



## Imprint

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

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To be cited as:

Schulz, L., Gray, R., Blackstock, K., Ibrahim, A., Carmen, E., Bérczi-Siket, A., Birk, S., Buijse, T., Boulard, M., Gelencsér, G., Gruber, T., Hernández Herrero, E., Hering, D., Nyíró, F., Vion Loisel, A. 2025. *Just transformations: Sectoral stakeholder engagement, processes and perceptions of mainstreaming Nature-based Solutions*. 113 pages. EU H2020 research and innovation project MERLIN deliverable 4.2. <https://project-merlin.eu/outcomes/deliverables.html>

Acknowledgements: We would like to thank the Steering Group and sectoral partners for their constructive feedback on earlier drafts of this deliverable; and the reviewers for helping us improve the deliverable.

Due date of deliverable: 30th September 2024

Actual submission date: 26th September 2024

Revised deliverable submission date: 30<sup>th</sup> April 2025

## MERLIN Key messages

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- 1. Nature-based Solutions (NbS) offer the potential to address societal, economic and environmental challenges:** MERLIN emphasises NbS that go beyond traditional conservation-focused restoration by integrating solutions that enhance biodiversity, support climate adaptation, contribute to societal well-being, while also addressing new economic opportunities.
- 2. A just transformation is essential for the equitable distribution of NbS benefits:** Deliverable 4.2 applied a justice framework, encompassing representation, involvement, and equitable distribution to explore pathways for more just and equitable development of NbS. A just transformation refers to a systemic change that emphasises equity, ensuring all stakeholders are included and that the outcomes are fairly distributed.
- 3. Identifying win-win scenarios aligning economic interests with ecosystem restoration:** MERLIN engaged six economic sectors – agriculture, hydropower, insurance, inland navigation, peat extraction, and water supply and sanitation – through roundtables, workshops, and interviews, forming sectoral Communities of Practice (CoPs) to encourage knowledge sharing and collaboration. The CoPs were designed to create ownership, driving the mainstreaming of NbS across sectors.
- 4. Effective networks were built through persistence and support:** Successful CoPs were driven by strong partnerships and persistence, while other sectors faced difficulties in finding common ground due to conflicts of interest, particularly between public goods (for free) and private goods (for profit). Long-term engagement, personal connections, clear goals and trust are important for sustaining momentum.
- 5. Sectoral perceptions of NbS evolved over time, but challenges remain:** While the six sectors demonstrated increased openness to NbS, challenges persisted, particularly regarding the financial feasibility of large-scale implementation of NbS projects and ongoing conceptual confusion, especially in defining and measuring the effectiveness of NbS. Demonstrating tangible benefits and developing standard metrics are needed for broader support.
- 6. Representation and inclusion are critical for a just transformation:** The CoPs engaged influential stakeholders but lacked local landowners and communities, challenging full representative justice. However, the focus on EU-level engagement was essential for addressing higher level barriers, including clearer regulatory guidance and other institutional sector-specific challenges.
- 7. Balancing diverse views and avoiding power imbalances:** Stakeholders expressed varied and sometimes conflicting views on NbS. The process effectively recognised diverse perspectives, but it was challenging to address power imbalances, particularly between private sector stakeholders and environmental advocates. Conflict resolution will be critical for balancing competing interests.
- 8. Distributional justice is essential for Just Transformations:** Stakeholders raised concerns about who should bear the costs of NbS and who benefits from its implementation. Addressing these concerns through clear incentives and equitable responsibility-sharing will be crucial for mainstreaming NbS.

## MERLIN Executive Summary

MERLIN, part of the European Union's Horizon 2020 programme, is focused on the mainstreaming of Nature-based Solutions (NbS) as a strategy for addressing societal, economic, and environmental challenges. This deliverable (D4.2) focuses on how six key economic sectors - agriculture, hydropower, insurance, inland navigation, peat extraction and water supply and sanitation - can integrate NbS to support large-scale ecosystem restoration. By fostering sectoral engagement and collaboration, D4.2 provides insights into how economic sectors can play a pivotal role in mainstreaming NbS, with a focus on 'Just Transformations', ensuring the shift to NbS is inclusive and equitable, with benefits fairly distributed across all stakeholders.

Understanding sector-specific perceptions, motivations, and barriers is critical for fostering more inclusive, effective, and sustainable collaboration. While the importance of inclusion and social justice is widely recognised, achieving practical implementation remains a challenge. D4.2 identifies opportunities for win-win scenarios, aiming to create pathways for more just and equitable transformations through NbS (see Section 1).

This deliverable provides a comprehensive analysis of MERLIN's sectoral stakeholder engagement processes between 2022 and 2024, supplemented by nine interviews with sector leads and additional insights from stakeholder feedback (see section 2). Key themes were identified through coding and findings were organised around the three research questions, as summarised below.

1. What are the composition and patterns of stakeholders engaged in MERLIN sectoral activities?

Section 3 details the involvement of 146 organisations in MERLIN's sectoral engagement activities, forming Communities of Practice (CoPs) to mainstream NbS. Engagement varied, with strong participation from hydropower and peat extraction, while agriculture and insurance faced challenges. Some CoPs built effective networks, but others struggled to agree goals and handle competition. The process leaned towards EU and international organisations, creating possible consultation fatigue due to overlapping roles, highlighting the need for a focused and adaptable approach across diverse sectors.

2. What are sectoral stakeholder perceptions and views about mainstreaming NbS?

Section 4 presents the findings on sectoral stakeholders' perceptions of integrating NbS into their practices. Initial discussions revealed scepticism, mainly due to confusion over NbS, its practical implementation, financial concerns, and challenges related to collaboration across sectors and with landowners, particularly for large-scale restoration. By 2023, ongoing dialogue improved understanding of NbS benefits. Despite continued challenges with financial feasibility, regulatory support, and coordination, most sectors acknowledged NbS potential by 2024. The engagement process raised awareness, reduced opposition to the Nature Restoration Law, and developed sector-specific strategies, though further efforts are needed to fully integrate NbS into policy and practice.

3. How could considering justice principles in mainstreaming NbS help achieve just transformation?

Section 5 assesses whether MERLIN's stakeholder engagement facilitated a just transformation in mainstreaming NbS. While diverse perspectives were incorporated, representation was uneven, with key groups like landowners underrepresented, and some stakeholders feeling a lack of control over the process. The engagement raised awareness and expanded discussions on NbS, but challenges related to financial accountability, power dynamics, and sectoral interests underscored the need for a clearer integration of justice principles and stronger governance frameworks to manage trade-offs and foster balanced, equitable dialogue when consensus is lacking.

These findings are discussed (see section 6) and translated into recommendations (see section 7) that address critical aspects of mainstreaming NbS, including strengthening long-term stakeholder engagement, tailoring sector-specific strategies, and incorporating justice principles. Key areas for improvement include balancing public and private interests and fostering deeper collaboration. Recommendations also highlight the need for capacity building, clearer governance frameworks, and better tools for monitoring and evaluation to ensure NbS adoption is both equitable and effective across sectors.

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Table 1: Abbreviations

Abbreviations	
CAP	Common Agricultural Policy
COM	European commission
CoP	Community of Practice
CoPs	Communities of Practice
D4.2	Deliverable 4.2
EU	European Union
IPS	International Peat Society
IUCN	International Union on Conservation of Nature
MERLIN	Mainstreaming Ecological Restoration of freshwater-related ecosystems in a Landscape context: INnovation, upscaling, and transformation
MS	Member State
NbS	Nature-based Solutions
NGO	Non-Governmental Organisation
RQ	Research Question
RT	Roundtable
UNEP	United Nations Environment Programme
WP	Work Package
WSS	Water supply and sanitation



## Introduction

The H2020 project ‘[MERLIN](#) - Mainstreaming Ecological Restoration of freshwater-related ecosystems in a Landscape context: INnovation, upscaling, and transformation’ aims to contribute to the EU Green Deal goals through a focus on freshwater<sup>1</sup> restoration<sup>2</sup> measures across predominantly rural Europe. These measures include wetland and peatland restoration, instream and riparian rehabilitation in small streams, and floodplain renewal in major rivers. The project aims to mainstream<sup>3</sup> and integrate best practices derived from 18 case studies across Europe, thereby enhancing ecological resilience and biodiversity while addressing climate challenges.

The Transformations Work Package (WP4) in MERLIN goes beyond traditional conservation-focused restoration by emphasising Nature-based Solutions (NbS) that address societal challenges. This shift involves fundamental changes in social-ecological systems, reshaping their forms, functions, and meanings (Chan et al., 2020; O’Brien, 2012). NbS are 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).**

In the context of freshwater ecosystems, NbS include restoring wetlands, reforesting riparian zones, and reconnecting rivers to their floodplains. These solutions enhance biodiversity, improve water quality, mitigate flooding, and support climate adaptation. The IUCN Global Standard for NbS advocates for practices that are inclusive, transparent, and balance environmental, social, and economic considerations to achieve sustainable outcomes (IUCN, 2020).

### 1.1 Just Transformations

Deliverable 4.2 (D4.2), titled "*Just transformations: sectoral stakeholder engagement, processes and perceptions of mainstreaming Nature-based Solutions*" is a component of the Transformations Work Package (WP4). The focus is on EU and national sectoral stakeholder engagement processes<sup>4</sup>, aiming to understand how diverse groups are represented and involved, as well as how their views, perceptions, and grievances are considered in the implementation of NbS. Additionally, it explores the evolution of sectoral stakeholder perspectives on NbS throughout their participation in MERLIN activities.

As part of these engagement processes, examples from MERLIN’s demonstration projects (“case studies”) were used during the virtual Round Tables (RTs) to stimulate discussion and provide concrete illustrations of NbS in practice. These examples, also detailed in Table 3, played a key role in prompting stakeholder reflection and feedback. However, the emphasis in D4.2 are the engagement processes with sector stakeholder. The in-depth analysis of the case studies and their role in influencing stakeholder positions is reserved for D4.9. This deliverable thus focuses on capturing the overall engagement journey and its contributions to understanding sectoral perspectives on mainstreaming NbS.

Guided by the transformations framework (Carmen et al., 2024), D4.2 underscores the necessity for environmental benefits to be equitably distributed to ensure broad-based support and effectiveness between social groups. The framework emphasises that mainstreaming NbS must be rooted in social justice (Ibrahim & Carmen, 2022), reflecting a growing recognition of the importance of justice and equity in NbS implementation (Cousins, 2021).

<sup>1</sup> Water with less than 0.5 ‰ mean annual salinity (EU Water Framework Directive, 2000).

<sup>2</sup> “Assisting in the recovery of ecosystems that have been degraded or destroyed, as well as conserving the ecosystems that are still intact” (Gann et al, 2019) cited in Waylen et al (2024).

<sup>3</sup> Mainstreaming means normalising ideas considered common in one domain into other domains, to build shared understandings and concerted actions (Scott, Holtby, East, & Lannin, 2022).

<sup>4</sup> In order to mainstream uptake of Nature-based Solutions (NbS); influential European and National stakeholder organisations were targeted. Consideration of Just Transformations, focussing on regional and local stakeholders (Merlin’s case studies), will be addressed in the complementary deliverable D4.9 due summer 2025.

A comprehensive justice framework for NbS includes three key dimensions: **Representation**, ensuring all relevant interests are involved in decision-making; **Involvement**, ensuring that decision-making is inclusive, accessible, and well-structured; and **Distribution**, ensuring that the outcomes of change are equitably distributed amongst all stakeholders. This means that the outcomes, whether they are environmental, social, or economic, are shared fairly, without disproportionately burdening or excluding any group, especially marginalised or vulnerable populations. Equitable distribution ensures that everyone, regardless of their power, resources, or position, receives a fair share of the benefits and is protected from undue harm (Walker et al., 2024; Pineda-Pinto et al., 2021).

Additionally, the IPBES (2019) framework emphasises that embracing stakeholder diversity, recognising areas of inequality, and enhancing inclusion are critical leverage points for achieving transformative change. Social justice is widely recognised as a crucial dimension in designing NbS and achieving the societal transformation needed to mainstream them. Integrating social justice ensures that vulnerable communities are protected from the adverse impacts of both climate change and the transitions required for decarbonization, fostering more equitable and politically feasible pathways (Patterson et al., 2018). This aligns with the broader understanding that successful NbS must account for social inequalities to support sustainable and inclusive transformations (Seddon et al., 2020). These principles form the foundation for D4.2 in MERLIN, addressing important aspects not covered elsewhere in the work package or the broader project.

This deliverable focuses on **sectoral stakeholder engagement** as part of MERLIN's commitment to driving a just transformation in how economic sectors engage with and benefit from NbS. As stated in the project proposal, MERLIN aimed to reshape the role of key economic sectors by positioning NbS as not only environmentally sustainable but also as a financially viable investment. The project emphasised that restoration must deliver socio-economic benefits equitably, ensuring that economic sectors and communities share in the advantages of healthier ecosystems while mitigating environmental risks and adapting to climate change impacts.

