuries of agricultural and hydraulic development. Over 90% of Tisza floodplains and wetlands have been lost since the 18th century, leaving legacy of ecological degradation and groundwater depletion. In addition, fragmented land ownership entangled with entrenched water governance structures and unequal power relations in land-use decision-making. Large farmers (> 200 – 500ha) dominate, while smallholders, aging rural populations, and community groups often lack effective representation.

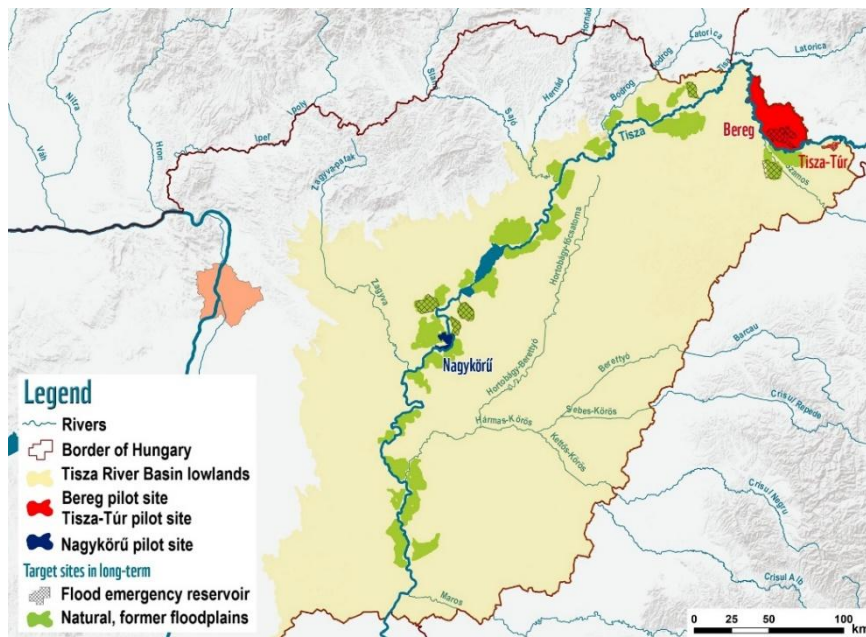


Figure 12. Tisza Floodplain Rewetting pilot areas. Map submitted by Péter Kajner

Against this backdrop, the Tisza Floodplain Rewetting initiative seeks to reconnect former floodplains to the river and reintroduce water retention for ecological repair, and integration of conservation, climate resilience, and local livelihoods. With stakeholders spanning broad spatial spectrum (e.g. regional and municipal governments, national water and agriculture authorities, environmental NGOs, public agencies, small and large farming operations, and civil society actors) and underpinned by centralised governance MERLIN's stakeholder engagement processes is helping carve out localised, participatory spaces for dialogue and co-design of NbS.

4.4.2 Key issues that needed attention

The central challenge in implementing restoration was the negotiation of land and water use in a contested, hydrologically constrained landscape. For restoration to work, water had to be retained on agricultural lands, prompting concerns about flooding, soil saturation, and decreasing yields. A particularly vivid example emerged following the earlier LIFE intervention (2001 – 2006): two farmers voiced concern that seasonal flooding led to unmanageable inundations and groundwater levels in cultivated fields. These grievances underscored a tension that persisted into the MERLIN period: who bears the burden of ecological restoration, and what recourse exists when trade-offs arise?

However, the centralised structure of water governance in Hungary posed challenges for just and inclusive restoration as institutions were often reluctant to support locally adapted measures that require more participatory decision-making and shared responsibility. Moreover, the agricultural subsidy system poses a major obstacle to water retention because it does not encourage farmers to tolerate waterlogging, nor does it adequately compensate them for the resulting losses. The lack of compensation seems to encourage veto water retention decisions rather than the principle of majority decision-making. For instance, even if a few farmers initiate water retention in an area, and only one other farmer objects, the water authorities will prefer to drain the water rather than pay damages. Hence, it was difficult for local stakeholders, especially smallholders and community groups, to shape or influence decisions that directly affected their land and livelihoods. This misalignment between national authority and local needs limited both procedural and distributive justice.

4.4.3 Application of stakeholder engagement

The MERLIN initiative did not begin from scratch. Through a Tisza LIFE intervention (2001–2006) in Nagykörű (Middle Tisza) the value of early stakeholder engagement was already demonstrated with consultation with local farmers, municipalities, and formation of grazing cooperatives to manage restored grasslands. These relationships became foundational for MERLIN restoration measures.

What distinguishes the MERLIN phase is a shift toward more sustained, adaptive stakeholder engagement. A Case Study Board was established at the implementation site, in the Bereg landscape (Upper Tisza), comprising municipal leaders, NGOs, public water authorities, and farmers' groups. It met regularly to oversee progress, provide feedback, and discuss implementation details. Beyond the CSB, stakeholder involvement unfolded through a series of local meetings, bilateral negotiations, technical planning sessions, and field visits, complemented by formal governance structures.

These initiatives were tailored to overcome entrenched power imbalances. In the Bereg, WWF Hungary undertook the task of obtaining the consent of all affected farmers for flooding in the designated areas. Attempts were made to align subsidy structures, especially those under Hungary's Common Agriculture Policy, with nature-friendly floodplain farming, addressing the concern that rewetting might compromise their agricultural support payments.

Although cultural or ethnic diversity was not a major axis of engagement (given the demographic profile of the region), the intervention actively acknowledged inequalities in influence, especially between small and large landholders. Engaging resistant actors (like the Ministry of Agriculture or the National Chamber of Agricultural) remained difficult, but ongoing negotiations helped keep open the door to future alignment.

4.4.4 Outcomes and benefits

The long-term engagement has yielded both ecological and social gains. Rewetted areas are showing early signs of habitat recovery, while traditional floodplain farming supported by regional branding (e.g. "Living Tisza") are helping diversify local livelihoods. Though a few farmers opposed rewetting due to concerns over waterlogging, their views were acknowledged, and negotiations, including possible state land acquisition, were pursued to try to address tensions.

Nonetheless, barriers to just transformations remain. There is no sufficiently motivating compensation scheme for those facing short-term losses when land is flooded, and monitoring of costs and socio-economic impacts remains limited. While the Case Study Board fostered collaboration, more effort is needed to include marginalised voices such as smallholders and stakeholders who can bring forward new ideas and initiatives that promote more diverse adaptive and nature-friendly land use. Still, participants reported feeling heard, and public discourse suggests a growing openness to more nature-integrated land use.

4.4.5 Lessons learnt

The Tisza case illustrates that building long-term relationships and trust is critical for navigating complex land-use transitions. Decades of engagement, starting with earlier interventions, enabled local actors to participate more openly in MERLIN, even in a politically centralised context. However, this experience also shows that inclusivity cannot be assumed; it must be deliberately structured. Smallholders and less powerful stakeholders remained underrepresented in formal decision-making, highlighting the need for more intentional outreach and equitable design. Finally, just transformations demands more than ecological success: it requires open conversations about trade-offs, risks, and who bears them. Without clear compensation mechanisms, even well-supported restoration efforts risk reproducing existing inequalities.

4.5 Lima Floodplain Forest Restoration (Portugal): Negotiating restoration in a patchwork landscape – Inclusivity and trade-offs

4.5.1 Context and stakeholder landscape

The Lima Floodplain Forests, in the flat lowlands of the Estorãos catchment, tributary of Lima River, integrate a patchwork landscape resulting from both social and environmental processes (Figure 13). The average size of holdings in this Northern region of Portugal it is less than 5ha, but parcels are even smaller (often less than 1ha) as they were traditionally divided across generations, creating a very characteristic and diverse landscape. At the first half of the 20th century much of the parcels were cultivated or grazed with limited remnants of non-productive areas. At the time, implementation of agricultural policies involved modifying the hydrographic network through drainage of the wetland, and later in the 50's creating ditches for the plantation of exotic trees (*Eucalyptus camaldulensis*) to increase the timber production. In the 20th century, the region witnessed a process of migration, both internally from rural areas to cities and abroad, which contributed to shifts in land cover composition. Indeed, land abandonment enabled the spontaneous recovery of forested areas (e.g.

expansion of the native *Alnus lusitanica* dominated wetland forests) but also brought novel challenges in managing diverse private plots to sustain the land structure, especially the face of land use competitions.



Figure 13. Volunteers clearing Acacias in the Lima. Photo: Fancisco Correia

More recently since the start of the 21st century, there is increasing susceptibility to climate change and biological invasions. In line with this, a new management orientation with the declaration of a protected area. In 2000, the lowlands of the Estorãos River were designated the Protected Area of the Lagoons of Bertandos and São Pedro d'Arcos and later became part of the Natura 2000 network and is classified as: Protected Area of Regional Scope; Site of Community Importance; and Site No. 1613 on the List of Sites of the Ramsar Convention, Wetland of International Importance.

Over time, conservation responsibilities also shifted. Initially overseen by the National Institute for Conservation of Nature, management of some protected areas in Portugal was transferred to municipalities. This shift meant that the Municipality of Ponte de Lima (CMPL) became fully responsible for conserving the area where the Lima Floodplain Forest restoration (CS12) is located, establishing CMPL as the primary stakeholder.

4.5.2 Key issues that needed attention

One of the major social issues faced by a newly responsible CMPL of the management of a protected area, derived from the fragmentation of land, and therefore integrating a large range of disparate interests and motivations. In the CS12 case, it means more than 300 owners that hold land within the Protected Area, often with strong attachment to their properties irrespective of the site or the current land use. The multiplicity of small holdings contrasts with the presence of stakeholders such of National Electric network while not interested in restoration but strongly influencing the management of the area affecting natural habitats. These complex stakeholder dynamics, shaped by fragmented land ownership and diverse motivations, highlight why effective and inclusive engagement is essential in the Ponte de Lima case. Ensuring fair representation and transparent procedures is particularly challenging when decision-making must balance the interests of small landholders, public authorities, large infrastructure operators, and conservation bodies.

4.5.3 Application of stakeholder engagement

In the last two decades, the Municipality developed a strong strategy of environmental education, with remarkable dynamics especially with schools in the region. Also, they pursued to increase their capacity and articulation to manage land with actions like buying parcels within the protected area, where they conducted the first conservation actions. Since 2017, a sequence of interconnected EU interventions with measures in place ([LIFE FLUVIAL](#), [MERLIN](#), and further [RESTORE4Life](#)) led to a progressive and growing involvement of CMPL also in larger dimension of the restoration process.

A key innovative measure since 2021 is the reinforcement of stakeholder mapping and integration of educational activities. First, both CMPL-ISA/University of Lisboa worked together as an implementation-scientific partnership within MERLIN to optimise and upscale best restoration practices within a Green Deal Approach. Second, stakeholder mapping helped identify about 17 groups, with a predominance of public and

private sector actors but also including NGOs and community organisations. This mapping provided the basis for targeted, multi-level engagement. The formation of case study boards was used to anchor high-level meetings with inaugural one involving 44 participants across 13 stakeholder groups which also reached around 900 online viewers. Engagement activities extended well beyond the board, with workshops, capacity building, volunteer events, exhibitions, media participation, and social events, particularly with landowners and schools. Educational initiatives alone reached over 2,000 students and teachers, helping to broaden representation and make procedures more transparent and inclusive.

In 2025 CMPL took the leadership on the stakeholder engagement process when it became an Associated Region of RESTORE4Life Horizon intervention with the overarching goal of restoring wetland ecosystems. This trajectory represented also a growing capacity to expand and reinforce stakeholder engagement. The policies of different interventions partly contributed to growing stakeholder engagement. This engagement process continues to evolve, with five new stakeholder entities recently expressing interest in regional scalability workshops. The aim is to enable both new and existing stakeholders advance to higher levels of engagement.

4.5.4 Outcomes and benefits

The more evident and short-term benefits from this long-term engagement process observed during MERLIN is understanding that planned restoration measures depend on the establishment of agreements with landowners, notably given that several proposed measures fall within private parcels. These agreements are currently ongoing, benefiting from a long history of progressive trust building, and have already enabled the expansion of the land area under restoration beyond what was initially planned. Also, the collaboration between local authority and scientific partner in MERLIN has positively contributed to capacity building and mutual exchange of good practices during the development of a monitoring network for the assessment of restoration measures.

4.5.5 Lessons learnt

The restoration is a long-term process, often linked to the target area's environmental and social diversity. The more complex the social dimension, in this case, multiple small holdings, the greater the challenge of finding a common approach to address a problem (i.e. recovering essential functions and services provided by ecosystems) despite being of a concern for all society/ even though it is a concern for society as a whole. For the process to be reliable, trust needs to be built gradually, and cultivating robust relationships among social agents requires time to generate and strengthen meaningful connections. Also, since "human" timings often shaped by social pressures like politics or economics, they do not align with ecological cycles. Therefore, a longer and deliberate process of periodical assessment and adaptive management is needed to guarantee socio-ecological sustainability.

4.6 Forth Basin Restoration (UK): Building on continuity – expanding existing networks to find common ground

4.6.1 Context and stakeholder landscape

The intervention aimed to restore channel and riparian habitats and reconnect floodplains on the Allan Water (~23 km length) at Greenloaning using leaky dams (Figure 14), blocking ditches, breaking drains and making wetland scrapes. There is upstream peatland restoration at Knoxfauld Farm, part of the 285ha of peatland upstream of Greenloaning interventions. The focus is on continuity within the catchment, linking peatland restoration upstream to mid-stream river and floodplain restoration, to benefit downstream urban communities. The intervention built on existing engagement with the Allan Water Steering Group, which consists of public sector, NGO and community organisations. Leaky dams and riparian wildflower planting were also used to slow the peak flow of a tributary from the river Devon at Pool of Muckhart Village. Mapping and Treatment of Japanese Knotweed and release of a Rust fungus to control Himalayan balsam was carried out on the river Devon. By using MERLIN Implementation money as match funding with other grants the case study aimed to exemplify how upscaling could be delivered with the hope of attracting private finance. Therefore, the MERLIN case is building on a history of NbS, with strong drivers from the national Climate Change Plan and Biodiversity Strategy.



Figure 14. Pool of Muckhart Community planting of leaky barriers. Photo: Charlotte Neary

4.6.2 Key issues that needed attention

The downstream communities of Dunblane and Bridge of Allan had been flooded, leading to the Allan Water improvement intervention, delivering multiple benefits from working with nature. Likewise, the Pool of Muckhart responding to local flooding concerns. The MERLIN case is working with a progressive large landowner in the Allan Water who is reducing livestock numbers and investing in environmental actions. The case study partners (Forth Rivers Trust, UKCEH and NatureScot) highlighted that their main challenge was land manager engagement, in the context of uncertainty around public and private funding for environmental improvements. The challenge lies in upscaling the approach to other farmers in the area; and to align the environmentally focussed approaches with the needs and motivations of local stakeholders including local residents. Some stakeholders remain unsure about using NbS for flood mitigation due to a lack of evidence.

4.6.3 Application of stakeholder engagement

There was strategic engagement with national (Scottish) and regional stakeholders, and local engagement with those living and working in the Allan Water catchment. The case study team identified 40 organisations involved in the activities. Many of the organisations were already involved (n=38) with restoration in the area, spanning 12 different sectors. Most were identified as supportive of the restoration and there is strong history of working together between most of the governmental and NGO organisations involved. The Allan Water Steering Group continues to meet twice a year throughout the intervention.

Despite this foundation, the intervention has increased engagement via over 20 engagement activities. There are no ‘non-participating’ stakeholders anymore; and 22 stakeholders who were originally ‘informed’ have been reduced to only six. Five stakeholders have moved from the lowest form of engagement (informing) to the highest (collaboration), although nine other organisations had not (yet) reached the desired level of engagement. These targeted engagement processes can be set in the context of the information provided by visits to the Forth Rivers Trust website (~40,000 visits) and reaching 502 individuals with information on the proposed measures.

During the intervention, the need to engage local communities and farmers more effectively was noted. There was a farmers Regional Scalability plan (RSP) meeting in December 2023; prompting in a lot of learning about how to reframe the material to better connect with land-manager needs. The RSP confirmed the focus on working with land managers should be continued. On the Allan Water communities were engaged through information evenings, volunteering and stalls at local agricultural shows. There has been community

engagement with volunteers from the local flood group co-designing and implementing the Pools of Muckhart intervention; and volunteers were essential to complete the riparian planting (including 4200 trees financed by Network Rail). The implementation plan shows that at least 30 staff days were required to design engagement, interact with relevant landowners and community representatives to find appropriate sites, and maintain dialogue during the implementation and maintenance of the Greenloaning measures. A similar amount of time was interventioned for the proposed peatland restoration measures.

4.6.4 Outcomes and benefits

To date, 3 ha of floodplain have been reconnected; and just over 4 ha of streams restored; 36.5 ha of wetland created and 24 leaky dams installed, resulting in locally important biodiversity gains, reduced GHG emissions, flood mitigation and drought resilience. The intervention has increased awareness of, and investment in, natural flood management, increased educational activities, and the attractiveness of the area. This has been achieved without (at the time of reporting) any change in the land available for farming. During the recent months, the intervention has leveraged additional funding from infrastructure providers to do more restoration in the catchment. Most importantly, the engagement has built relationships between upstream and downstream stakeholders and helped explain why adaptation and restoration is needed. The strong local participation in design and implementation has built support and generated local ownership for the interventions. The engagement has identified potential upscaling solutions including adapting agricultural support payment conditions to include restored floodplains and sharing monitoring results to help participants understand that benefits are received. The planned “MERLIN Day” in September 2025 will provide this information to the strategic stakeholders, but it is unclear how the local stakeholders will be updated. The actively engaged strategic stakeholders are confident in the intervention but uncertain about long term outcomes and monitoring due to the short-term nature of the funding for both measures and engagement processes.

4.6.5 Lessons learnt

The use of existing stakeholder groups has been useful, but further efforts were still required to engage the strategic and local stakeholders and to cultivate relationships between upstream and downstream stakeholders to build a catchment understanding. Using ongoing relationships is very important, but it requires ongoing effort and adaptation to the issues. Furthermore, these engagement processes are time intensive and require specific skills in translating restoration into relevant issues for residents or land managers. Showing people, rather than telling them, was very influential in gaining interest. The ‘twin-track’ approach of working with ‘bottom-up’ local people as well as ‘top-down’ public and NGO advocates is useful to align policy objectives with the needs of those who can support (volunteers) or block (NFM sceptics) the restoration.

5 Discussions: Implications for taking just transformation approach

The purpose of this deliverable was to reflect on MERLIN case study experience of implementing NbS, and how issues of just transformations were approached. Three dimensions of the just transformations framework – representation, procedure and distribution – were analysed based on stakeholder engagement activities and procedures. This section summarises the research question findings and reflects on the key lessons for mainstreaming nature-based solutions in Europe and beyond.