## 1.2 Stakeholder engagement

In NbS, stakeholders include individuals, groups, or organisations with an interest in, or affected by, the outcomes of NbS projects. Effective engagement of these stakeholders is crucial for achieving meaningful and sustainable outcomes (Ibrahim et al., 2024; Carmen et al., 2023b). By incorporating diverse perspectives, engagement processes help ensure that NbS are contextually relevant, sustainable, and responsive to local needs (Mok et al., 2021; Giordano et al., 2020). The aim of a successful stakeholder engagement is to build trust and foster collaboration to achieve socially, environmentally, and economically sustainable results (Lavery, 2018; Mok et al., 2021).

The rationale for engagement is categorised as substantive, instrumental, or normative, aimed at improving decision quality, fostering trust, and ensuring fair representation (Blackstock & Richards, 2007; Stirling, 2006, 2007). For example, substantive engagement helps stakeholders explore alternative solutions and enhances decision outcomes by incorporating diverse viewpoints (Malekpour et al., 2021). Instrumentally, it fosters understanding and ownership, critical for sustainable implementation (Blackstock & Richards, 2007). Normative engagement aligns with governance principles, promoting transparency and inclusivity (OECD, 2015; UN ESCAP, 2009).

According to Ibrahim et al.'s (2004) framework, the stakeholder engagement process is structured around four key building blocks: first, defining the rationale for engagement; second, identifying relevant stakeholders; and finally, undertaking the actual engagement through appropriate methods at different stages of the project (Figure 1). By progressing through these building blocks, stakeholders can move from being passive users of natural resources to active partners in the regeneration and sustainability of ecosystems through NbS (Seddon et al., 2020; Raymond et al., 2019; Cohen-Shacham et al., 2016).



Figure 1: Four building blocks of stakeholder engagement, adapted from Ibrahim et al. (2024).

Ibrahim et al.’s (2024) framework offers a useful overview of engagement stages as it draws from more recent models emphasising the importance of early and continuous stakeholder involvement throughout the NbS implementation stages (Arlati et al., 2021; Jolibert & Wesselink, 2012). These newer approaches adopt a dynamic, circular process characterised by adaptive co-creation and continuous learning (Mok et al., 2021; Lavery, 2018). By stressing the need to clearly define the engagement rationale, they draw attention to other frameworks which highlight that stakeholders play multiple, evolving roles throughout the process, including co-producers, facilitators, and decision-makers (Ibrahim et al., 2024). Stakeholder involvement and engagement are dynamic processes, which evolve throughout the NbS process, with stakeholder roles shifting over time. Some stakeholders may have minor roles at certain stages and more significant impacts at others, making it crucial to understand how they perceive and engage with NbS (Ballesteros & Dickey-Collas, 2023; Mok et al., 2021; Jolibert & Wesselink, 2012).

The complexity of engagement varies depending on the project's scope and context, ranging from simple information-sharing to fully collaborative co-design and co-management (Sterling et al., 2017; Mok et al., 2021). The Life Cycle Co-Creation Process (LCCCP) provides a structured framework for continuous engagement, outlining five stages: CoExplore, CoDesign, CoExperiment, CoImplement, and CoManage (DeLosRíos-White et al., 2020). This approach ensures that stakeholders are involved from the initial planning stages through to long-term management, creating a sense of ownership and adaptability. Tools such as workshops and feedback mechanisms allow stakeholders to contribute meaningfully at each phase, ensuring that NbS projects meet diverse needs while remaining flexible and resilient to future challenges (Mok et al., 2021).

The MERLIN WP4 stakeholder engagement process has integrated a variety of engagement activities so far, including stakeholder analyses, virtual roundtables, interviews, bilateral meetings, and feedback on draft documents. For a complete overview of all engagement activities conducted between 2022 and 2024, please refer to **Annex 2**. These activities were designed to engage stakeholders in developing

strategic actions that are inclusive of their sectors and promote the mainstreaming of freshwater NbS across Europe. The aim was to bring these stakeholders together within sectoral Communities of Practice, as described in the next section (Section 1.2.1).

### 1.2.1 Communities of Practice

Transitioning from isolated practice fields to more interactive Communities of Practice (CoPs) fosters sustained engagement and long-term impact (Barab & Duffy, 1998). CoPs have emerged as powerful tools for facilitating knowledge sharing, learning, and collaboration. CoPs consist of individuals who share common concerns, challenges, or passions and continuously deepen their expertise through ongoing interaction (Wenger et al., 2002; Lave & Wenger, 1991). Recent research underscores CoPs as key platforms for bridging science, policy, and practice to address complex issues (King et al., 2023; Wickenberg et al., 2022, 2024; Raška et al., 2022). Cross-sectoral dialogue and collaborative governance are essential for CoPs, especially in tackling sustainability challenges (Young et al., 2014; Nesshöver et al., 2017). CoPs have demonstrated their potential to catalyse change through social learning, as seen in areas like natural flood management, where they have helped shift environmental management paradigms (King et al., 2023).

CoPs are characterised by three essential components:

- **Domain:** A shared area of interest that provides common ground and inspiration for participants.
- **Community:** A group of individuals who interact and learn together.
- **Practice:** A shared repertoire of resources, tools, and knowledge that community members develop over time (Wenger, 2002).

Best practices for developing CoPs focus on nurturing the above three elements while promoting engagement, participation, and the collective creation of knowledge. Practical guidelines for establishing CoPs, including integrating diverse knowledge systems, are essential for advancing sustainability goals (De Carvalho-Filho et al., 2020; Frantzeskaki et al., 2019). Best practice guidelines recommend a six-step adaptive process for building CoPs successfully, as illustrated in Figure 2.



Figure 2: Best practice steps for building a Community of Practice. Figure generated with the help of MS PowerPoint and ChatGPT, September 1, 2024, OpenAI, <https://chat.openai.com>.

1. **Defining the domain and purpose:** The first step in building a Community of Practice (CoP) is to clearly define its domain and purpose, which is crucial for aligning participants and fostering meaningful engagement (Li et al., 2009). A well-defined domain provides direction, instills ownership, and ensures shared goals (Young et al., 2014), while clearly articulated objectives ensure alignment with both immediate priorities and broader sustainability goals (de Carvalho-Filho et al., 2020; Frantzeskaki et al., 2019). Early stakeholder involvement is essential for co-

creating an inclusive and relevant domain that integrates environmental, social, and policy concerns (Wickenberg et al., 2022, 2024; Malekpour et al., 2021).

2. **Building relationships and trust:** Step 2 focuses on building strong relationships and trust, essential for sustained engagement. Open communication and transparency foster meaningful interactions, especially in contexts like science-policy dialogues, where transparency and informal interactions help bridge gaps (Wenger, 1998; Young et al., 2014). Collaborative, cross-sectoral relationships are key to addressing complex challenges such as NbS, promoting mutual understanding and shared knowledge (Nesshöver et al., 2017; Raška et al., 2022). Regular, open interactions help create an inclusive community, while mentorship and peer support facilitate newcomer integration (Wickenberg et al., 2022, 2024; Barab & Duffy, 1998). Continuous knowledge coproduction further strengthens trust across the CoP (Frantzeskaki et al., 2019).
3. **Developing shared repertoire and practice:** Step 3 involves developing a shared repertoire of knowledge, tools, and practices, which evolves over time as members contribute to and refine collective resources (Hoadley, 2012). CoPs should leverage digital platforms to facilitate communication and knowledge-sharing, particularly for geographically dispersed members working on NbS (Nesshöver et al., 2017; Wickenberg, 2024). The shared repertoire must integrate diverse perspectives, including technical guidelines and local knowledge, fostering continuous learning and collaboration (Wickenberg et al., 2022; Raška et al., 2022; Young et al., 2014). Regularly updating this repository with case studies and best practices ensures that the CoP remains relevant and adaptable to different contexts (Malekpour et al., 2021; King et al., 2023).
4. **Utilising technology for collaboration:** Step 4 focuses on using digital tools such as discussion forums, document repositories, and video conferencing facilitate communication, knowledge-sharing, and continuous engagement (De Carvalho-Filho et al., 2020; Hoadley & Kilner, 2005; Barab & Duffy, 1998). These platforms are essential for fostering dialogue across sectors and disciplines, especially in contexts like NbS, where cross-sectoral collaboration is key (Young et al., 2014; Nesshöver et al., 2017). Technology enables CoPs to maintain ongoing discussions, share resources, and document lessons learned, ensuring accessibility for all members (Wickenberg et al., 2022; Raška et al., 2022). Regular updates to shared tools and frameworks support continuous learning and adaptation, keeping the community dynamic and relevant (Malekpour et al., 2021; King et al., 2023). User-friendly platforms also extend the CoP's reach, allowing for effective collaboration despite geographical barriers (Barab & Duffy, 1998; de Carvalho-Filho et al., 2020).
5. **Encouraging active participation and contribution:** Step 5 encourages active participation and contribution, essential for maintaining its vitality and to ensure that members keep engaged and knowledge is continuously shared (Young et al., 2014; Nesshöver et al., 2017). Creating opportunities for both formal and informal involvement helps foster a culture of participation, where members feel empowered to contribute and take on leadership roles (Wickenberg et al., 2022; Wickenberg, 2024). Ensuring inclusive participation by engaging underrepresented groups and supporting diverse perspectives is key to maintaining dynamic community engagement (Raška et al., 2022; Malekpour et al., 2021). Encouraging members to move from peripheral to central roles promotes individual growth and community development (Barab & Duffy, 1998). Continuous recognition of contributions and the inclusion of fresh ideas from new members help the CoP evolve and avoid stagnation (de Carvalho-Filho et al., 2020; Frantzeskaki et al., 2019).
6. **Ongoing monitoring, evaluation, and adaptation:** Step 6 aims to ensure that the CoP remains relevant and meets the needs of its members. Regular evaluation should focus on both processes (such as participation and engagement) and outcomes (such as knowledge creation and skill development) (Frantzeskaki et al., 2019; Goodman & Sanders Thompson, 2017). Feedback loops allow the CoP to adapt its structure and activities, ensuring it continues to fulfil its goals and evolve with members' needs (Young et al., 2014; Nesshöver et al., 2017). Continuous evaluation is especially important for NbS-focused CoPs, where both social and ecological impacts need to be tracked and incorporated into future practices (Wickenberg et al., 2022; Raška et al., 2022). Joint reflection and feedback mechanisms are crucial for refining governance models and ensuring that collaborative processes remain effective (Malekpour et al., 2021; Wickenberg, 2024). Additionally, evaluating the long-term impact of social learning helps assess shifts in individual and institutional behaviours (King et al., 2023). Regular evaluation and adaptation maintain the CoP's dynamism, enabling it to respond to emerging challenges and opportunities (Barab & Duffy, 1998; de Carvalho-Filho et al., 2020).

In MERLIN, CoPs engaged sector-specific stakeholders through virtual roundtables, workshops, and interviews to promote knowledge sharing, address barriers, and develop strategies that balanced economic, societal, and environmental impacts (see ANNEX 3 for a full overview of sector engagement activities). Over four years, MERLIN scientists and sector representatives met three times in virtual roundtables to facilitate collaboration and integrate NbS into sectoral practices. The goal was to foster

support, ownership, and collective action, ultimately driving the mainstreaming and upscaling<sup>5</sup> of NbS across sectors:

- **Roundtable 1 (2022)** focused on understanding the motivation and interests of each sector, and the potential impacts of nature restoration on their operations.
- **Roundtable 2 (2023)** shared examples of river restorations and their effects on sectors, with a particular focus on MERLIN case studies. It aimed to encourage discussion on the pros and cons of NbS, expand stakeholder involvement, and introduce cross-sectoral discussions, policy levers, and opportunities for cooperation.
- **Roundtable 3 (2024)** was designed to develop sectoral strategies, including exploring value chain impacts and cross-sectoral requirements, ensuring that MERLIN's outputs align with sectoral needs.

In addition, the CoPs established feedback mechanisms to assess NbS strategies, ensuring active stakeholder involvement and thorough documentation to inform future actions. These engagement activities were coordinated by sectoral leads, whose roles are further detailed in the next section.

### 1.2.1.1 Role of Sectoral Leads

For each sector, a team member was identified as a lead for each sector (= sectoral lead), with responsibilities to select relevant stakeholders, involved in key events (i.e. virtual workshops and roundtables) to contribute to the process whilst encouraging community building for the long term. Each sector lead worked closely with a partner organisation to support this process. Sectoral leads adopted varied approaches to stakeholder engagement based on the specific needs of their sectors. Some leads took a more targeted approach, focusing on specific stakeholder groups, such as private sector actors, to maximise impact with limited resources. This approach emphasised building deeper, more sustained relationships, prioritising quality over quantity of engagement. In contrast, other leads employed broader strategies, engaging a wider range of stakeholders to ensure more diverse perspectives.