5.1 Review of findings for research questions

What are the composition and patterns of stakeholders engaged in MERLIN case study activities? The analysis of **representative justice** reveals a strong dominance of public sector actors, who accounted for over half of the stakeholders involved. This is potentially due the public sector being responsible in providing public goods and are traditionally first points of contact in the initiative of such interventions. Nevertheless, the stakeholders also included private sector actors, NGOs, and community groups, reflecting some diversity. The diversity is further reflected in the sectoral engagement, which varied by landscape context and intervention types, with administration, conservation, agriculture and water supply being among the most consistently represented sectors. Minority groups defined by characteristics such as gender, ethnicity, or income were not evidenced, though imbalances in knowledge and influence, particularly between public bodies, NGOs, and community actors, were evident, hinting at uneven capacities to participate in and shape NbS efforts.

Overall, while most case studies demonstrated an intention to ensure fair representation, few described targeted efforts to identify or remove barriers to participation. This suggests that assumptions of fairness and openness were often built into intervention procedures without critical assessment of who might be left out. As a result, opportunities remain to strengthen safeguards and build more robust systems for inclusive engagement in future NbS initiatives.

What are the procedures and practices for involving stakeholders? Stakeholder engagement across case studies showed a gradual improvement over time, with many stakeholders initially positioned at the level of non-participation or simple information sharing but later advancing toward more collaborative forms of involvement. Public sector actors remained the most actively engaged throughout, while community groups were less actively involved. Almost all case studies had case study boards, because of the MERLIN approach, serving as advisory and collaborative platforms for engagement and joint implementation. While this platform offered opportunity for stakeholders to influence decision making, it was dominated by the public sector. Participatory workshops were commonly used to deepen understanding and build trust, and efforts were made to help stakeholders up the engagement ladder. While many case studies viewed their decision-making processes as fair, a considerable number of stakeholders expressed uncertainty, suggesting not everyone involved is satisfied with how decisions are made and who is involved. Some case studies demonstrated more inclusive approaches, using advisory boards, cooperative structures, and targeted engagement with smallholders and land managers to mitigate power imbalances and foster shared ownership. Furthermore, the analysis underscores the importance of clearly defining the roles expected of each stakeholder to facilitate an appropriate engagement plan. It also highlights the need for systematic tracking of stakeholder participation from the outset of the intervention, with regular updates throughout implementation, to effectively monitor and support stakeholders' progression along the engagement ladder.

What are the distributive implications for the case study stakeholders? Case studies generally reported positive perceptions of the benefits delivered by the NbS interventions, such as improved flood protection or emission reductions, but there was limited clarity on who exactly benefits, how, and whether any groups experience disadvantages. Also, benefits of NbS were more readily identified than the costs or impacts. This was less the case at the local intervention level, where many were able to reflect on the need to meaningfully involve landowners, both to raise their awareness of a intervention's benefits, but also to better understand any costs of activities.

In some cases, insufficient stakeholder representation was felt to restrict the identification of relevant costs and benefits. Most insights on cost and benefit distribution emerged at the strategic level, often overlooking the more localised implications felt by individual landowners or vulnerable communities. Some cases, such as Sorraia River Restoration (CS13, Portugal) and Forth Basin Restoration (CS17, UK), attempted to identify and address potential impacts on private landowners through early engagement, while others, like Deba Barrier Removal (CS02, Spain) and Tisza Floodplain Rewetting (CS09, Hungary), revealed tensions tied to perceived cultural loss or uneven distribution of burdens.

Across some case studies, compensation procedures remained unclear, even when trade-offs were recognized. This uncertainty, together with the way NbS objectives were presented, sometimes led to misunderstanding or

mistrust, particularly regarding sensitive issues like heritage or land use. However, not all opposition can be resolved through communication alone; some concerns stem from deeply held values, ongoing perceptions of unfairness, or stakeholders who are unwilling to engage or reconsider their positions. As a result, while the benefits were generally well communicated and widely acknowledged, the processes for identifying and managing costs and trade-offs often remained fragmented and underdeveloped.

5.2 Lessons for taking just transformation in nature-based solution

Taking a just transformations approach implies that transformative actions whether in the environment or specifically freshwater interventions must be oriented towards achieving equity, stakeholder inclusion and ensuring no one is prejudiced against by the interventions (Bennett et al., 2019; Boyland et al., 2022). Approaches that actively involve stakeholders are considered most effective for fostering just transformations, as they are often locally focused and aim to address diverse stakeholder perspectives (Lopes et al., 2021). The approach taken in the MERLIN case studies provides insights into what happened and highlights several key areas for reflection, which are discussed in this section.

5.2.1 Power dynamics and politics – a key challenge for taking just transformations approach

The case study stories reveal that power imbalances, shaped by who is represented, how decisions are made, and how benefits and burdens are distributed, are deeply embedded in freshwater NbS. The results show public entities and formal administrative actors often dominated both the design and implementation of the interventions through the formal case study boards and advisory groups. While strong representation from public authorities was anticipated given their roles as funders, policy implementers, and providers of public goods, this should not limit the involvement of other stakeholder groups.

It is also obvious that sometimes landownership patterns and the dominance of large farmers can restrict the influence of smaller landholders, as seen in Tisza Floodplain Rewetting (CS09, Hungary). Policy frameworks can even reinforce this imbalance, allowing landowners to veto collective NbS decisions when compensation is inadequate. Therefore, it remains essential to respect and engage landowners, but this should not come at the expense of involving other stakeholders, as decisions on NbS affect a broader range of interests beyond landowners.

Moreover, the Deba Barrier Removal (CS02, Spain) shows that exclusion is not always intentional or due to a lack of engagement; sometimes, a small but persistent group of stakeholders may deliberately choose not to participate – or may participate disruptively without being open to other points of view – as a means to resist NbS implementation, even when multiple opportunities for dialogue are offered. Interventions need to anticipate such setbacks and have strategies to address the difficulties and negative emotions that can arise. Nevertheless, limited community involvement can also contribute to stronger local resistance by leaving underlying grievances unaddressed. These experiences highlight that such resistance is not necessarily a intervention failure but can prompt reflection and action on justice concerns within the local context.

Overall, the lesson is that power and politics are not peripheral, they must be openly recognised and addressed as central elements of just transformation. Hence, it is important for interventions to maintain open engagement with all relevant stakeholders, including the local community, and recognise the different forms that opposition can take to better understand underlying grievances.

5.2.2 Building trust and navigating stakeholder relationships

The case studies have consistently showed that building relationships is essential to the success of NbS. However, this also has justice implications, as that has proven to help increase stakeholder involvement and support for the interventions. It is obvious that building relationships takes time and deliberate effort; it cannot be achieved through formal boards or occasional consultations alone. In some cases, trusted governance structures (e.g. Forth Basin Restoration (CS17, UK) and pre-existing, centralised systems (e.g. Tisza) can offer foundational relationships and speed up progress. However, this may limit the inclusion of new or local stakeholders if established actors reinforce their own influence or if those structures are not set-up to support and broaden participatory processes. Therefore, relationship-building needs to move beyond surface-level inclusion and ensure that diverse interests and knowledge systems are meaningfully represented and heard. Flexible and iterative engagement processes, which adapt as stakeholders or issues change, support more legitimate and effective procedures. Interventions that invest in ongoing, transparent communication and proactively reach out to less-involved groups (e.g. school partnerships in Lima) not only broaden representation but also build shared understanding about the benefits and possible impacts of the interventions. As Pound et al. (2025) underscore, decisions should be made with stakeholders rather than for them, which can help reach consensus.

5.2.3 Embracing open and diverse definition of cost and benefits

Embedding equity into cost–benefit discussions mean recognising and addressing the diverse definitions of costs and benefits from stakeholders’ perspectives. Interventions should not assume that broad public gains like biodiversity or flood protection will be experienced equally, or that all stakeholders view outcomes the same way (Carmen et al., 2023; Han & Luo, 2024). Equity requires clarifying who is represented in these discussions and ensuring that affected groups have a genuine say in managing trade-offs and structuring procedures for negotiation and compensation.

Open dialogue about fears and perceived risks is essential. In several cases, stakeholders expressed anxiety that NbS interventions could create new problems, such as increased flooding, or threaten established livelihoods and cultural identities. These concerns may have stemmed from how NbS interventions were framed and how they might affect people’s sense of place or identity. Ignoring such concerns can undermine trust and support. Therefore, establishing early, transparent conversations to identify, acknowledge, and, where possible, address these fears can foster stronger engagement and greater support (Lees et al., 2023).

Attention to distribution is also critical. Equity discussions must go beyond technical assessments to consider non-material losses – such as impacts on place identity or cultural connection – and take practical steps to ensure benefit-sharing is fair (e.g. adapting infrastructure in Kampinos for people with disabilities) (Wild et al., 2024).

5.2.4 Sustaining engagement beyond the intervention lifecycle

Sustaining engagement and equitable outcomes requires ongoing adaptive management, not just strong initial project design. Long-term success depends on building flexible structures and processes that can respond to evolving stakeholder needs, shifting contexts, and unexpected challenges. This means planning from the outset for how relationships, learning, and decision-making will continue once formal funding for stakeholder coordination ends. In many cases, this seem unclear across the case studies, but it is obvious that success and challenges will not be constrained to only the MERLIN periods. Examples like Kampinos Wetland Rewetting (CS05, Poland), Tisza and Lima Floodplain Forest Restoration (CS12, Portugal) show that previous long-term engagement (from earlier LIFE and other interventions – overall, programs with long-term goals and regular consultations with local residents) built a legacy of trust that supported ongoing negotiation even after formal funding ended. These examples highlight the need for early planning about succession, capacity-building, and embedding of new practices within existing institutions to ensure momentum, relationships, and learning are maintained over time. Hence, building on the achievement is essential for long term success. Adaptive management also relies on cultivating local capacity and ownership, providing more reasons why community participation is essential so that responsibility for monitoring, learning, and adjusting does not depend solely on external actors or short-term funding. However, sustaining progress without the support of paid coordinators is much more challenging.

5.2.5 Context matters

The findings also show that just transformations in freshwater restoration cannot be achieved through one-size-fits-all approaches; therefore, engagement strategies must be tailored to local realities. While challenges like stakeholder dominance, underrepresentation, and unequal benefit-sharing are common, the ways these issues play out depend heavily on context. Landscape conditions, land tenure systems, cultural values, institutional and governance structures all influence which stakeholders are included, how decisions are made, and what trade-offs are acceptable. For example, some interventions may face distinct challenges negotiating with private landowners, especially in fragmented landscapes (e.g. Lima), or navigating centralised governance structures (e.g. Tisza), or working within established local governance and land consolidation (e.g. Kampinos). In other cases (e.g. Deba), responding to the cultural significance of infrastructure is critical, where it was important to recognise both natural and cultural heritage and seek solutions that protect and valorise both. Here, measures such as partial demolition, archaeological studies, and public information panels were used to balance restoration goals with heritage values.

Context also means that not all stakeholders will necessarily be engaged at the same level; who is included at higher levels of participation often depends on the rationale, intervention stage and the type of decisions being made (Ibrahim et al., 2025). However, it is important that such processes are transparent, fair and carefully managed, to avoid reinforcing the power of existing influential actors at the expense of marginalised groups.

These experiences show that effective and just processes require a systems approach: carefully analysing local dynamics, remaining adaptive, and retaining flexibility to revise engagement and management strategies as new issues emerge. Contextualising approaches in this way is essential for meaningful representation, fair procedures, and equitable distribution (Huxham et al., 2023; Ruano-Chamorro et al., 2022). Context also

requires understanding how site-specific dynamics feed into wider regional and national governance processes, so that intensive engagement leads to longer-term outcomes and avoids consultation fatigue.

5.3 Recommendations: Towards a transformative change

Transformation, in the context of freshwater NbS requires systemic change that reconfigures not only ecological and technical systems, but also social relationships, governance arrangements, and decision-making processes (Carmen et al., 2024). Just transformations approach stresses broad and meaningful representation, equitable procedures, and fair distribution of both costs and benefits. Progress among the case studies demonstrates increasing recognition of this connection. Many interventions have moved beyond tokenistic engagement, embracing more inclusive stakeholder mapping, participatory decision-making, and explicit attention to distributional impacts. While this progress varies, there is clear momentum towards practices that elevate justice as a core element of making lasting change in the management of freshwater ecosystems.

However, it is evident that achieving this shift is not automatic; it requires critical enablers such as trust-building, shared leadership, continuity, dedicated resources, flexible and transparent governance, capacity building, and institutional support (Perera et al., 2024). Figure 15 presents eleven conditions that can enable the application of just transformations principles in designing and implementing NbS. **When these enabling conditions are present, interventions are more able to commit time to identify and address power imbalances, adaptively manage unforeseen challenges, and sustain engagement over time.** Ultimately, embedding justice is not only a moral imperative but a practical pathway to deeper, more durable transformations.



Figure 15. Requirements for achieving just transformations (2nd inner rings) through stakeholder engagement and broader enabling conditions (outer ring) for enhancing just transformations.

While doing so, **it is crucial to recognise that the dimensions of just transformations are interconnected**: who participates (procedural) shapes who benefits or bears costs (distributional), and both are shaped by whose voices are recognised as legitimate (representational) (Wijsman & Berbés-Blázquez, 2022). These dimensions must be addressed holistically, as weaknesses in one can undermine the others and risk reinforcing – rather than reducing – existing inequalities. The following recommendations outline steps for practitioners, policymakers, and researchers to advance just transformation in future interventions.

5.3.1 For future NbS interventions

Practitioners should prioritise meaningful engagement that goes beyond basic stakeholder mapping or symbolic consultation. Engagement should be ongoing, responsive, and tailored to the specific needs and contexts of all stakeholders, particularly those who are often marginalised. As these processes require substantial time and resources, it is important to integrate them into the intervention planning phase (European Commission: Directorate-General for Research and Innovation et al., 2023; Pound et al., 2025). This allows intervention leaders to allocate sufficient time and adopt a flexible, adaptive approach to stakeholder engagement in NbS interventions. Flexible approaches, where involvement fits the context and evolves with stakeholder needs, help ensure that participation is meaningful (Ibrahim et al., 2025). For instance, stakeholder engagement needs for a small river may not be the same as a large transboundary river.

Structured stakeholder mapping tools ([such as the MERLIN approach](#)) (Ibrahim & Blackstock, 2021), logging stakeholders' progression along the engagement ladder, and using NbS standards like those from the IUCN can all guide effective stakeholder engagement. These approaches enable careful planning, help identify potential conflict areas, and support the development of targeted strategies to address them. Monitoring and using these data to adapt and improve engagement is very important.

It is equally important for NbS practitioners to embrace scientific expertise and foster co-production of knowledge between scientists, local actors, and stakeholders. Drawing on both scientific evidence and local knowledge strengthens decision-making and the credibility of NbS initiatives. Ultimately, building and sustaining trustful relationships, planning for ongoing capacity, and supporting local leadership are essential. There is no one-size-fits-all solution; engagement strategies should be continuously reviewed and adapted, ensuring that just transformations remains central as interventions evolve. Particularly, strategic measures to increase stakeholder interest in engagement, given the voluntary nature of participation and the challenges posed by persistent opposition, will be essential. In addition, doing interventions on the ground can build the evidence base on costs and benefits and the distribution of these that so many policy makers are seeking.

It is equally important for NbS practitioners to embrace scientific expertise and foster co-production of knowledge between scientists, local actors, and stakeholders. Drawing on both scientific evidence and local knowledge strengthens decision-making and the credibility of NbS initiatives. Ultimately, building and sustaining trustful relationships, planning for ongoing capacity, and supporting local leadership are essential. There is no one-size-fits-all solution; engagement strategies should be continuously reviewed and adapted, ensuring that justice and transformation remain central as interventions evolve. Particularly, strategic measures to increase stakeholder interest in engagement, given the voluntary nature of participation and the challenges posed by persistent opposition, will be essential. In addition, doing interventions on the ground can build the evidence base on costs and benefits and the distribution of these that so many policy makers are seeking.

5.3.2 For policy makers and funders

Policy makers and funders play a crucial role in advancing just transformations, particularly by shaping the regulatory, institutional, and governance environment for NbS. The EU policies such as Climate Law, Water Framework Directive, and the Green Deal, and more recently Nature-Restoration Law (NRL) increasingly emphasise different dimensions of justice including social benefits, trade-offs and stakeholder's inclusion (Blackstock et al., 2023). However, it is evident that at the Member State level, existing regulatory and institutional frameworks can constrain inclusion, sometimes reinforcing bureaucratic processes, dominance of public sector stakeholders, and limiting involvement of community groups.

To prioritise justice over tokenism, more time, human resources and funding must be committed to planning and supporting meaningful stakeholder engagement (van der Jagt et al., 2023), including robust mechanisms for dialogue, conflict mediation, and ongoing feedback. It appears that interventions tend to do more than what was budgeted for, which could dissuade some projects to pay due credence to justice. Once adequate funding is provided, funding calls and policy frameworks should require transparent reporting on stakeholder representation, procedural fairness, and distributional impacts aligning with best practices from instruments such as the IUCN Global Standard for NbS. Sustaining transformative impact also demands support for post-intervention engagement.

5.3.3 What are the implications for future researchers?

Researchers play a vital role in supporting transformations, but to maximise their impact on justice, academic methods and tools need to be practical, accessible, and directly usable by practitioners. This means moving beyond purely theoretical frameworks and instead participating actively in practical interventions, jointly developing and testing stakeholder engagement approaches, mapping tools, and justice criteria alongside those delivering NbS on the ground. Collaborative research, co-design, and hands-on partnerships can ensure that new knowledge is both relevant and readily adopted in real-world contexts. These not only provide strong impact case studies but also strong empirical evidence to extend theories regarding socio-ecological systems.

Moreover, there is a need to continually evaluate and refine existing tools, making them adaptable for diverse contexts and different types of users. Finally, researchers can contribute by identifying gaps in current justice approaches, such as overlooked equity dimensions, limitations in existing monitoring practices, or the lack of long-term tracking of justice outcomes, and prioritising these areas for future investigation. By embedding themselves in practitioner networks and focusing on joint problem-solving, researchers can help shape NbS interventions that are both more just and more transformative.

6 Conclusion

In this deliverable, we analysed stakeholder engagement in 19 MERLIN case studies to understand how NbS implementation reflects principles of just transformations, focusing on representation, procedure, and distribution. The analysis combined cross-case synthesis with further insights from six selected case studies. Data sources included stakeholder mapping, local stakeholder survey, engagement ladder log, the IUCN Global Standard for NbS, meeting records, and earlier MERLIN deliverables.

In terms of representation, a broad range of stakeholders across types and sectors were engaged, but public authorities, typically responsible for delivering environmental initiatives, tended to dominate. While this reflects their traditional roles, such dominance can reinforce power imbalances and limit the inclusion of local perspectives and priorities.

Procedurally, considerable efforts were made to move engagement beyond tokenism and promote active participation. However, power imbalances remained evident, with community groups least represented in more active roles such as collaboration, cooperation, and empowerment – spaces often occupied by public actors. While the levels often reflect the engagement rationale, such imbalances risk limiting the ability of marginalised groups to influence decisions that affect them, reinforcing the position of already influential stakeholders.