Sectoral leads were responsible for helping to identify sector-specific challenges and opportunities for mainstreaming NbS and integrating just transformation principles, bridging the gap between MERLIN's overarching goals and the practical realities of each economic sector. They played a key role in balancing diverse viewpoints and ensuring collaboration across sectors, with key responsibilities including:

- **Stakeholder Selection:** Sectoral leads identified and selected relevant stakeholders from within their sector. This process involved mapping out key actors, understanding their interests and influence, and ensuring a diverse representation of perspectives.
- **Community Building:** Sectoral leads were tasked with establishing the CoP within their selected economic sectors. This involved creating a collaborative environment where stakeholders could share knowledge, discuss challenges, and explore opportunities related to mainstreaming freshwater NbS.
- **Engagement Strategy:** Sectoral leads organised and conducted stakeholder engagement activities to involve stakeholders in meaningful discussions about NbS. This included facilitating virtual roundtable discussions, conducting interviews, and gathering feedback from stakeholders.

### 1.2.1.2 CoPs Participants

Carmen et al. (2023b) created a typology of actors: the **public sector** (government bodies and regulators), the **non-profit sector** (NGOs and charities focused on public benefit), and **networks** (multi-stakeholder partnerships). The **for-profit sector** covers businesses aiming to generate profit, while the **research sector** consists of universities and research institutions. Lastly, the **community sector** involves local groups and community interest companies that engage residents in place-based initiatives (Carmen et al., 2023b).

Stakeholders involved in NbS operate at various scales, from local communities to multinational organisations, with their scale influencing both their objectives and their impact on NbS (Carmen et al., 2023b). They also differ in their core areas of focus, which may include nature conservation, environmental management, or economic activities, and these focus areas help to clarify their motivations and contributions (Carmen et al., 2023). Additionally, they bring diverse expertise, ranging

<sup>5</sup> Implementing restoration measures and NbS on larger scales addressing technological, social, governance and financial processes.

from biophysical interventions to social-economic challenges and procedural knowledge, all of which are essential for the successful implementation of NbS projects (Carmen et al., 2023). The roles stakeholders play - whether initiating, steering, or implementing - are dynamic and can evolve as projects advance, reflecting the changing needs and stages of NbS development (Mitincu et al., 2023; Wittmayer et al., 2017).

To build sectoral CoPs in MERLIN, existing relationships and knowledge within the consortium were leveraged and a snowballing approach was employed to involve additional stakeholders and ensure open, inclusive participation. In addition, sectoral leads conducted stakeholder mapping to identify key organisations with the potential to influence the adoption of NbS. By engaging with EU-level representatives and selected Member State-level economic sectoral stakeholders, MERLIN aimed to explore how freshwater NbS could be integrated into mainstream practices and drive socially equitable and environmentally sustainable systemic changes.

The CoPs employed a strategic approach to representation, aiming to fairly reflect the diverse interests within each economic sector. Due to the scale of MERLIN, the focus was on engaging influential and representative stakeholders capable of voicing broader sectoral interests. A key focus was bringing together diverse actors with relevant insights, including those from planning, policy, for-profit businesses, non-profits, public sector organisations, and government agencies, to promote a more inclusive approach in planning and delivering transformation for more sustainable practice in the future. Consequently, the CoPs consisted of a mix of key stakeholders from private and public organisations<sup>6</sup>. Stakeholder organisations often provided insights into national and local contexts, partially bridging the gap to direct local representation. The CoPs thus included sectoral leads managing the process, industry experts with sector and NbS expertise, policy makers involved in relevant regulations, practitioners working within the sectors, along with umbrella groups like the International Peatland Society, which provided valuable insights through their national associations. This structure aimed to adopt a balanced approach to exploring the mainstreaming of freshwater NbS.

Section 3 outlines the stakeholder organisations that were identified, approached, and engaged in MERLIN's sectoral activities. As is common in stakeholder engagement efforts, not all invited stakeholders participated in the CoP sectoral activities. For some, this was due to a perceived lack of relevance, while others were unable to attend due to their regular workload, amongst other reasons. In this deliverable, we distinguish between stakeholders who attended and those who were invited but did not participate, as defined below.

- **Sectoral Leads:** Responsible for managing and facilitating the CoPs.
- **Industry Experts:** Professionals with expertise in the economic sector and/or NbS.
- **Policy Makers:** Individuals involved in regulatory and policy decisions relevant to the sector and/or NbS.
- **Practitioners:** Stakeholders actively working within the sector, implementing or considering NbS.
- **Attendee:** Stakeholder from any of the categories above who was invited to participate in the CoPs and did participate in at least one sectoral activity.
- **Invited stakeholder:** Stakeholder from any of the categories above who was invited to participate in the CoPs and did not participate in any of the sectoral activities.

MERLIN focuses on engaging key strategic sectoral actors to establish an EU-wide CoPs for each sector. MERLIN specifically targets six economic sectors, which will be described in the next section.

## 1.2.2 MERLIN economic sectors

A critical aspect of mainstreaming NbS is embedding their use as a standard practice within the full spectrum of societal and economic sectors (Mayor et al., 2021; Newell, Twena, & Daley, 2021). Economic sectors are essential stakeholders in supporting NbS and have a responsibility to adopt sustainable practices that align with ecosystem regeneration goals (Malekpour et al., 2021). Understanding an economic sector from a system perspective involves recognising the dynamic interrelationships amongst diverse actors who hold a range of ideas and perspectives. Established social relationships within sectors can facilitate actor involvement in discussions, supporting collective action and decision-making. However, it is crucial to critically reflect on who is included or excluded from these processes. Engagement should be approached as a continuous learning and adapting process to ensure it remains inclusive and responsive (Carmen et al., 2022).

<sup>6</sup> Reflection on working with local stakeholders in the MERLIN cases will be addressed in a sister deliverable (D4.9) due in the summer 2025.

MERLIN WP4 focuses on sectors linked to freshwater ecosystems and associated with its 18 cases across Europe. Six priority sectors were identified as a focus in MERLIN WP4. As stated in the project proposal, the aim of working with the six economic sectors was to drive transformative change by aligning restoration efforts with economic activities and mainstreaming NbS. MERLIN aimed to develop sector-specific strategies, enhance public-private cooperation, and mainstream NbS across Europe to tackle climate change, biodiversity loss, and societal challenges. By aligning with EU and global policies, MERLIN sought to overcome barriers and leverage opportunities for systemic change through collaboration with key sectors.

The selected sectors were chosen because they have significant influence on and could benefit from NbS. In the interviews with the project coordinators, the sectors were described as the “soul of MERLIN”, emphasising their central role in the project. MERLIN aimed to demonstrate the mutual benefits of NbS for both the economy and the environment, fostering win-win solutions that integrate NbS into business models and supply chains. Initially, MERLIN aimed to focus on four key sectors: agriculture, navigation, insurance, and water supply and sanitation. This is due to existing evidence of NbS success for these four sectors.

**"[...] We were thinking initially of agriculture, navigation, insurance and water supply because we had references of projects where these sectors were already benefiting. [...] And we could put that on the table and tell them: okay, you can do things through green infrastructure or you can also incorporate nature into your equation and into your investments, and benefit from it. Instead of fight nature, work with it." (Sectoral Lead / Coordinator Interview, June 2024)**

Despite initial doubts within the project consortium, the hydropower and peat extraction sectors were included due to strong interest from project partners with established relationships in these industries. The focus for these sectors was on identifying incentives to reduce their negative environmental impacts and encourage them to take responsibility for ecosystem restoration.

**"We had a severe discussion about Hydropower and Peat... but I think it was a big advantage that we involved them because they are very engaged." (Sectoral Lead / Coordinator Interview, June 2024)**

To better understand the six selected sectors, MERLIN WP4 commenced by conducting questionnaires, desktop reviews, interviews, and virtual roundtable discussions with sector stakeholders. This work aimed to gather insights into the sectors' current perspectives on restoration and NbS and to establish how MERLIN can effectively engage with them. These activities served as a baseline for ongoing work with the sectors. The six sectors are outlined below, with a brief description of each sector, its relationship with freshwater ecosystems, and the rationale for engaging with the sector. For comprehensive details, please refer to the [MERLIN sectoral briefings](#).

- **Agriculture:** As a key land-use sector, agriculture has a profound impact on ecosystems and biodiversity. Restoration measures, such as floodplain reconnection and sustainable farming practices, offer solutions to balance agricultural productivity with ecosystem health. Agriculture was selected because it plays a crucial role in managing vast landscapes that can either hinder or enhance ecosystem restoration. Engaging with this sector is essential for implementing widespread nature-based solutions that improve water quality, soil health, and resilience to climate change.
- **Hydropower:** Hydropower involves the generation of electricity by controlled water flow, encompassing various types of installations to store water from river systems or by altering river systems using artificial barriers. MERLIN concentrates on hydropower's historic role in altering river systems with a focus on removing unnecessary barriers as a new nature policy priority. This sector was chosen because of its significant impact on river ecosystems and the potential to align hydropower practices with restoration efforts, ensuring that Hydropower becomes more sustainable and compatible with ecosystem health.
- **Insurance:** Insurance is a risk management concept where financial protection is offered against a fee by an insurance company, compensating another party for specific losses, damages, or injuries. This sector plays a crucial role in compensating damages incurred by insured assets. Within MERLIN, the insurance sector looks at the possibility of NbS integration in non-life insurance to mitigate financial risks associated with water-related events such as floods and droughts. Additionally, the idea of life insurance investing in nature is considered.



- **Navigation:** Inland navigation encompasses domestic freight and waterway passenger transport, relying on river systems and the maintenance of fairway conditions. The development and upkeep of this infrastructure has historically altered river hydro morphology, often leading to ecological challenges such as sediment imbalance, riverbed degradation, and habitat loss. Navigation was chosen due to its impact on river dynamics and floodplain ecosystems, with opportunities for adapting navigation practices to be more compatible with ecosystem health, such as through sediment management and reconnecting rivers with their natural floodplains.
- **Peat Extraction:** This sector involves the mechanical extraction of peat for horticultural and energy purposes. Although the sector occupies a small proportion of Europe’s peatlands, it is increasingly associated with carbon emissions and biodiversity loss. MERLIN highlights the need for sustainable management practices, including habitat restoration post-extraction to preserve degraded peatlands across Europe.
- **Water Supply and Sanitation (WSS):** The WSS sector is responsible for managing drinking water and wastewater for households, industry, and agriculture. These water resources are directly linked to ecosystem health. Improving water quality and ensuring sustainable water management through NbS benefit both ecosystems and water services. Water supply was selected as a key sector because healthy freshwater ecosystems are critical to providing clean water, and the sector has both a vested interest and a responsibility in supporting NbS to maintain these resources.

### 1.3 Focus of this deliverable (D4.2)

The Global Standard highlights the importance of considering diverse views, concerns, and grievances, underscoring the significance of perceptions and personal worldviews in the transformations framework (Carmen et al., 2024). This deliverable (D4.2) focuses on how economic sectors can integrate NbS to support large-scale ecosystem restoration, contributing to MERLIN’s broader goal of addressing climate and biodiversity challenges. The selection of six sectors - agriculture, hydropower, peat extraction, water supply, navigation, and insurance - was intentional due to their influence on freshwater ecosystems and their potential to both impact and benefit from NbS. A deeper understanding of stakeholder perceptions, motivations, and challenges is essential to foster more inclusive and effective collaboration. While the importance of inclusion and social justice is acknowledged, practical implementation often falls short. D4.2 aims to identify win-win scenarios and explore pathways for more just and equitable transformations. Addressing the issues within the context of mainstreaming NbS can significantly improve the development of sectoral CoPs and provide insights for transformative, action-oriented research and practices.

D4.2 presents the findings of a comprehensive analysis of the sectoral stakeholder engagement processes within MERLIN, highlighting changes and progress across the six economic sectors. It provides insights on engaging strategic sectoral actors and integrating them into NbS mainstreaming initiatives. Additionally, the deliverable seeks to inform future projects, guide policy development, and enhance sectoral communities of practice, ensuring that NbS are widely adopted and sustainably implemented.

Using a qualitative approach, the analysis integrated data from various sources, including virtual interviews, roundtables, surveys, workshops, with findings organised around three key research questions (RQ):

1. What are the composition and patterns of stakeholders engaged in MERLIN sectoral activities? (RQ1)
2. What are sectoral stakeholder perceptions and views about mainstreaming NbS? (RQ2)
3. How could considering justice principles in mainstreaming NbS help achieve just transformation? (RQ3)

### 1.4 Structure of D4.2

This deliverable is structured around three core research questions: the composition and patterns of stakeholders engaged in MERLIN sectoral activities, stakeholder perceptions of mainstreaming NbS in MERLIN, and how justice principles (representation, procedure, outcomes) can help mainstream NbS in economic sectors. **Section 2** outlines the methodology, including data sources, collection, and analysis. **Section 3** explores the composition of stakeholder engagement, detailing which organisations

were involved, how they were engaged, and how these interactions evolved from 2022 to 2024. **Section 4** focuses on stakeholder perceptions, examining institutional and on-the-ground transformations, changes in views over time, and reflections on the engagement process. **Section 5** assesses the application of justice principles in MERLIN's approach, evaluating the fairness of representation, involvement, and outcomes. **Section 6** discusses the broader implications of the findings, while **Section 7** concludes with recommendations and next steps for mainstreaming NbS in economic sectors, with a focus on achieving just and equitable transformations.