In terms of distribution, the benefits of NbS were generally well communicated, leading to positive perceptions, but stakeholders had limited clarity about implementation costs, who benefited, who was disadvantaged, and how compensation was handled⁵.

Key lessons include the role of power and politics, trust and stakeholder relationships, diverse understandings of costs and benefits, sustained engagement beyond intervention timelines, and the context-specific nature of just transformations. These findings highlight essential enablers for future NbS, such as shared leadership, dedicated resources, participation incentives, institutional support, and capacity building, to embed justice in implementation.

Limitations

There were some limitations in the approach adopted for this deliverable (see Annex 2), which should be considered when interpreting the findings and could inform future improvements in assessing just transformations:

- Case studies differed in the depth, format, and richness of the data submitted. Early planning of data needs and structures for reporting would improve comparability and integration.
- Few case studies explained what was discussed during stakeholder meetings or how decisions about various aspects of the intervention (e.g. implementation, monitoring and addressing stakeholder concerns) were made, making this aspect difficult to assess across all case studies.
- Some data were collected mid-intervention, but not more recently and may not reflect recent developments. Other data predated the MERLIN period, which may have influenced how engagement processes were reported.
- Few case studies provided information on how costs and benefits were shared, which limited the analysis to procedural aspects rather than outcomes.

Despite these limitations, the findings provide valuable insights into what it takes to embed just transformations into NbS planning and delivery. Just transformation is not a fixed pathway, it is a dynamic, iterative process that requires inclusive, transparent, and context-responsive engagement.

⁵ A formal cost-benefit analysis results for selected MERLIN case studies were not available at the time of writing this deliverable and had not been shared with the case studies. The deliverable (D3.4) on this will be due in September.

References

- Anguelovski, I. (2022). Integrating justice in Nature-Based Solutions to avoid nature enabled dispossession. *Ambio*, 52(1), 45-53.
- Bennett, N. J., Blythe, J., Cisneros-Montemayor, A. M., Singh, G. G., & Sumaila, U. R. (2019). Just Transformations to Sustainability. *Sustainability*, 11(14), 3881. Retrieved from <https://www.mdpi.com/2071-1050/11/14/3881>
- Blackstock, K., Baffert, C., Bérczi-Siket, A., Carmen, E., England, M., Gray, R., Waylen, K. (2023). Briefing on policy opportunities for mainstreaming Fresh Water Nature Based Solutions. EU H2020 research and innovation intervention MERLIN Deliverable 4.3. Retrieved from <https://intervention-merlin.eu/outcomes/deliverables.html>.
- Boyland, M., Tuhkanen, H., Green, J., & Barquet, K. (2022). Principles for just and equitable nature-based solutions. In *Principles for Just and Equitable Nature-Based Solutions*. Stockholm Environment Institute Stockholm.
- Buijse, A. D., Penning, W., Alatalo, I., Andrzejewska, A., Anlauf, A., Anton, C., Wilińska, A. (2022). MERLIN Deliverable D2.1: Case study optimisation strategies.
- Carmen, E., Ibrahim, A., Blackstock, K., & Waylen, K. (2024). A transformations framework for mainstreaming a nature-based solutions approach. *Nature-Based Solutions*, 100199. doi:<https://doi.org/10.1016/j.nbsj.2024.100199>.
- Carmen, E., Waylen, K., Marshall, K., & Ellis, R. (2023). Appraising Key Stakeholders and Institutions Relevant to Catchment-based Nature-based Solutions (Nbs) in Scotland.
- Chan, K., Agard, J., Liu, J., Aguiar, A. P. D., Armenteras, D., Boedhihartono, A., Mohamed, A. (2019). Chapter 5. Pathways towards a sustainable future. In E. S. Brondízio, J. Settele, S. Díaz, & H. T. Ngo (Eds.), *Global assessment report of the Intergovernmental science-policy platform on biodiversity and ecosystem services* (pp. 769-874). Bonn. PBES secretariat.
- Cohen-Shacham, E., Cabecinha, E., & Andrade, A. (Eds.). (2025). *Applying the IUCN Global Standard for Nature-based Solutions™: 21 case studies from around the globe*. Gland, Switzerland: IUCN.
- Cousins, J. J. (2021). Justice in nature-based solutions: Research and pathways. *Ecological Economics*, 180, 106874. doi:<https://doi.org/10.1016/j.ecolecon.2020.106874>.
- Dorst, H., van der Jagt, A., Toxopeus, H., Tozer, L., Raven, R., & Runhaar, H. (2022). What's behind the barriers? Uncovering structural conditions working against urban nature-based solutions. *Landscape and Urban Planning*, 220, 104335. doi:<https://doi.org/10.1016/j.landurbplan.2021.104335>.
- European Commission: Directorate-General for Research and Innovation, Andersson, I., Ferreira, I., Arlati, A., Bradley, S., Buijs, A., Van der Jagt, S. (2023). *Guidelines for co-creation and co-governance of nature-based solutions – Insights from EU-funded interventions*. Publications Office of the European Union.
- Gionfra, S., Utkarsh, S., & Moncorps, L. (2023). Leaving no one behind: Towards inclusive nature-based solutions. Knowledge Brief drafted by IUCN and ICLEI for NetworkNature. Retrieved from <https://networknature.eu/product/29521>.
- Grygoruk, M., & Rannow, S. (2017). Mind the gap! Lessons from science-based stakeholder dialogue in climate-adapted management of wetlands. *Journal of environmental management*, 186, 108-119.
- Han, S., & Kuhlicke, C. (2021). Barriers and Drivers for Mainstreaming Nature-Based Solutions for Flood Risks: The Case of South Korea. *International Journal of Disaster Risk Science*, 12(5), 661-672. doi:10.1007/s13753-021-00372-4.
- Han, S., & Luo, A. (2024). Unravelling stakeholder narratives on nature-based solutions for hydro-meteorological risk reduction. *Sustainability Science*, 19, 1-15. doi:10.1007/s11625-024-01541-2.
- Huxham, M., Kairu, A., Lang'at, J. K., Kivugo, R., Mwafrica, M., Huff, A., & Shilland, R. (2023). Rawls in the mangrove: Perceptions of justice in nature-based solutions interventions. *People and Nature*, 5(5), 1497-1511. doi:<https://doi.org/10.1002/pan3.10498>.
- IAP2. (2018). IAP2 spectrum of public participation. International Association for Public Participation.
- Ibrahim, A., & Blackstock, K. (2021). Guidelines for Stakeholder Mapping and Establishing Stakeholder Board in Mainstreaming Restoration. MERLIN - Mainstreaming Ecological Restoration of freshwater-related ecosystems in a Landscape context: INnovation, upscaling, and transformation. Retrieved from https://www.hutton.ac.uk/wp-content/uploads/2025/04/MERLIN-WP1-2-Guideline-for-Stakeholder-Mapping_13-04-2025.pdf.
- Ibrahim, A., Marshall, K., Carmen, E., Blackstock, K. L., & Waylen, K. A. (2025). Raising standards for stakeholder engagement in Nature-based Solutions: Navigating the why, when, who and how. *Environmental Science & Policy*, 163, 103971. doi:<https://doi.org/10.1016/j.envsci.2024.103971>.
- IUCN. (2020). *IUCN Global Standard for Nature-based Solutions. A user-friendly framework for the verification, design and scaling up of NbS. First edition*. IUCN, International Union for the Conservation of Nature. Gland, Switzerland. doi:<https://doi.org/10.2305/IUCN.CH.2020.08.en>.
- Kiss, B., Sekulova, F., Hörschelmann, K., Salk, C. F., Takahashi, W., & Wamsler, C. (2022). Citizen participation in the governance of nature-based solutions. *Environmental Policy and Governance*, 32(3), 247-272. doi:<https://doi.org/10.1002/eet.1987>.
- Lees, K. J., Carmenta, R., Condliffe, I., Gray, A., Marquis, L., & Lenton, T. M. (2023). Protecting peatlands requires understanding stakeholder perceptions and relational values: A case study of peatlands in the Yorkshire Dales. *Ambio*, 52(7), 1282-1296. doi:10.1007/s13280-023-01850-3.
- Lopes, P., Freitas, C., Hallwass, G., Silvano, R., Begossi, A., & Campos-Silva, J. (2021). Just Aquatic Governance: The Amazon basin as fertile ground for aligning participatory conservation with social justice. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 31. doi:10.1002/aqc.3586.