## 2 Methodology

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For this deliverable, we conducted a qualitative thematic analysis, a method that helps identify, analyse, and interpret patterns (or "themes") in data, as further detailed in Section 2.3.1. This approach was used to explore how sectoral stakeholder engagement in MERLIN influenced and supported 'just transformations' in freshwater NbS. Various data sources, such as from stakeholder analyses, virtual interviews and roundtables, and questionnaires, were combined to answer the three research questions.

### 2.1 Research Questions (RQ)

This section outlines the research questions guiding the analysis of stakeholder engagement and its implications for just transformations in freshwater NbS. The primary aim is to understand the dynamics of stakeholder engagement and its impact on advancing equitable and effective NbS practices.

#### RQ1 (Section 3)

**What are the composition and patterns of stakeholders engaged in MERLIN sectoral activities?** This question seeks to identify the types of stakeholders involved in MERLIN's six economic sectors, examining their distribution across different administrative scales and sectors. It also investigates the modes of engagement employed, such as selection processes, interaction designs, and purposes. Finally, it addresses how these patterns have evolved over time.

#### RQ2 (Section 4)

**What are sectoral stakeholder perceptions and views about mainstreaming NbS?** The second question focuses on understanding stakeholder attitudes towards the mainstreaming of NbS. It aims to reveal recurring themes and viewpoints, identify areas of consensus and disagreement, and explore how perceptions and positions have shifted over the course of MERLIN, with reflections on engagement processes and what it means for mainstreaming NbS.

#### RQ3 (Section 5)

**How could considering justice principles in mainstreaming NbS help achieve just transformation?** This question examines how applying justice principles in stakeholder engagement can support just transformations in the mainstreaming of NbS. Justice was considered across three dimensions: representation, involvement, and distribution. Each was assessed through specific indicators, including diversity and equal opportunity, recognition of knowledge and perspectives, fairness in the distribution of costs and benefits, and the balancing of trade-offs. These indicators were used analytically – not to design the research tools, but to assess how justice concerns were reflected in stakeholder experiences and MERLIN's overall engagement approach. The analysis highlights how these principles can both inform and challenge the process of just transformation in complex sectoral contexts.

### 2.2 Data Collection and Preparation

The data collection process was designed to align with the stakeholder engagement strategy developed for MERLIN, ensuring a comprehensive capture of stakeholder perspectives. The strategy focused on obtaining real-life examples of MERLIN's impact on just transformation across MERLIN's six economic sectors. Although we collected both quantitative and qualitative data, our primary approach was a qualitative thematic analysis. The quantitative data, such as stakeholder counts and ratings, were used only for descriptive purposes; no statistical analysis was applied to the quantitative data. The qualitative data from reports, documents, and virtual roundtable discussions were analysed to capture key themes, including engagement rationale, discussion topics, and areas of debate.

#### 2.2.1 Data sources from MERLIN Work Package 4

For this deliverable, we consolidated data from across Work Package 4 (WP4) and used NVivo software to manage the data for data analysis. Figure 3 provides an overview per research question. We divided the data into two categories:

- **Primary Data:** 59 documents, including roundtables (RT), interview transcripts, survey results and fieldwork notes.
- **Secondary Data:** 50 documents, including sector briefings, reports, and meeting notes.

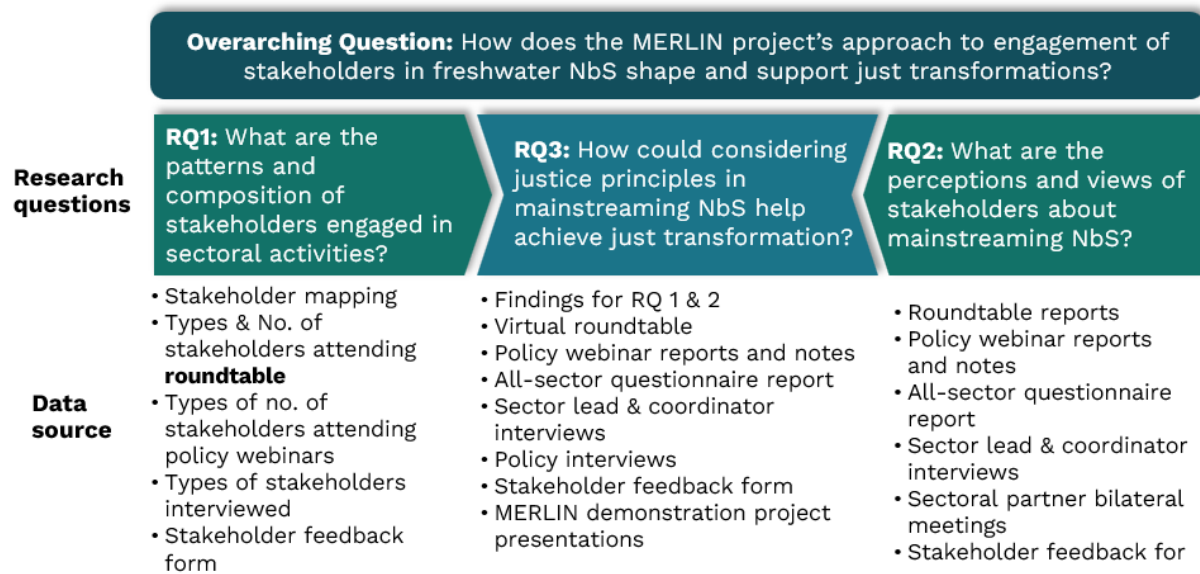


Figure 3: Overview of data sources used to answer the three research questions.

The following data used in this analysis were not initially collected with this specific research task in mind. Instead, they were aggregated from project activities to support a thorough investigation of the research questions. Each data source offered distinct insights, addressing one or more of the research questions as follows:

- **Stakeholder Mapping:** Updated sectoral stakeholder mapping data, providing insights into targeted and engaged stakeholders, and changes over time (RQ1).
- **All-Sector-Questionnaire and report** contained qualitative and quantitative data about stakeholder perceptions and motivations (RQ2 and 3)
- **Sectoral roundtables (RT), workshops and interviews (all virtual)** included transcripts, meeting plans, notes, and participant lists to assess stakeholder types (RQ1), views and and perceptions (RQ2), as well as insights into just transformation principles (RQ3).

## 2.2.2 Data collection for this deliverable

For this deliverable, two specific data collection methods were employed to gain additional insights into the sectoral CoPs. These methods aimed to address gaps in understanding and provide an in-depth perspective on key themes.

### 2.2.2.1 Coordinator / Sector Lead Interviews

Nine semi-structured interviews were conducted by Rebecca Gray and Leonie Schulz from the James Hutton Institute<sup>7</sup> with the coordinators and sectoral leads in May and June 2024. The interviews were designed to gather qualitative data that could not be obtained from the existing sources mentioned under 2.2.1, addressing gaps in understanding and providing deeper insights into stakeholder composition, engagement patterns, perceptions of mainstreaming freshwater NbS, and the application of justice principles. By employing a semi-structured format, the interviews allowed for flexible and in-depth exploration of these topics, providing rich qualitative data to complement the findings from other sources.

The interviews focussed on ‘behind the scenes’ information, such as the decision-making processes behind stakeholder selection, undocumented informal discussions, reasons for stakeholder non-participation or withdrawal from the CoP. They also provided a more detailed exploration of findings from other data sources, such as changes in stakeholder perspectives - from the viewpoint of the

<sup>7</sup> Rebecca and Leonie conducted most of the thematic analysis, giving them a comprehensive understanding of the data. In addition, their distance from day-to-day project activities allowed them to create a more neutral environment for open discussion.

sectoral leads - and the extent to which discussions around just transformations emerged during stakeholder engagement activities. Please see **Annex 3** for the full interview guide.

**Interview sample:** The interviews were conducted with current and former sectoral leads as well as MERLIN project coordinators. Further interviews with external stakeholders were not conducted due to resource constraints and to avoid placing additional demands on participants who were already involved in other MERLIN activities. These individuals were selected due to their involvement in and in-depth knowledge of the themes discussed within the sectoral CoPs. The sectoral leads facilitated the CoPs within their respective economic sectors, while the project coordinators were responsible for the overall design of MERLIN, including the selection of the six economic sectors and the development of the CoP concept.

### 2.2.2.2 Stakeholder Feedback Form

To evaluate participants' perceptions of the sectoral CoPs, we designed a Stakeholder Feedback Form (see Annex 4). This form was distributed to all invited stakeholders by sectoral leads during the period from June to July 2024. The goal was to understand how participants viewed the stakeholder engagement activities and the effectiveness of the CoP in supporting their strategies for mainstreaming NbS into their practices. By gathering feedback directly from participants, the aim was to assess the impact of the engagement process and identify areas for improvement. The collected feedback from 39 respondents (Figure 4) provided insights into participants' experiences and perceptions, helping to inform recommendations for future stakeholder engagement strategies.

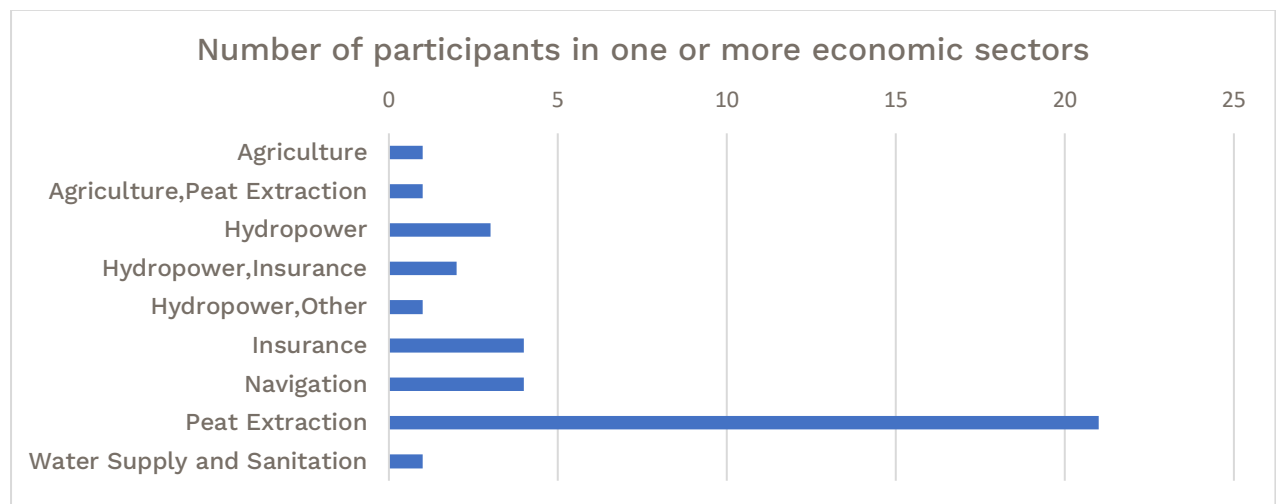


Figure 4: Number of participants in one or more economic sectors (Stakeholder Feedback Form)

## 2.3 Data analysis

This section describes the methods used for thematic coding and analysis to identify key patterns and themes, as well as the approach for compiling and verifying stakeholder involvement in the MERLIN project.

### 2.3.1 Coding and thematic analysis

**Thematic Coding** was employed to analyse data and identify key themes and patterns. This process involved several steps. We started by reviewing all collected materials, as detailed in section 2.2. Initial coding was organised into themes that addressed the research questions, such as stakeholder types, modes of engagement, perceptions of NbS, and principles of just transformation. These initial codes were then reviewed and refined iteratively to form both broad themes and sub-themes. Finally, a thematic analysis was performed to interpret the data in the context of the research questions, identifying patterns and synthesising insights to understand how stakeholder engagement influenced 'just transformations' in NbS.

### 2.3.2 Stakeholder counts (RQ1)

To address the first research question, we compiled sectoral stakeholder data using the WP4 stakeholder mapping spreadsheet, listing organisations by sector and type (e.g., public, private, NGO). However, gaps existed, such as missing involvement details or stakeholders joining late. To resolve

this, we reviewed roundtable transcripts and notes to track attendance and noted absent stakeholders. The compiled lists were then shared with sector leads for updates in April and June. While the final numbers reflect patterns, they are indicative and not meant for quantitative analysis.

### 2.3.3 Perceptions regarding distribution of outcomes (RQ3)

To analyse this question, justice was approached through three core dimensions – representation, involvement, and distribution – each assessed using a set of deductively developed indicators grounded in environmental and social justice literature. Under each dimension, indicators were identified to reflect specific principles such as diversity and inclusion, recognition of knowledge, fair cost and benefit sharing, and balancing trade-offs (Figure 8). These indicators did not shape the design of research tools (e.g. interviews, workshops), but were applied analytically to interpret findings. The analysis drew on data generated through stakeholder engagement activities and was also informed by insights from research questions 1 and 2, providing a framework for assessing how justice principles were reflected in practice across MERLIN.

## 2.4 Data anonymisation and pseudonymisation

In adherence to confidentiality and anonymity requirements for stakeholders, all reporting has been anonymised or pseudonymised as needed. The following measures were implemented:

**Use of quotes:** References for quotes are provided by indicating the data source rather than naming the specific person or organisation. For instance, quotes from RT are cited with the sector and the date (e.g. Agriculture Sector RT, June 2023). Similarly, quotes from interviews are identified by category and date (e.g. Sector Lead / Coordinator Interview, June 2024).