- Mabon, L., Barkved, L., de Bruin, K., & Shih, W.-Y. (2022). Whose knowledge counts in nature-based solutions? Understanding epistemic justice for nature-based solutions through a multi-city comparison across Europe and Asia. *Environmental Science & Policy*, 136, 652-664. doi:<https://doi.org/10.1016/j.envsci.2022.07.025>.
- OECD. (2015). *Stakeholder Engagement for Inclusive Water Governance*.
- Perera, C., Toxopeus, H., Klein, S., & Merfeld, K. (2024). Enabling justice for nature-based solutions in real estate development. *Nature-Based Solutions*, 6, 100148. doi:<https://doi.org/10.1016/j.nbsj.2024.100148>.
- Pound, D., Short, C., Bavin, S., Davis, J., Pound, J., B., P., George, I. (2025). *Enabling Positive Landscape Change to Deliver Landscape Resilience: The role of Landscape Governance and Landscape Justice*. Natural England Commissioned Research.
- Ruano-Chamorro, C., Gurney, G. G., & Cinner, J. E. (2022). Advancing procedural justice in conservation. *Conservation Letters*, 15(3), e12861. doi:<https://doi.org/10.1111/conl.12861>.
- Tallent, T., & Zabala, A. (2024). Social equity and pluralism in Nature-based Solutions: Practitioners' perspectives on implementation. *Environmental Science & Policy*, 151. doi:10.1016/j.envsci.2023.103624.
- UNEP. (2022). *Nature-based Solutions: Opportunities and Challenges for Scaling Up*. Nairobi.
- van der Jagt, A. P. N., Buijs, A., Dobbs, C., van Lierop, M., Pauleit, S., Randrup, T. B., Wild, T. (2023). With the process comes the progress: A systematic review to support governance assessment of urban nature-based solutions. *Urban Forestry & Urban Greening*, 87, 128067. doi:<https://doi.org/10.1016/j.ufug.2023.128067>.
- van der Velde, Y., Temme, A. J. A. M., Nijp, J. J., Braakhekke, M. C., van Voorn, G. A. K., Dekker, S. C., Teuling, A. J. (2021). *Science for Environment Policy*. In E. C. D. E. N. A. Service (Ed.), *Proceedings of the National Academy of Science*. Bristol: SCU, The University of the West of England.
- Walker, S., Bennett, N., Smith, E., Nuckols, T., Narayana, A., Lee, J., & Bailey, K. (2024). Unintended consequences of nature-based solutions: Social equity and flood buyouts. *PLOS Climate*, 3. doi:10.1371/journal.pclm.0000328.
- Waylen, K., Wilkinson, M. E., Blackstock, K. L., & Bourke, M. (2024). Nature-Based Solutions and Restoration are intertwined but not identical: highlighting implications for societies and ecosystems. *Nature-Based Solutions*, 100116.
- Whitt, J. P. (2022). *Who Reaps the Benefits? Integrity principles for benefit sharing in forest nbs for climate mitigation*. WWF. Retrieved from https://wwf.panda.org/wwf_news/?6821466/Who-Reaps-the-Benefits-Integrity-Principles-for-Benefit-Sharing-in-Forest-NbS-for-Climate.
- Wijsman, K., & Berbés-Blázquez, M. (2022). What do we mean by justice in sustainability pathways? Commitments, dilemmas, and translations from theory to practice in nature-based solutions. *Environmental Science & Policy*, 136, 377-386. doi:<https://doi.org/10.1016/j.envsci.2022.06.018>.
- Wild, T., Baptista, M., Wilker, J., Kanai, J. M., Giusti, M., Henderson, H., Kozak, D. (2024). Valuation of urban nature-based solutions in Latin American and European cities. *Urban Forestry & Urban Greening*, 91, 128162. doi:<https://doi.org/10.1016/j.ufug.2023.128162>.
- Zingraff-Hamed, A., Hüesker, F., Lupp, G., Begg, C., Huang, J., Oen, A., Pauleit, S. (2020). Stakeholder Mapping to Co-Create Nature-Based Solutions: Who Is on Board? *Sustainability*, 12(20), 8625.

Annexes

Annex 1: List of 19 MERLIN case studies

CS No.	CS Short name and country code	Small streams & basins
CS01	Kvorning Wetland Rewetting DK	Peatlands and wetland
CS02	Deba Barrier Removal ES	Small rivers & basins
CS03	Beaver River Engineering SE	Peatlands and wetland
CS04	Room for the Rhine NL	Large transboundary rivers
CS05	Kampinos Wetland Rewetting PL	Peatlands and wetland
CS06	Hutovo Blato Peatland Rewetting BiH	Peatlands and wetland
CS07a	Danube Floodplain Restoration AT	Large transboundary rivers
CS07b	Danube Sidearm Reconnect HU	Large transboundary rivers
CS08	Danube Floodplains Reconnect RO	Large transboundary rivers
CS09	Tisza Floodplain Rewetting HU	Large transboundary rivers
CS10	Blue Belt Germany DE	Large transboundary rivers
CS11	Emscher Basin Restoration DE	Small rivers & their catchment
CS12	Lima Floodplain Forest Restoration (CS12, Portugal)	Peatlands and wetland
CS13	Sorraia River Restoration PT	Small rivers & basins
CS14	Komppasuo Peatland Rewetting FI	Peatlands and wetland
CS15	Tzipori Basin Restoration IL	Small rivers & basins
CS16	Upper Scheldt Restoration BE	Small rivers & basins
CS17	Forth Basin Restoration UK	Small rivers and basins / Peatlands and wetland
CS18	Ervidel River Restoration PT	Small rivers & basins

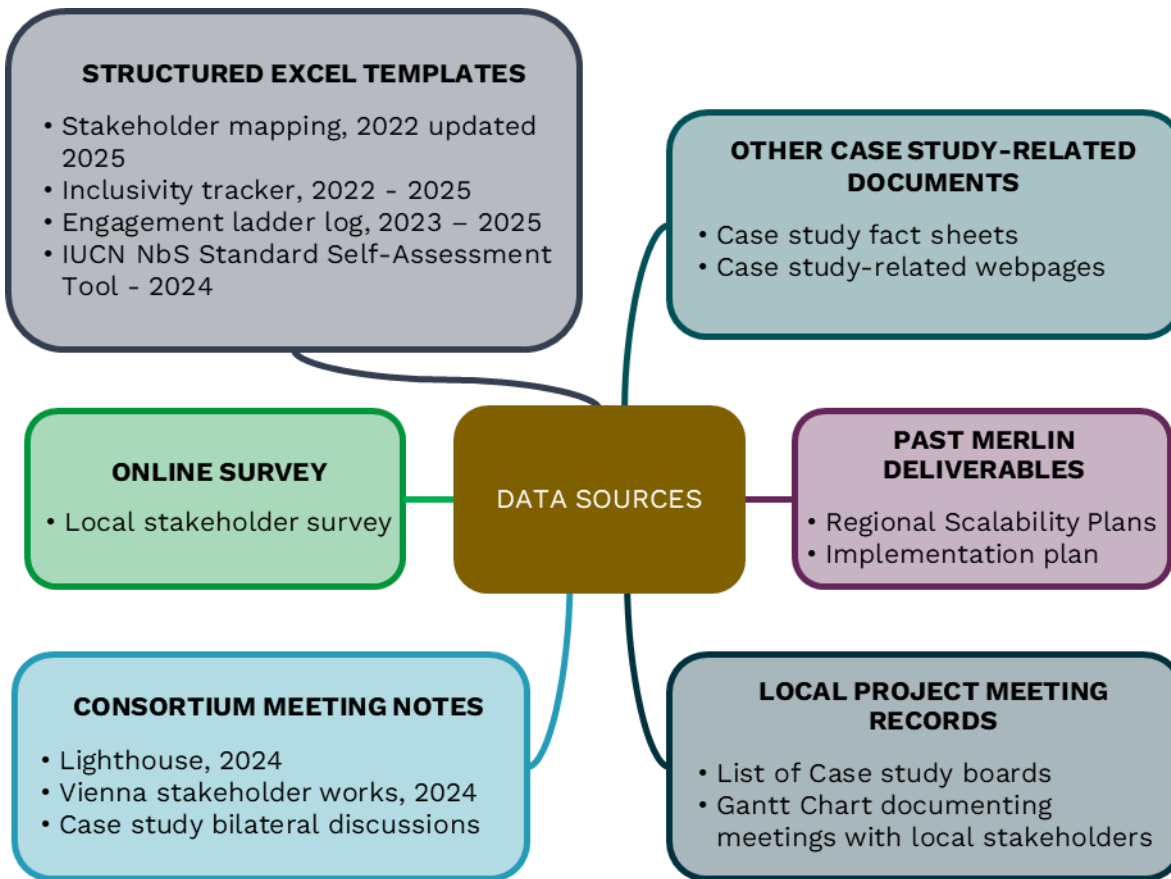
Annex 2: Methodology

Data collection and sources

This deliverable adopted a pragmatic and synthesis-oriented methodology, shaped by the diversity of stakeholder-related data available within the MERLIN project and the briefing-style format of the report. Rather than conducting an in-depth or systematic analysis of all datasets, the aim was to extract the most relevant and illustrative insights in relation to the three core research questions: representation, procedure, and distribution.

The analysis relied on existing datasets generated through prior MERLIN activities (Annex 5). No new data were collected specifically for this task, both to respect time constraints and to avoid case study stakeholder fatigue. These included structured Excel templates (such as stakeholder mapping, inclusivity tracker, and engagement ladder log), self-assessments using the IUCN NbS Standard (Full SAT), local stakeholder survey responses (MiniSAT), consortium and local stakeholder meeting documentation, and relevant intervention deliverables (such as regional scalability plans). All datasets, except the MiniSAT, which was completed directly by local stakeholders, were based on submission or narratives of case study leads based on instructions and templates provided by the respective MERLIN task leads.

Case study leads had the opportunity to verify key datasets (e.g. stakeholder mapping, inclusivity tracker, engagement ladder log, and Gantt charts of meetings) as part of earlier reviews (such as D1.6). The 2024 Full SAT also built on an earlier 2022 version, allowing case study leads to improve or clarify their assessments. Some variables, such as stakeholder types or sectors, were recategorised to allow cross-case comparison.



Data analysis

This analysis focused on extracting the most relevant and illustrative insights across the three research questions – representation, procedure, and distribution – rather than applying a systematic or exhaustive approach. The process followed two stages.