**References to an organisation’s name or an individual:** To protect anonymity, names of organisations or individuals have been pseudonymised where necessary, especially in contested contexts. IDs are used to represent organisations. For example, "Stakeholder 2" refers to an organisation with ID #2.

## 3 Composition and patterns of Sectoral Stakeholder Engagement

This section presents findings relating to which stakeholder organisations were identified, approached and engaged in the MERLIN sectoral activities (namely virtual roundtables and/or interviews or bilateral meetings; as well as invitations to inform the process through questionnaires and feedback on draft documents). The aim, as originally designed, was to use stakeholder mapping and analysis to identify the most influential organisations likely to either enable, or block, mainstreaming of freshwater Nature-based Solutions (NbS) across Europe. The project would bring these organisational participants together around their mutual interests in such NbS to form sectoral communities of practice (CoPs). The proposal envisaged two virtual roundtable engagements building on these existing shared interests, which act as a deliberative forum for social learning to create a comprehensive discussion of sustainability issues, such as NbS, and build support for the integration of these solutions across different sectors. The end point was to summarise these shared interests in individual sectoral strategies that would act as a roadmap for the sectoral CoPs. Between these formal meetings, shared working on the draft documents would provide continuity and room to express differences whilst seeking resolution. Therefore, the selection and engagement processes were underpinned by ideals of building new relationships between diverse organisations, seeking to build common ground and to increase the acceptance of freshwater ecosystems as assets for their businesses.

The focus was on ‘economic sectors’ to seek common interests between commercial companies and those implementing restoration; as traditionally nature restoration and socio-economic development are often presented as a trade-off. However, the NbS approach should involve all aspects of society and provide solutions that meet the needs of many different interests.

**“We said if we can show the different sectors that there is something in nature for them, then they will become allies instead of barriers” (Sectoral Lead / Coordinator Interview, June 2024)**

However, the choice of the six sectors (Berczi-Siket et al., 2022) was contested due to concerns about conflicting interests and historical tensions. Whilst at the start of the project we believed that some sectors (e.g. agriculture) would benefit from freshwater NbS, we expected it to be much harder to engage sectors whose main economic activities were perceived as negatively impacted by restoration

measures - such as hydropower (removal of barriers) and peat extraction (restoration of degraded peatlands) and to do so in a constructive way to reach co-produced solutions.

**“We had a severe discussion about Hydropower and Peat, especially because they ... are very often on the other side, cooperation with them is pretty unusual.” (Sectoral Lead / Coordinator Interview, June 2024)**

The first section (3.1) indicates which stakeholder organisations were engaged, the rationales for engaging these organisations, and observes any patterns within each sector and between them. The second section (3.2) indicates how these stakeholders were engaged. The third section (3.3) provides evidence of how the different sectoral engagements evolved from the start in 2022 to the end of data collection (for this deliverable) in June 2024. The themes of the discussions that took place and what they mean for mainstreaming NbS are discussed in sections 4 and 5, respectively.

### 3.1 Which stakeholders were engaged?

Overall, 146 organisations were engaged in the sectoral CoPs up to June 2024. This is a subset of the 308 organisations that were identified as part of the stakeholder mapping and invited to participate. The difference illustrates that despite our best efforts, we were unable to mobilise the full suite of strategic organisations initially identified as potentially relevant to the CoPs, as illustrated in Figure 5.

Regarding the numbers, please note that this report, along with Appendix 1, presents the count of organisations, which differs from figures in the Roundtable (RT) reports that counted individuals. Members of the MERLIN consortium were actively considered part of the CoPs and are included in the counts. However, it is important to recognise that engagement and motivation levels differed between participants who were paid to participate and committed to MERLIN activities and those invited as external participants. Some stakeholder organisations were 'cross-sectoral,' participating in activities aimed at different sectors (e.g. DG Clima being involved in Hydropower and WSS sectoral RTs).

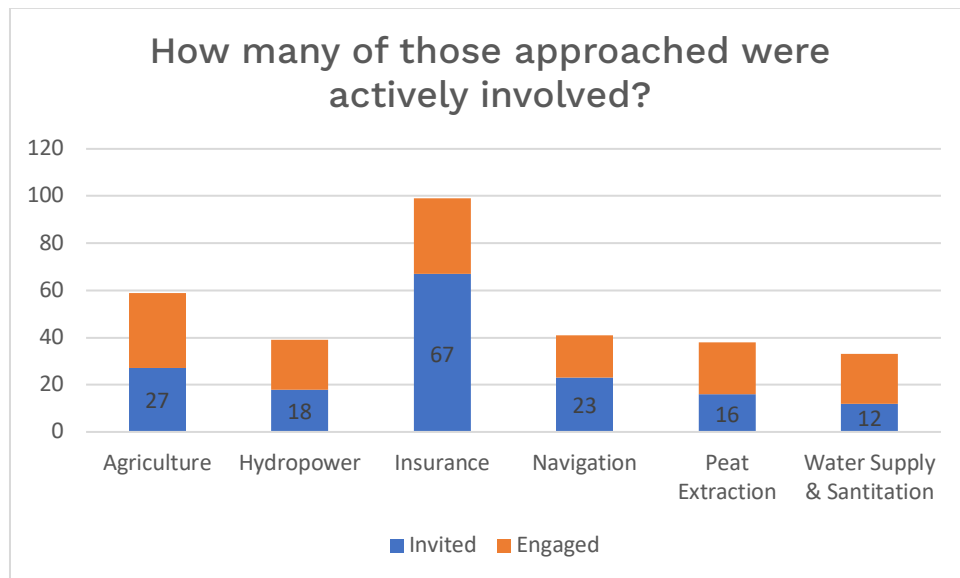


Figure 5: Sectoral illustration of total number of organisations approached and actively engaged (counts)

### 3.1.1 Sectoral Patterns

The section briefly identifies some patterns between the six sectors; summarised in Table 2 below.

Table 2: Types of organisations invited to the RTs

Organisation type	Organisations in Agricultural CoP	Organisations in Hydropower CoP	Organisations in Insurance CoP	Organisations in Navigation CoP	Organisations in Peat in Extraction CoP	Organisations in Water & Supply Sanitation CoP
Public	5	2	5	4	0	5
Private	3	4	8	0	7	4
Network/NGO	8	5	7	4	7	8
Research	10	3	4	1	1	0
MERLIN	6	7	7	9	7	5
Total	32	21	32	18	22	21
Total invited	59	39	99	41	37	33

Based on final counts in July 2024, a total of 59 organisations were identified as potential members of the CoP from the **agricultural sector** and 32 were actively involved in one or more activities<sup>1</sup>. Most of these organisations were working at the European scale, with only five at national or regional level. The size of the organisations, as far as we could tell, varied from SMEs to large multinationals.

It proved easier to engage policy, food processor and academic stakeholder organisations than “real farmers representation organisations” (Coordinator / Sector Lead Interview, June 2024). These actors are important, as they control potential levers of transformation, particularly retailers who are active on sustainable diets and eco-labelling and those designing the future CAP. Although some representatives from local farming projects attended the second roundtable, they constituted a minority. It was surprising that some of the ‘for profit’ networks on sustainable farming did not engage given the focus of the RT discussions mirrored their network objectives.

The focus of the CoP - such as soil management, buffer zone management, and micro-catchment natural water retention measures/floodplain restoration - mirrored many ongoing projects and initiatives that also involve farming organisations. It is possible that the target audience did not perceive significant added value in attending a roundtable on these topics, particularly given that local farmers prefer to learn from other farmers about good practice examples and may be less interested in discussing strategic institutional levers for transformation. There may also be a fear of change:

**“They're not going to come to any meeting that says they have to change.... Other people were telling us ‘well nature-based solutions: I mean it's about nature. We want to talk about agriculture, okay?’” (Coordinator / Sector Lead Interview, June 2024)**

Despite the best efforts, each RT was not representative of the full range of stakeholder required to mainstream NbS with agricultural actors.

**“What we had in the roundtables was probably not super representative of the sector because, they [farmers and farming associations] didn't want to participate. I mean, among the interviews plus the roundtables, we did have a good coverage but not per roundtable.” (Coordinator / Sector Lead Interview, June 2024).**

Overall, 39 organisations were approached to become part of the **Hydropower CoP**, 21 were actively involved in one or more activities. Most of these were active at European or International scales, with only three national level organisations involved. Engaging energy companies and the European Commission (DG Energy) proved challenging.



**“My focus was getting more and more energy companies involved. Many of the companies approached, including those that had been identified as funding barrier removal in the past, were not specifically focused on hydropower, so it was difficult to make the focus on restoration and barrier removal relevant when their sustainability officer was often more focused on other forms of energy generation... I did try and target the DG Energy, and it was just ‘this isn't relevant. I'm not a hydropower expert’. That was a bit disappointing.”**  
(Coordinator / Sector Lead Interview, June 2024)

Although not initially identified for the strategic Hydropower CoP, participants mentioned some additional authorities as essential for facilitating collaboration amongst various actors at the basin scale, but these were not engaged in the RTs, rather they were engaged in relevant case studies as key implementation stakeholders. **“River Basin Management Authorities should play a crucial role in stakeholder engagement and discussions about evolving plans.”** (Hydropower RT2, June 2023)

There were a total of 98 organisations approached to participate in the **Insurance CoP**, making 99 when we include the convening organisation. Of these, 32 organisations participated in one or more activities that were used to create the CoP. There were more national organisations (n=13) than the previous sectors covering a wide range of Member States (including Bulgaria, Denmark, France, Germany, Italy, Netherlands, Romania, Spain). It was important to have this range, as the structure of the non-life insurance sector varies a lot between countries, and this can affect how the companies engage with freshwater NbS. There was a balance of types of organisations across the CoP. Whilst the sector lead worked hard to attract private insurance companies, it proved difficult to find a way to make restoration measures (often upstream, large-scale and focussed on biodiversity outcomes) sufficiently relevant to businesses focussed on protecting individual urban assets from predominantly flood risk.

A total of 41 organisations were approached for the inland **Navigation CoP**. Amongst these, 18 were actively involved in one or more of the CoP RTs. Notably, unlike other CoPs, there were no Member State-level organisations; even though there are varying structures and responsibilities across EU countries.

**“The responsibilities of management bodies, agencies, and ministerial departments are highly depend on the countries’ tradition in managing waterways.”** (RT2 Notes, July 2023)

Furthermore, the view of the sector lead was that user groups had a limited role in implementing NbS. The cargo and cruise sub-sectors were more focused on zero emissions, waste reduction, and smart boat design, and showed less interest in initiatives like redesigning channel morphology or reconnecting floodplains, unless these changes directly affected their ability to navigate the channels. So the decision was made to focus on the water management authorities (Coordinator / Sector Lead Interview, June 2024).

A decision was taken to focus strategically on participating entities were engaged at European or international levels. Here, unlike some CoPs like Hydropower, there was a decision to engage with those managing large rivers with transboundary management issues, rather than inviting individual shipping companies. However, it was surprising that organisations dealing with transboundary river basin management, such as the International Commission for the Protection of the Danube River (ICPDR) and the International Commission for the Protection of the Rhine (ICPR) did not participate as we expected them to be more motivated to discuss NbS than commissions dedicated to ensuring navigable waterways.

The recreational sector was not represented. This was a pragmatic decision, as the needs and views of small private boat owners and users were so different to the large cargo and cruise companies that it was deemed impractical to combine them; and the focus was on working on large rivers not the smaller waterways often preferred by small boat owners. DGs were invited to the second roundtable but despite personalising the invitations and using established contacts, none of the representatives of the DGs participated or responded to the invitation email.

A total of 37 organisations were approached to participate in the **Peat Extraction (PE) CoP**. Out of these, 22 organisations actively participated. This relatively high engagement is testimony to the work of the sectoral partner, IPS, whose staff were able to use their long-standing networks within the PE industry to identify and encourage their members to attend.

The participating organisations included international or European-focused entities (n=14), although there were eight national organisations, across Estonia, Finland, Germany, Ireland, Latvia, Netherlands

and the UK. Given the fact that rehabilitation of PE sites is managed by MS planning regulations, having this MS specific perspective was an asset.

There were no public institutions directly involved, although one of the partners was a state agency managing the funding of peatland restoration. This reflects a broader issue where many of those approached focus generally on peatland, while the PE sector itself seems to be a “no-man’s area”, as described by a Commission representative (Coordinator/ Sector Lead Interview, May 2024).

Out of the 33 organisations approached, 21 actively engaged with the **Water Supply and Sanitation CoP**. There were no non-MERLIN research organisations, although some networks also engaged in research activities. Organisations involved were mostly active at the EU or international level (n=18), with three focusing on regional water supply in specific areas of France, Poland, and Spain. This mix highlighted the diverse regulatory and cultural approaches to water supply management across Member States and between urban and rural settings.