First, all case study data were compiled and synthesised into consolidated files by dataset (e.g. stakeholder mapping, inclusivity tracker, engagement ladder log), enabling cross-case comparison and identification of key patterns. Second, these synthesised insights were drawn upon for drafting, with supplementary analysis (including charts and comparative tables) generated as needed to support specific findings.

Structured data (e.g. from Excel templates and SAT ratings) were analysed in Excel using simple counts, frequency comparisons, and cross-cluster synthesis. MiniSAT survey results were exported from Qualtrics and used both in summary form and for additional disaggregation.

Open-text responses from Excel, Full-SAT, and MiniSAT were reviewed thematically using a light-touch approach, focused on reading, annotation, and keyword search, to identify recurring patterns and illustrative quotes. While not systematically coded, qualitative data were used to highlight perceived fairness, stakeholder concerns, and participation dynamics. Meeting notes and intervention deliverables supported contextual understanding.

Description of data used and collection process

Data & description	RQ1	RQ2	RQ3
Stakeholder mapping: CS stakeholder mapping excels templates presented by each CS, 2022, and re-viewed in 2025	Demonstrate procedure for stakeholder identification; Stakeholder types, diversity attributes and indications of who are minorities.		
Inclusivity tracker: Excel template to monitor inclusivity of stakeholders. 2022 – 25.	Stakeholder types engaged in case study boards and opportunity for minority groups and changes overtime.	Description of the means for engagement; shows composition of stakeholders in active roles.	Rating extent of addressing the societal challenges & perception of stakeholders
Local stakeholder survey; Used to evaluate implementation progress from local stakeholder perspective, 2023	Perceptions of stakeholders about involvement of wider stakeholders. Gives indication of the role of stakeholders and who are at influential roles.	The stakeholder perceptions and views about how they were involved and whether they feel well-engaged or not	Stakeholders' awareness of cost and benefits; assessment of grievances; and the felt decisions were made fairly.
IUCN NbS Standards Self-Assessment Tool Excel templates that assess extent to which NbS interventions applied IUCN global standard for NbS	Rating and open-text responses of case studies about identifying direct and indirect stakeholders; opportunities for involving minority groups; ways to avoid discrimination	Ratings for understanding the feedback and grievance resolution mechanisms	Assessment of beneficiaries and social challenges addressed; the well-being outcomes identified, and cost & benefits associated
Engagement ladder log: Excel template which documents the levels and modes of stakeholder engagement	Assess number of stakeholders groups actually engaged; and who they were and compares all stakeholder types.	Assessing the levels of engagement to evaluate if engagement was active or tokenistic. Also provide information about actions taken and comparison for initial and present phase of the interventions. Offer comparison among stakeholder types.	
Case study board meeting records: Documents number of meetings with case study boards and issues discussed. Also help know other meetings with wider stakeholders.	Assess number of people who usually attended meetings	Valid frequency of undertaking active engagement; and kind of active engagement activities undertaken.	
Regional Scalability Plans Deliverable. A deliverable about how to scale the NbS interventions beyond the current case study scope.	Rough understanding of how case studies are willing to include other stakeholders beyond intervention scope. Also offer insights about who are strategic stakeholders.		Perspective of how issues of benefits and cost were taken up beyond the intervention level.
Consortium meeting records. Contains notes	Offer general description of how participatory process evolved across cases studies and issues emerging.	Offer general description of how participatory process evolved across cases studies and issues emerging.	Offer general description of how participatory process evolved across cases studies and issues emerging.
Other MERLIN Deliverables and case study-related documents. There are only used when needed.	Could help understand stakeholder dynamics.	Understand dynamics of approaches to engaging stakeholders.	Understand dynamics of cost and benefits issues arising from the engagement.

Limitations

While this analysis draws on a diverse set of stakeholder-related data, several limitations should be acknowledged:

- **Variation in data quality:** Case studies differed in depth, format, and richness of the data provided.
- **Limited documentation of meeting content:** Many records confirmed stakeholder engagement took place, but few detailed the actual discussions or decisions made.
- **Timing of data collection:** Some datasets (e.g. MiniSAT, Full SAT) were collected mid-intervention and may not reflect more recent developments. Also, some case studies predated MERLIN period
- **Limited data on distribution:** Few case studies documented how costs and benefits were shared; analysis therefore focused on processes rather than outcomes.
- **Lack of demographic detail:** Data on gender, ethnicity, income, and age were largely absent, as mapping prioritised stakeholder type and sector.
- **Selective case study use:** Only six case studies were selected for narrative illustration to keep the document succinct, which does not showcase the full range of experiences.

To address these gaps, case study leads reviewed both their submitted data and the draft analysis. Where individual datasets were weak, findings were cross-checked with other sources to ensure consistency. Further deliverables (D2.5, D2.6 due in January 2026) will reflect on stakeholder engagement as part of wider evaluation of the case studies.

Annex 3: Justification for selecting the six case studies for illustration

All 19 case studies provide valuable, context-specific insights, but only six were selected as illustrative stories⁶ to manage time constraints and keep the document concise. Selection was first guided by the quality and completeness of submitted data, with final choices made after screening each case study. The detailed justification is provided below.

Data & description	Justification for Selection
CS0 Deba barrier removal, Spain	Submitted all of the primary needed with a list of strategic stakeholders and wider local stakeholders. This case shows how stakeholder engagement can both empower and delay action. Conflict over dam removal – viewed by some as restoration and others as cultural loss – sparked public debate, a non-binding vote, and opposition campaigns.
CS05 Kampinos wetland re-wetting, Poland	Submitted all primary data, which inclusivity indicator showing baseline information for stakeholders engaged before MERLIN began. Also created a Case Study Board with wide representation and flexible membership, demonstrating a procedural commitment to diversity and inclusion. Have ongoing workshops and planning networks, which show engagement mechanisms can be adapted.
CS07a Danube floodplain restoration Austria	Has a long-standing stakeholder board, and shows satisfaction with procedural fairness and representation, but also shows concern over gaps in local actor involvement and sectoral diversity. Stakeholders felt well-included.
CS09 Tisza floodplain re-wetting, Hungary	CS09 stands out for its deep procedural history rooted in a past LIFE intervention (2001–2006), which built strong relationships with farmers through grazing-based restoration. Also offers a compelling look at distributive justice and issues of compensations. Submitted all primary data needed.
CS12 Lima Floodplain Forest restoration, Portugal	This case weaves together private landowners, education institutions, forestry actors, and public agencies in a complex socio-ecological context. With competing land uses and historic hydrological interventions, the intervention navigated ecological goals alongside landowner interests and public education. It's especially strong in showing multi-level procedures and reflects the difficulty of defining and distributing benefits in fragmented landscapes. All primary data was submitted.
CS17 Forth basin restoration, UK	Submitted all primary data. Offers a valuable lens into procedural stability and legitimacy through long-standing local governance structures. Engagement with farmers and non-farming residents was bolstered through agricultural shows, social media, and targeted events. Rather than reinventing engagement mechanisms, it built on trusted platforms – an important lesson for durable stakeholder involvement.

⁶ All photos for the selected stories were provided by case study partners and met the GDPR requirements, we have permission to re-use.

Annex 4: Note on the shift from just transitions to just transformations

Originally, Task 4.2 was framed as “Translating MERLIN case study findings for EU Sectors and EU Just Transitions Policy,” with the aim of linking MERLIN’s empirical findings to EU sectoral strategies and Just Transition objectives, particularly around climate mitigation and adaptation. However, this framing has proven too narrow and potentially misleading. The EU’s Just Transition Policy is focused primarily on the energy transition in carbon-intensive regions, and only a small number of MERLIN case studies are located within these designated areas. Connecting MERLIN’s work to this policy would require substantial additional research and risk confusion when engaging with EU institutions. Importantly, a dedicated deliverable has already addressed sectoral engagement processes in detail, reducing the need to duplicate this focus within Task 4.2.

The shift to “Just Transformations” more accurately reflects both the direction of the task and MERLIN’s conceptual framework. Rather than centring on energy or climate transitions, the revised focus addresses the systemic governance changes needed to mainstream freshwater NbS in a socially just way. It emphasizes representation, inclusive participation, and fair distribution of NbS benefits and burdens, issues especially relevant to the local and territorial scales at which MERLIN operates. The reframing also enables stronger integration with other WP4 tasks and makes use of rich stakeholder engagement data already generated across the interventions to explore how freshwater NbS can contribute to equitable transformations.

Finally, we removed ‘leave no one behind’ from the title to allow us focus more on what was done and achieved. The other reason for this change is that the concept much broader and the data we have will not help us analyse whether some people have been left behind or not.