The team felt that the RTs had good overall representation but lacked engagement from the main private sector associations after the first RT. The emphasis on large-scale upstream NbS over green infrastructure or wastewater management might explain some of the differences. It may also reflect the sectoral lead organisation’s remit to focus on public sector water companies. Section 5 will further explore these issues of representativeness and participation.

### 3.1.2 Summary and reflections

We expected larger companies would have staff available to attend, such as Sustainability officers, while smaller firms might struggle. Interestingly, some small family-run businesses participated, but (some) large professional networking organisations did not. Some organisations were involved in more than one CoP. This included MERLIN partners, who facilitated and researched engagement processes or shared freshwater restoration measures relevant to various sectors. Additionally, research organisations and EU institutions, including DG Clima and DG Environment, engaged across multiple sectors due to their interest in advancing climate and biodiversity actions.

The numbers reported cover RTs or equivalent formal meetings or interviews, but do not include ad hoc input at conferences, consortium meetings or via email. For example, we received some feedback forms from five organisations that did not attend RTs but did comment on documents or fill in questionnaires. Some organisations had registered for one or more RTs but ultimately did not participate. While we cannot determine if scheduling conflicts or other issues were to blame, these organisations were engaged in the topic and might have ‘participated’ through online materials (e.g. questionnaires). Some of these organisations, though not actively participating, might still be peripheral members staying informed via briefings and/or indirectly feeding their interests into the CoP via membership networks. However, missing three RTs suggests that the process was not sufficiently important to them to prioritise or delegate to another member of their organisation. It is telling that MERLIN is just one of many projects trying to engage busy networks “we get a lot of project information so I cannot always remember which one we were involved when and how anymore” (Feedback form 18, from insurance sector).

Despite the critical role of public organisations (EU, national, regional administrations, and agencies), few were engaged in the RTs. The lack of direct EU Commission representation reflects a broader challenge in engaging such bodies in specific issues associated with implementing freshwater restoration measures.

**“Some maybe came to the webinar with the European Commission and then afterwards they sent an email, that that is not their field.” (Coordinator/ Sector Lead Interview, May 2024)**

The focus on non-state actors, driven by the need to focus on transformation and NbS, and aiming to expand beyond the current expectation of the State to deliver environmental outcomes, gave the economic sectors (private for profit and state run/NGO social enterprises) an opportunity to see their role in NbS.

## 3.2 How were these stakeholders engaged?

This section examines how stakeholders were engaged in the six sectoral CoPs. Stakeholders were selected based on their relevance to NbS and freshwater restoration. The sectoral teams conducted desktop reviews and stakeholder analyses to ensure relevant parties were involved and to shape the CoP’s focus. The boundaries of which types of stakeholder organisation to invite was not always clear cut; and different teams took different positions on how to focus their energies as described in section 3.1.

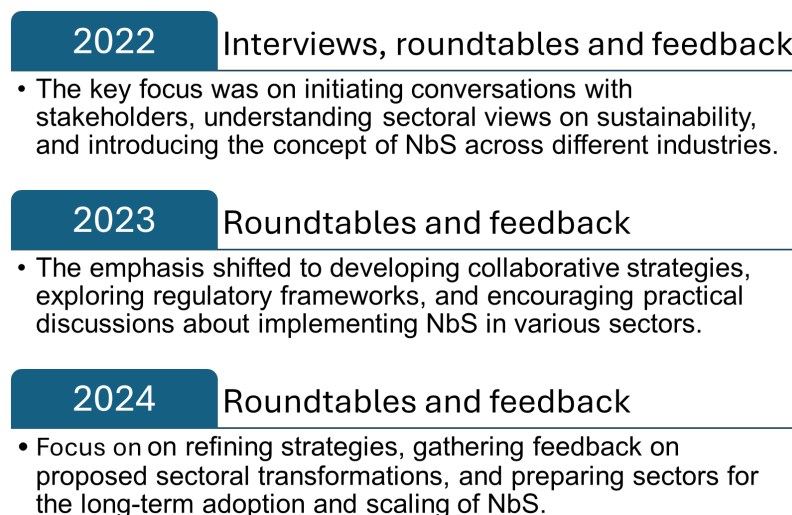
Considerable effort was invested in designing and sending "save the date" emails to introduce the project and outline the topics for the RTs.

**“Doing all that sort of nitty gritty relationship-building activities, like sharing information and being clear about what the MERLIN project was about, what the tasks involved were, and our aims [was crucial in setting up the RTs].” (Coordinator / Sector Lead Interview, June 2024)**

The engagement process was carefully designed to address both general and specific aspects of these sectors. It was a deliberate decision not to involve policy actors from the Commission DGs during the first year of the CoP to avoid focusing the RTs on the proposed Nature Restoration Law. Instead, individual discussions were held with DGs (Environment, Climate, Agriculture) to gather their perspectives on the sectors and their connections to freshwater restoration, as detailed in D4.1 (Berczi-Siket, 2022).

**“Okay, let's make a first RT just with the sector to create some trust to allow them to speak freely and then have separate calls with people from DG Agri and that worked nicely.” (Coordinator / Sector Lead Interview, June 2024)**

Figure 6 provides an overview of the CoPs engagement activities and their focus between 2022 and 2024.



*Figure 6: Overview of sectoral stakeholder engagement activities and focus - 2022, 2023, and 2024*

The CoPs activities included two or three formal virtual roundtables (RTs), which served as forums for knowledge exchange between research, policymakers, and industry representatives. The intention was to find a specific aspect of the connection between the ‘sector’ and freshwater restoration, to move from traditional conservation focus (intervention to improve freshwater ecology) to a NbS that met societal needs, including the needs of the economic sectors. Therefore, the model was designed to go from general discussion to a more focussed approach.

**“In the first roundtable, we discuss with them, to know more about the sector and their relationship or links with restoration, and then subsequent ones also help us to develop some ideas to understand where exactly we should focus on in promoting restoration and nature-based solution within the sector.” (Coordinator / Sector Lead Interview, June 2024)**

There was a lot of discussion about how to design and manage the RTs, and research undertaken to identify guest speakers, including email exchanges between individuals, which contributed to the value of the overall social learning. This learning took place within the sectoral teams and consortium as well as between the consortium and external participants.

**“The preparation was even more valuable than the roundtable itself.” (Coordinator / Sector Lead Interview, June 2024)**

After each RT meeting, a report of the RT and the main themes discussed was circulated for comment to those invited (including those who could not attend but expressed interest) and the final agreed version published on the project website. This process helped maintain engagement between the formal RTs. The final sectoral RTs were used to focus on the content of the proposed strategies. The

RTs often represented just the “tip of the iceberg”. It was recognised that these discussions alone were not sufficient for developing a comprehensive, action-oriented strategy.

**“It always needed to be followed up with other steps of work.” (Coordinator / Sector Lead Interview, June 2024)**

There was substantial ‘hidden’ work involved in setting up and maintaining connections through calls and process evaluation or design meetings between the RTs.

### 3.2.1 Sectoral Patterns

This section illustrates the activities undertaken by each sectoral team to build their sectoral CoP and highlights any issues associated with a specific sector. The overview is provided in [Table 3](#) a detailed table of engagement activities can also be found in Annex 2. The purpose of these activities was to co-produce, as much as possible, agreed approaches to adopting NbS in ways that suited their sector.

*Table 3: Detailed overview of Engagement Activities*

Activity	Agriculture CoP	Hydropower CoP	Insurance CoP	Navigation CoP	Peat extraction CoP	Water Supply and Sanitation CoP
Stakeholder analysis			Undertaken in 2022, updated as part of RT preparations in 2023 & 2024			
Desktop review	Yes (2022)	Yes, updated regularly	Yes (2022)	Yes (2022)	Yes, updated regularly	Yes, updated regularly
1-2-1 calls	Yes	Yes	Yes	Yes	Yes	Yes
Virtual Interviews	18 interviews in lieu of RT 2022	Yes, policy actors	Yes, policy & business actors	No, policy actors did not respond	Yes, policy actors	Yes, policy actors
Virtual RTs	2022 No RT  2023 2.5 hours 3 discussants Examples 2 MERLIN case studies, 1 on policy)  2024 2.5 hours Examples (2 external speakers on local networks; 1 external on Blue Deal, MERLIN policy and VC presentations )	2022 2.5 hours Example (1 external speaker case study) Breakout groups  2023 3.5 hours Examples (1 external speaker) Breakout groups  2024 Three hours Example (external speaker) Presentation on Strategy Breakout groups	2022 2 hours Example (1 external speaker case study) Breakout groups  2023 2.5 hours Example (2 MERLIN presentations ) Breakout groups  2024 2.5 hours MERLIN Presentation on Strategy & VC  Breakout groups	2022 Three hours Examples: MERLIN and external case studies  2023 2.75 hours No examples presented (focus on strategy)  2024 3 hours 2 MERLIN Case study examples  Presentation on Strategy	2022 2.5 hours Examples: External speaker Case Study Breakout groups  2023 2.5 hours Examples: 4 presentations from external speakers Breakout groups  2024 3 hours Presentation by external speaker Presentation on Strategy & VCs  Breakout Groups	2022 2 hours Presentation on MERLIN Mentimeter Polls  2023 2 hours External speaker MERLIN presentations 2 case studies, policy, scaling  2024 2 hours Example (external speaker) Presentation on Strategy 4 external discussants
Reviewing Reports			After both RTs			

Draft Strategy	Presented 2024 RT Summary shared with invite	Presented 2024 RT	Presented 2024 RT Summary shared with invite	Presented 2024 RT	Presented 2024 RT Summary shared with invite	Presented 2024 RT Summary shared with invite
Draft Value Chain example	Presented 2024 RT	N/A	Presented 2024 RT Summary shared with invite	N/A	Presented 2024 RT Summary shared with invite	Developed after RT held

Table 3 shows that the virtual RTs lasted between 2 – 3 hours; and the teams experimented with different formats and mechanisms to engage the participants, including using MERLIN or external case studies and using external speakers or discussants, to foster the sense of knowledge sharing across multiple initiatives. Break out rooms were used by half the teams to foster discussion, a practice considered good in theory but challenging in execution.

**“The principle behind a focus group is you get a bunch of people in a room and they start sparking off each other and sometimes we didn’t have the sparking.” (Coordinator / Sector Lead Interview, June 2024)**

The ability to create and maintain energy in an online format also challenged those using a plenary format

**“Such an online meeting, it’s not that easy to get the energy into the group... and then I had to try to break the silence a little bit, sometimes a bit jokingly” (Coordinator / Sector Lead Interview, June 2024)**

The table also illustrates that although the RTs were the focus of the engagement, there were considerable valuable preparation and follow-up activities.

**“I think the one-on-one discussions have been really, really important to keep people feeling like they’re valued. [...] I’ve noticed is a spike in communication around the reports...that has sometimes sparked discussions within the group and not just one on one to me” (Coordinator / Sector Lead Interview, June 2024)**

There were different approaches. For example, the **Agricultural** team aimed to leverage existing platforms, such as the European Innovation Partnerships on Agriculture. Although this approach provided substantial feedback, incorporating the EIP working group as a primary CoP platform did not materialise, possibly due to consultation fatigue.

The **Hydropower** team had to navigate carefully to establish an effective and balanced approach and set a positive tone to attract industry representation.

**“We’re trying to be quite independent, we’re not pushing an anti-hydropower agenda.. trying to demonstrate that we’re opening up a space for a conversation [...] I made efforts to set the tone as professional but at the same time quite informal ... let’s all try and work this out together and I think that helps to break down the barriers a little bit.” (Coordinator / Sector Lead Interview, June 2024)**

The **Insurance** team used initial interviews with individuals and policy actors to gain an overview of the sector. These interviews helped build some connection with the industry and clarify participants' roles and expectations. Participants were interested in discussing financial aspects and not to specific case study restoration, but we had limited capacity or expertise available to address broader insurance-related EU financial instruments, such as the EU Taxonomy or other financial policies or initiatives. The insurance sector is a competitive one, and the sector lead raises this aspect as a possible explanation for the low invitee vs attendee ratio in these events.

The **Navigation** team used examples to illustrate how channel and floodplain restoration can be done using an NbS approach to benefit nature whilst maintaining societal priorities to build foundational knowledge within the sector.

The process for **Peat Extraction** was particularly shaped by the input of the sectoral partner, International Peatland Society (IPS), who was involved from the very beginning. This approach ensured continuous dialogue and input from the sector throughout the process.

**“It’s not just the roundtable. We will send emails, ask for their views and opinions, and continue to hold bilateral meetings with IPS. They sometimes organise their independent meetings to discuss these emerging issues in MERLIN.” (Coordinator / Sector Lead Interview, June 2024)**

A similar pattern took place within the **Water Supply and Sanitation** team, where the sectoral partner merged MERLIN activities with their wider network activities.

**“Outside of the MERLIN project, we've organised webinars, for example, we've organised conferences and events on the topic of nature-based solutions. We have created relationships with stakeholders that are involved in that, and basically having those conversations with the stakeholders to see what we could do better to implement nature-based solutions.” (Coordinator / Sector Lead Interview, June 2024)**

### 3.2.2 Summary and reflections

Engaging stakeholders effectively throughout the MERLIN project involved various strategies and adaptations. Key reflections on this process provide insights into successes, challenges, and opportunities for future improvements. There was an effort to build a CoP within MERLIN amidst many other stakeholder platforms addressing similar yet distinct topics. MERLIN aimed to build on this by bringing experts together to share information, although this sometimes-risked duplication with existing initiatives.

The stakeholder engagement process involved various on- and offline activities, including sharing drafts and seeking feedback on RT reports. These methods were designed to foster discussion and refine the strategy. Allowing participants time on the agenda to give their feedback on the topic enhanced engagement and provided a more accurate representation of diverse views.

**“Its lessons learned from the work that they are doing on a daily basis, and I think that was super useful.” (Coordinator / Sector Lead Interview, June 2024)**

Time constraints limited opportunities for participants to set their agendas and highlight their priorities, however, breakout sessions sometimes addressed this gap. A full-day in-person workshop would have facilitated more in-depth conversations and the development of stronger inter-personal relationships.

The symbiosis of the Strategy and the CoP/RT processes was crucial and sustaining ongoing dialogue and iterative development proved essential for effective stakeholder engagement.

**“You need the community of practice to start developing to develop the strategy and out of the development of the strategy to develop the community of practice” (Coordinator / Sector Lead Interview, June 2024)**

One observation is that some sector leads seem to focus primarily on meeting immediate objectives rather than developing a self-sustaining CoP with a long-term vision. Although there has been considerable discussion about future steps over the past six months, comprehensive plans beyond finalising the Strategies are not yet evident. This is particularly notable in light of the perspective shared regarding the importance of ongoing interaction for sustaining valuable contributions. Establishing connections between some of the sectors and NbS has proven challenging, which might influence the motivation for continued collaboration.

The approach in WP4 started from the perspective of how six economic sectors could support freshwater NbS approach; and in five of the six cases, sectoral partners with direct links to the sector were part of the implementation process. The sectoral partners’ network and commitment played a significant role in engaging the sector for some, whereas other teams were new to the sector, but managed to develop good engagement through their carefully planned approaches. Regular exchanges within MERLIN, including bilateral meetings with sectoral partners and consortium meetings, were crucial in shaping the engagement process. Additionally, internal project meetings provided valuable opportunities for sharing tips, replicating successful strategies, and reflecting on what worked and what didn’t. Here, some individuals were particularly dedicated in helping bridge between their sectoral participants and the wider team working transformations.

Reflecting on the overall process, it is evident that while the RTs and associated activities made progress, there is room for improvement. Prioritising the evolution of the strategy into a co-created, actionable plan is essential. The ongoing challenge lies in driving implementation and sustaining momentum beyond the project's end, addressing concerns about the actionability of engagement.

Another key lesson learned is the need to balance the quantity of information with the quality of interaction. These reflections highlight the importance of continuous dialogue, tailored engagement strategies, and balancing depth with practical constraints. However, these are time consuming activities when many agree that networks and leadership in this area are required, but few organisations view themselves as responsible for delivering these.

### 3.3 How did the sectoral engagement evolve over time?

This section reflects on evolution with the MERLIN teams and wider changes in engagement with the non-MERLIN stakeholder organisations.

#### 3.3.1 Changes within the MERLIN project

After the first year, the original intention was to focus on four economic sectors: agriculture, inland navigation, water supply and sanitation, and insurance. However, it became clear that the other sectoral teams had commitment that made it sensible to maintain engagement with all six.

**“So, when we started, it started like that with a bit more intensive with agriculture and navigation, water supply and insurance, but then as the task goes on, but I think it was a big advantage that we involved them [hydro and peat] because they are very engaged and very often, many of them would like to be involved in restoration beyond green washing”**  
(Coordinator / Sector Lead Interview, June 2024)

The **Agricultural** team experienced considerable turnover, initially led by a senior staff member who had significant other commitments and supported by an intern. As the project progressed, the leadership shifted to a new team member with agricultural experience. Additional staff joined in the third year, and other MERLIN consortium members began contributing to the team. The Insurance, Navigation and Water Supply & Sanitation (WSS) sector teams have also changed both leaders and organisations during the project.

In the case of **Insurance**, the sectoral partner (I-Catalist) stepped into the role as sectoral lead during the first year, due to staff changes in WWF; and the same individual has led the sectoral team since this time, providing continuity between the 3 RTs. A similar situation took place with the **WSS** sectoral team, when the sectoral partner (Aqua Publica Europa) took on the sectoral lead after the first year due to staff changes in WWF. The same team have worked together since then, again providing continuity. Finally, the **Navigation** team was led by WWF Hungary through the first two RTs, but in the third year, responsibility transitioned to Deltares, to consolidate resources and refine the engagement to support the drafting of a sectoral strategy; but the sectoral partner (from BfG drawing on their expertise and membership of the PIANC network) has remained constant throughout. In all these cases, the WP coordination team led by WWF provided support, advice and personnel to these teams. This evolution and turnover in these sectoral team may have amplified the challenges involved in engaging the sectors.

In contrast, the sectoral leads for **Hydropower** and **Peat Extraction** have remained unchanged throughout the process, providing continuity of relationships and institutional memory of prior discussions. An important difference is that the PE team contained the active sectoral partner (IPS), whilst Hydropower team did not have a dedicated sectoral partner, relying on the goodwill of other MERLIN consortium members (e.g. SYKE and TNC) to assist them in learning about the sector.

The teams also had varying approaches to defining and refining the ‘cooperation points’ from which to build the common interests that a CoP is built upon. The **Agricultural** team encountered some initial challenges in aligning different views on defining the sector, where to focus and how to best engage farming interests, although regular project meetings helped in aligning perspectives. The sectoral partner organisation's specialised remit was somewhat different from the project's broader agricultural scope. As the focus of the project refined, particularly with the introduction of the Value Chain exercise, the sectoral partner became increasingly engaged and effectively contributed their expertise to drive the process forward. The **Peat Extraction** team also had robust discussions about the potential mismatch between the sector's priorities and the focus on restoration of past extraction sites. The benefit of working together over three years has led to identifying common ground and learning from the multiple perspectives expressed. In the other teams, there have been challenges to get sectoral organisations engaged with the topic of NbS, but the teams themselves were able to identify and agree on common areas to focus upon with less deliberation, partly as the teams were smaller or contained within a single organisation rather than negotiating across different partners.

These internal changes are highlighted as they were important in the social learning that has occurred within the project, not only with external stakeholders but also internally between project partners. Whilst stability is beneficial in terms of maintaining relationships and more efficient planning and implementation of activities, sometimes, the changes in the team brought new ideas and energy. Therefore, change is not good nor bad but does require additional time and resource to facilitate handovers and ensure the wider CoP relationships are not disrupted.

### 3.3.2 Changes in the Sectoral Communities of Practice

The engagement within the MERLIN sectors evolved over time, reflecting shifts in focus and challenges in stakeholder participation. Organisations and individuals involved varied, with some joining in the second or third year while others left. For example, three feedback respondents only joined the sectoral CoPs during 2024. However, there are problems with embedding new stakeholders when trying to draft a Strategy:

**“I proceeded in line with the two previous roundtables. I didn't attempt to start inviting new people to the roundtables also because for such an online meeting, you only have a couple of hours and if you then bring in new people, then, that might take a lot of time.” (Coordinator / Sectoral Lead Interview, June 2024).**

**Agriculture:** The numbers of participants engaged decreased over time from 18 organisations involved in interviews; to 16 organisations present at the RT in 2023 and ten organisations at the RT in 2024. Only two organisations (both part of the MERLIN consortium) were involved across all three years. Three organisations were interviewed and attended the 2023 RT; and four (all MERLIN partners) attended both RTs but were not interviewed. Therefore, in this case, there was little ongoing commitment to a CoP.

The approach to engagement also changed. For example, in the agriculture sector, in the second roundtable, the focus shifted from interviews and strategic policy actors to working with local development champions and addressing on-the-ground realities. This pivot aimed to engage with local farming networks and address issues at the micro-catchment level. This local focus was a big change from the previous year's approach, which had engaged with broader European-level stakeholders and policymakers without directly involving farming organisations. The sectoral lead explained that the decision to focus on local networks stemmed from a recognition that EU-level farming representatives were often influenced by large multinational interests rather than local realities.

**Hydropower:** The numbers of participant organisations engaged increased from the first RT (n=9) to the second RT (n=18) and then decreased to 15 organisations contributing to the last RT. One industry network organisation attended RTs in 2022 and 2023 but was unable to attend in 2024 at the last minute. They will comment on the draft strategy and then have a 1-2-1 meeting to discuss any further aspects, so they are still committed. Four organisations were involved across all three years; two were members of the MERLIN consortium and the other two were network organisations representing energy companies. A further eight organisations were involved in two of the three RTs. Therefore, whilst there was quite a bit of turnover across the three years, there was a core group that stayed with the project and contributed to a deepening mutual understanding.

The focus of the Hydropower community of practice has stayed consistent in terms of addressing the EU Biodiversity Strategy and Nature Restoration Law objectives of removing barriers to free-flowing rivers. The framing of this has evolved from only addressing hydropower assets, to how the hydropower sector can support a strategic NbS approach to barrier removal within catchments. By the time of the revised deliverable, the sectoral participants were unhappy with the focus on barrier removal - for more information, see the Hydropower Strategy (Carmen & Blackstock, 2025).

**Insurance:** There were 11 participating organisations at RT1 in 2022; this increased to 14 participating organisations at RT2, and there were 14 organisations participating in the last RT. Of the 30 active organisations, the majority only attended one RT with five organisations outside of MERLIN participating in more than one. Of those five organisations, one was a private insurance company, one was an insurance association, one was a research centre, one was a public insurer, and one was a consultancy.

The focus for the insurance sector was very challenging potentially because large scale rural freshwater restoration was not yet being considered widely as a NbS for the sector. Despite significant effort to invite and involve representatives, high turnover and the difficulty of making the case for direct involvement meant that maintaining engagement was a challenge. Instead, the focus was on getting a mix of opinions to draw the big picture.



**Navigation:** There were 12 participating organisations at RT1 in 2022, 9 in RT2 in 2023 and 12 again in RT3. Six organisations (5 from the MERLIN consortium; one other international commission) attended all three RTs; with another three public sector organisations attending two out of three. Therefore, there was continuity of engagement, but this was limited beyond the MERLIN consortium.

The focus for the sector was identified early in the process, with a strong focus on illustrating how NbS could co-exist with navigable rivers rather than trying to tackle multiple other issues such as changing boat design or addressing water quality concerns from wastewater or litter. The challenge then became one of finding sectoral organisations who shared this interest in freshwater measures like reconnecting side arms or removing rip-rap from embankments.

**Peat Extraction:** Participation in the RTs was as follows: 13 organisations attended the RT1, 16 the second, and 14 the third. It is worth noting that these counts reflect the number of organisations, with some organisations sending multiple representatives. Nine organisations attended all three RTs, while another four attended two out of the three. These were primarily private companies or networks/associations supporting the PE industry. This showed strong continuity, making it easier to build on prior discussions.

However, the focus took some time to agree. Although the need to increase the ambition of the ‘after use’ of extraction site was identified at the first RT, much of the discussion at the 2<sup>nd</sup> and 3<sup>rd</sup> RT remained focused on discussing the problems and challenges facing the sector, rather than agreeing common solutions. Thus, whilst continuity and commitment were invaluable in getting the CoP to this stage, they are not necessarily a guarantee to finding agreed solutions.

**Water Supply & Sanitation:** Attendance at the RTs varied: eight organisations participated in RT1, 11 in the second, and 11 in the third. However, many organisations attended only one RT. Only three organisations (all MERLIN partners) attended all RTs, with a public institution attending the second and third, and a private interest network attending the first and third. This indicates good engagement overall but limited continuity beyond the MERLIN consortium.

As with other sectors, it took time to refine the focus of the CoP beyond the importance of raising awareness of NbS. The participants were often focussed on drinking water and wastewater treatment, whereas the MERLIN examples were more appropriate in terms of drought resilience and reducing diffuse, not point-source, pollution. Therefore, it took time to find the common cooperation points, particularly when there was limited continuity in the RT participants.

In summary, while there were some successes in engaging new stakeholders and adapting the focus of the CoP to better fit local and policy-level needs, there were also substantial hurdles in maintaining consistent participation. The value of a CoP lies in the quality of interactions rather than sheer numbers. A larger or more diverse sector, such as ‘agriculture’, might attract more participants compared to more specialised sectors like large river navigation or peat extraction. As Figure 7 shows, it was difficult to retain engagement with organisations across the three years; however, some sectors (e.g. Peat Extraction) were able to achieve continuity more than others. However, these data in Figure 7 may mask discontinuity due to different representatives from the same organisation attending, versus actual continuity where individuals might be unable to attend a RT but still engage with materials and provide feedback.