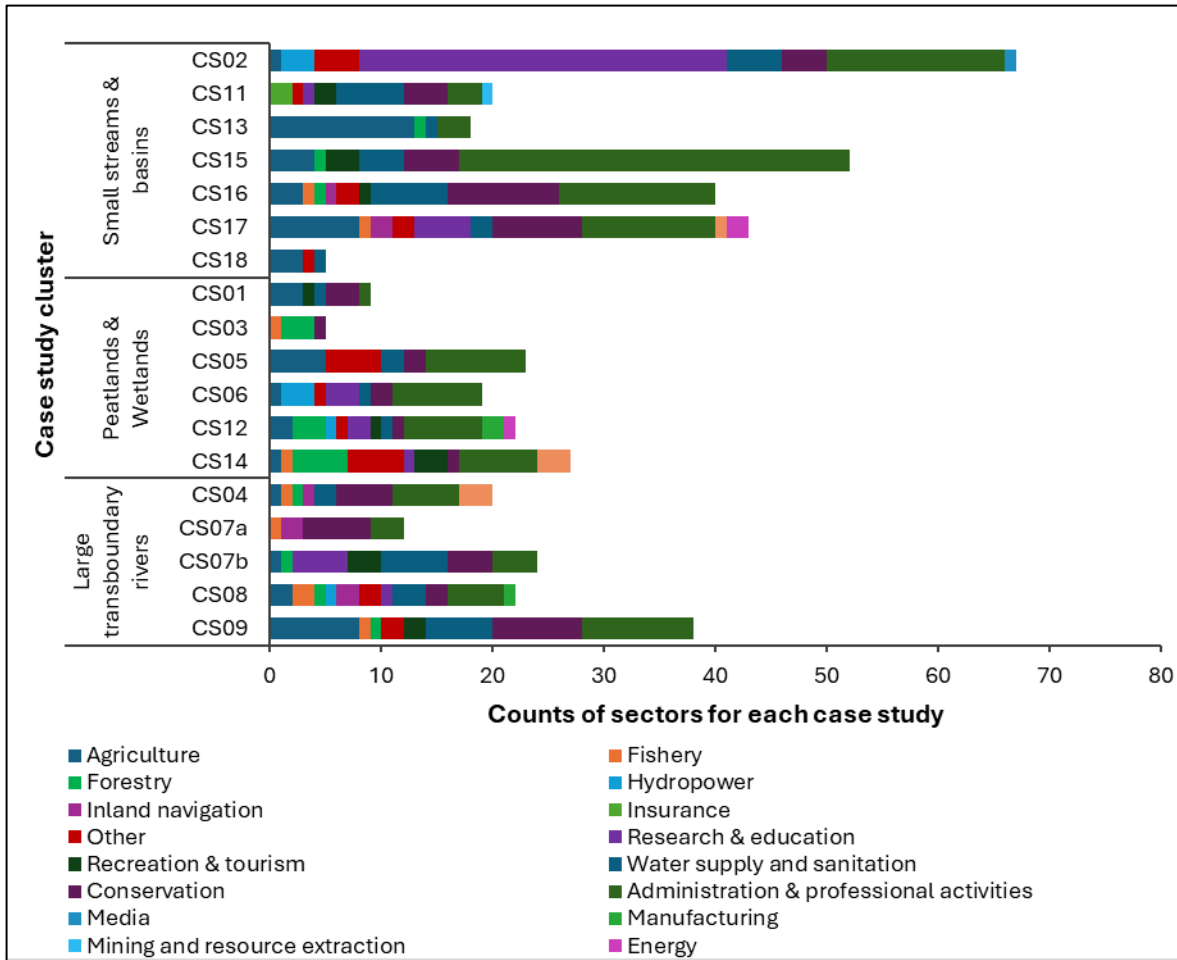
Annex 5: Record of primary data sets availability for case studies

Case name	Stakeholder mapping	Engagement ladder log	Inclusivity tracker	Case Study Meeting Record	NbS Standards Self-Assessment Tool	Local stakeholder survey
CS01 Kvorning Wetland Rewetting DK	✓	✓	✓	✓	✓	✓
CS02 Deba Barrier Removal ES	✓	✓	✓	✓	✓	✓
CS03 Beaver River Engineering SE	✓	✓	✓	✓	✓	✓
CS04 Room for the Rhine NL	✓	✓	x	✓	x	✓
CS05 Kampinos Wetland Rewetting PL	✓	✓	✓	✓	✓	✓
CS06 Hutovo Blato Peatland Rewetting BiH	✓	✓	✓	✓	✓	✓
CS07a Danube Floodplain Restoration AT	✓	✓	x	✓	✓	✓
CS07b Danube Sidearm Reconnect HU	✓	✓	✓	✓	✓	x
CS08 Danube Floodplains Reconnect RO	✓	✓	✓	✓	✓	✓
CS09 Tisza Floodplain Rewetting HU	✓	✓	✓	✓	✓	✓
CS10 Blue Belt Germany DE	x	x	✓	✓	✓	x
CS11 Emscher Basin Restoration DE	✓	✓	✓	✓	✓	✓
CS12 Lima Floodplain Forest Restoration PT	✓	✓	✓	✓	✓	✓
CS13 Sorraia River Restoration PT	✓	✓	✓	✓	✓	✓
CS14 Kompassuo Peatland Rewetting FI	✓	✓	✓	✓	x	✓
CS15 Tzipori Basin Restoration IL	✓	✓	✓	✓	x	✓
CS16 Upper Scheldt Restoration BE	✓	✓	✓	✓	✓	✓
CS17 Forth Basin Restoration UK	✓	✓	✓	✓	✓	✓
CS18 Ervidel River Restoration PT	✓	✓	✓	✓	✓	✓

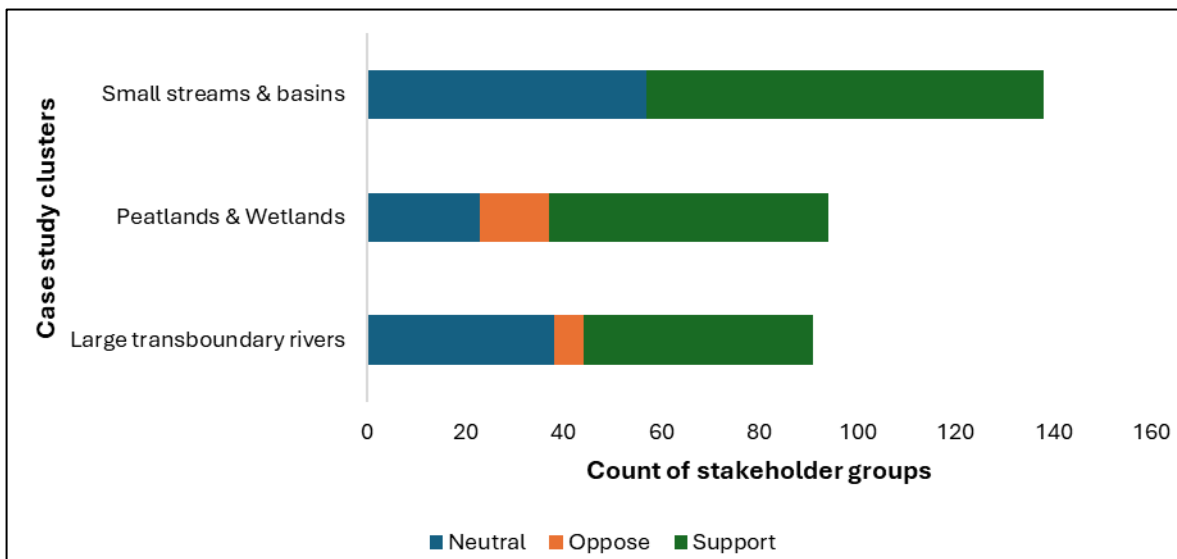
Annex 6: Summary of key findings for just transformations criteria

Just transformation criteria	Key finding
Representation	
Involving broad range of stakeholder types	Broad stakeholders were engaged from across different stakeholder types, with public sector stakeholders dominating. Despite lack of involvement in the early stages of the intervention, this improved over the intervention phases.
Clear stakeholder identification procedure	All case studies conducted systematic stakeholder mapping using structured excel templates
Embracing diversity	Overall, 16 sectors were involved, bringing in different knowledge domains, but dominated public sector stakeholder who perform administrative functions
Opportunity for minority involvement	Community groups are rated least in terms of influence. No clear evidence if the minority who opposed the measures were fully involved or not how their concerns were addressed.
Approach to avoiding discrimination	Case studies tend feel those directly and indirectly affected were identified and involved using the stakeholder mapping
Procedure	
Opportunity for active involvement beyond tokenism	Public sector stakeholders positioned more at higher level of engagement ladder with communities often at the bottom.
Adopting interactive and multiple mediums of communication	Workshops were the most frequent interactive actions occurring 66 times through in-person, virtual and hybrid means. Other interactive actions include focus groups, roundtables, working groups, stakeholder councils
Establishing feedback and grievance resolution mechanism	Case studies rated grievance procedure highly through IUCN Global Standard for NbS. Some used formal legal and regulatory challenges, while others use informal means such as stakeholder meeting to establish collaborative agreements
Distribution	
Understanding of cost and benefits associated	Stakeholders tend to understand the benefits, but not the cost and effectiveness.
Procedure for identifying cost and benefits	Cost identification tended to focus more on monetary costs using formal analysis, but others recognised non-financial values.
Measures for reducing negative impacts	Consultation and intervention adjustments help to sometimes address negative impacts
Acknowledging diverse definition of costs and benefits	Most identified from private landowner perspectives

Annex 7: Categories of sectors identified across the MERLIN case studies



Annex 8: Stakeholders position in terms support or opposition to the interventions



Annex 9: Case study leaders' rating of the interests of stakeholders in relation to the NbS

Stakeholder type	Very low interest	Low interest	Moderate interest	High interest	Very high interest	Grand Total
Community group		2	8	11	1	22
NGO	1	3	4	8	18	34
Other	1	2	4	1	6	14
Private (Commercial, investor, etc)	1	6	29	22	9	67
Public	16	23	50	56	40	185
Grand Total	19	36	95	98	74	322

Annex 10: Case study leaders' rating of the influence of stakeholders on decision regarding the NbS interventions

Stakeholder type	Very low influence	Low influence	Moderate influence	High influence	Very high influence	Grand Total
Community group		8	6	8		22
NGO	2	4	12	12	1	31
Other	1	3	3	6	1	14
Private (Commercial, investor, etc)	2	9	26	14	9	60
Public	8	32	44	50	44	178
Grand Total	13	56	91	90	55	305

Annex 11: Specific actions used to engage different stakeholder groups