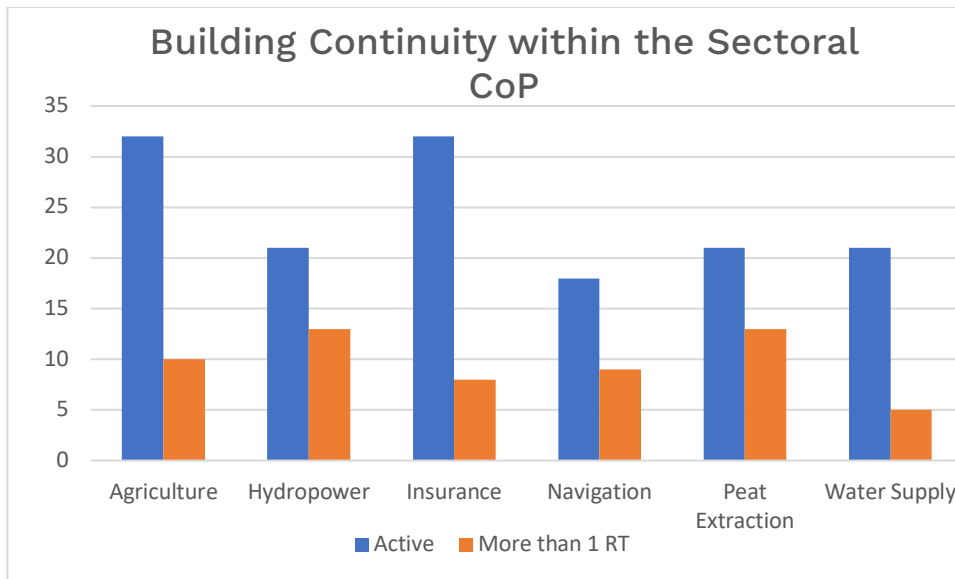


Figure 7: Creating repeat engagements per sector

### 3.4 Summary: Patterns in the Who and How of Sectoral Stakeholders engaged in MERLIN

The RTs were integral in defining problems and identifying common goals for sectoral stakeholders. While some sectors have made significant strides, “...for the others, I think especially as they are all so much larger, we probably have not been too successful in defining these areas, but it's not too late, especially now as we have the Nature Restoration Law” (Coordinator / Sector Lead Interview, June 2024).

There was variability in how well the sectors engaged. Hydropower and peat extraction sectors proved surprisingly engaged. This contrasted with the more challenging experience in agriculture and insurance, where engagement remained more superficial despite efforts to address sector-specific issues.

In some cases, the CoP managed to form effective networks even without pre-existing connections. This success was often attributed to a combination of seeking support from consortium partners, investing time to build understanding, and the persistence of certain individuals. However, other sectors, despite having networks and enthusiastic efforts, faced significant challenges. The perception of the lead organisation's credibility and the challenge of finding a niche in a crowded space were critical. This reflects a need for more focused and tangible goals from the start. However, it was agreeing these goals that proved difficult for our sectoral CoPs.

Engagement patterns showed a tendency towards EU or international organisations, contrasting with the national-level organisations that were suggested in the scoping questionnaire. The sectoral division within Commission institutions created complications, as certain DGs like ENV, FISMA, Regio, AGRI, CLIMA were relevant to multiple sectors. This overlap led to consultation fatigue and difficulties in aligning topics with the roles and structures of these institutions. Finding a DG with an interest in peat extraction proved challenging despite its relevance to biodiversity, climate change, and rural development policies.

The successes and challenges encountered in our engagement practices highlight the need for a flexible and adaptive approach to stakeholder engagement, particularly in complex and diverse sectors. The challenge of engaging with six sectors simultaneously, and the difficulty in balancing resources, suggests that focusing on fewer, more defined sectors might have been more effective. Having dedicated sectoral partners, individuals willing to act as mediators between their sectoral colleagues and the project proved very important, to help set up but also sustain a CoP (see section 1.2.1).

## 4 Stakeholder perceptions and views on mainstreaming NbS

Building on the analysis of stakeholder participation patterns in the previous section, this section reflects on the evolution of sectoral stakeholder perceptions and views on mainstreaming NbS between 2022 and 2024. Over this period, a range of engagement activities were conducted across six economic sectors—Agriculture, Hydropower, Peat Extraction, Insurance, Water Supply and Sanitation, and Navigation. These activities were designed to build a CoP around NbS, along with advancing discussions on sectoral challenges, opportunities, and transformations.

This section presents the outcome of the analysis of these engagements by:

- Identifying common concerns across the sectors, such as barriers to implementation, funding, and regulatory challenges
- Highlighting sector-specific differences
- Pinpointing themes that emerged as particularly relevant to some sectors but were either less prominent or absent in others
- Examining discrepancies in how sectors approach the mainstreaming of NbS and their perceived roles in the process
- Differentiating between perceptions linked to institutional compared to on-the-ground NbS
- Reflecting on how stakeholders view their roles in implementing NbS, including questions of responsibility
- Tracing shifts in perspectives over time—from initial discussions in 2022 through to 2024, focusing on how longitudinal engagement has helped sectors overcome barriers or highlighted ongoing challenges
- Assessing the status in 2024 and evaluating whether sectors are now more or less likely to support NbS based on these discussions.

As outlined in Section 3, the CoPs engagement activities progressed from introducing the MERLIN project and understanding sectoral views on NbS in 2022, to practical strategy development in 2023, focusing on regulatory and market mechanisms. By 2024, the focus shifted to gathering feedback on proposed strategies and long-term plans. For more details, **Annex 2** provides a comprehensive overview of sectoral stakeholder engagement, while **Annex 5** contains a table summarising key quotes from the engagement activities. The quotes from the six sectors are categorised into barriers and enablers (Annex 5) and are synthesised under two themes in this section: institutional transformation (Section 4.1) and on-the-ground transformation (Section 4.2). This section then looks at the changes over time and their implications for the mainstreaming of NbS, concluding with reflections on the stakeholder engagement process.

### 4.1 Institutional transformation: barriers and enablers

Institutional transformation is essential for mainstreaming NbS, but it faces distinct barriers across all sectors, particularly around **conceptual clarity**. In the **Agriculture** sector, stakeholders found it difficult to distinguish between traditional sustainability practices and NbS, leading to confusion about its practical applications. This lack of clarity extended to the **Hydropower** sector, where NbS was often seen as a vague "container term" rather than a clear framework for specific actions like dam removal. Hydropower stakeholders expressed that the ambiguity around NbS terminology hindered communication with both environmental groups and policymakers. In the **Insurance** sector discussion, doubts arose over what constitutes a nature-based solution, with some questioning whether certain actions should be classified under NbS. This issue of classification was mirrored in the **Inland Navigation** sector, where stakeholders struggle to define NbS and differentiate them from traditional restoration, creating uncertainty that hampers adoption. While awareness is still developing, there is growing recognition within waterway administrations. **Peat extraction** stakeholders highlighted a challenge in aligning NbS with restoration goals, as they found the term too broad, creating ambiguity in implementation. Lastly, in the **WSS** sector, varying definitions across municipal departments led to fragmentation and inconsistency in NbS implementation.

In terms of **financial and regulatory challenges**, sectors exhibited different concerns. **Agriculture** stakeholders noted a lack of financial incentives and unclear policies as major barriers. They struggled to see how NbS could be economically viable without stronger support from programmes like the Common Agricultural Policy (CAP). Meanwhile, the **Hydropower** stakeholders cited conflicting EU regulations, such as balancing energy production goals with water directives, which further complicated NbS adoption. In the **Insurance** sector, the absence of standardised tools to measure NbS

effectiveness hindered progress, with stakeholders hesitant to back NbS projects without clear cost-benefit analyses. Similarly, **Inland navigation** sector stakeholders highlighted that NbS can offer favourable cost-benefit ratios, as seen in projects like the Madeira River, where they outperformed traditional methods. Stakeholders also discussed that NbS reduce maintenance efforts, such as dredging and repairs, improving both sustainability and cost efficiency. However, significant delays in planning and approval slow adoption and hinder wider use of NbS in the sector. The **Peat extraction** sector identified financial feasibility as a major hurdle, especially regarding the lack of incentives for large-scale restoration. The slow, complex process of obtaining rewetting or restoration licenses, often taking years, further complicates efforts. Stakeholders mentioned that in some cases, environmental regulations conflict with NbS initiatives, delaying timely implementation of restoration practices. The **WSS** sector often operates separately from land-use planning, making it difficult for municipalities to take a holistic approach to NbS. Additionally, many municipalities lack the financial and human resources needed to implement NbS effectively.

Some **sector-specific themes** emerged. In the Agriculture sector, challenges in engaging farmers were evident, with many feeling their concerns have not been adequately addressed, leading to reluctance in participating in policy discussions until tangible needs are met on the ground. Additionally, collaboration on a catchment scale is perceived as difficult, as farmers are primarily focused on the immediate benefits to their own land and lack the time or resources to consider broader regional impacts. In the **Hydropower** sector, stakeholders were concerned about the cultural and heritage value of some in river transversal barriers. Local resistance to dam removal, even when these structures are no longer functional, posed a significant challenge to NbS mainstreaming in this sector. By contrast, in the **Peat extraction** sector, the lack of reliable data on greenhouse gas emissions from extraction sites was a primary issue, with stakeholders calling for more robust data to demonstrate the benefits of restoration. This focus on emissions data was less prominent in other sectors. In the **Insurance** sector, it was noted that some companies are reluctant to share data on their NbS efforts due to competitive concerns, which hinders collaboration and broader adoption. They expressed that without robust cost-benefit analyses, insurers are hesitant to invest, as the long-term effectiveness of NbS remains uncertain. Stakeholders called for regulators and public entities to step in, facilitating data sharing and ensuring NbS are properly evaluated and integrated into risk management strategies. In the **Inland navigation** sector, the focus was on integrating NbS into existing infrastructure, with stakeholders seeing NbS as complementary to traditional methods rather than a replacement. For the **WSS** sector, the separation of responsibilities amongst water utilities, urban planners, and environmental regulators makes it particularly challenging to achieve cohesive, cross-sectoral governance for NbS. Stakeholders argued that national-level policies often conflict with local practices, and that the lack of alignment across different governance scales impedes mainstreaming.

There were also discrepancies in how sectors viewed their **roles and responsibilities** in mainstreaming NbS. **Agriculture** stakeholders believed that the government and policymakers should take the lead in providing financial incentives and clearer guidance, as participants discussed that farmers would be unlikely to adopt NbS without economic support. Public sector representatives highlighted that the current CAP lacks strong incentives for NbS and is often vague or poorly implemented at the national level. They stressed the need for binding regulations to ensure compliance and wider adoption, as voluntary incentives alone may not be sufficient to drive widespread uptake of NbS. **Hydropower** stakeholders saw local communities and heritage organisations as key influencers. Hydropower participants also expressed uncertainty over leadership in NbS implementation, suggesting stronger leadership from both public and private sectors. **Insurance** stakeholders argued that the public sector should establish a framework for projects that deliver public goods, such as flood protection and water quality. They emphasized that stronger regulatory frameworks, legislation, and clearer evidence of NbS effectiveness would encourage private companies to participate in NbS initiatives. Conversely, **Inland navigation** stakeholders saw their role as active participants, noting that NbS could be integrated into existing projects to improve sustainability. However, resistance persists within parts of the shipping industry, which prioritize traditional grey infrastructure and view rivers mainly as transport routes, overlooking ecological benefits. NbS are highly site-specific, and stakeholders emphasised that rivers like the Danube and Rhine have unique challenges, complicating the implementation of general solutions across inland waterways. **Peat extraction** stakeholders believed that governments needed to create stronger policies and financial incentives but acknowledged that landowners and private companies also had roles in restoration efforts. The stakeholders discussed the value of NbS and responsible land management, and argued that with proper guidance and partnerships, they would be willing to contribute. However, stakeholders stressed that without strong economic incentives, companies and landowners are unlikely to undertake restoration. Lastly, the **WSS** sector stressed that public-private coordination was essential, with public agencies needing to take the lead in establishing

governance frameworks. However, the WSS was probably the sector with the highest interest in implementing NbS, driven by strong support from municipalities and water utilities. This interest is particularly focused on addressing challenges like flooding, climate change, and drought. Stakeholders highlighted that NbS provide multiple co-benefits, such as improved water quality, biodiversity protection, and enhanced public wellbeing, which often outperform traditional grey infrastructure solutions.

While the engagement process has helped address some barriers to institutional transformation, significant challenges remain, particularly regarding conceptual clarity, financial incentives, and governance structures. By 2024, all sectors had become more open to NbS, however, some sectors continued to struggle with the complexities of social, economic, and regulatory factors in mainstreaming NbS.

## 4.2 On-the-ground transformation: barriers and enablers

The on-the-ground transformation of NbS is primarily hindered by practical barriers, including **data limitations and difficulties in measurement**. In the **Agriculture** sector, stakeholders pointed out that it is challenging to quantify the long-term benefits of NbS, especially in areas like soil health, water quality, and biodiversity. These benefits take years to materialise, which would make it difficult for farmers to justify upfront costs without clear short-term returns. The **Insurance** sector echoed concerns about assessing NbS effectiveness, given the longer timeframes compared to traditional infrastructure, and the lack of shared data further complicates this. Expanding the EU Taxonomy to include more insurance activities related to water and climate risks could align the sector with sustainability goals. Classifying NbS as risk reduction measures would help insurers better integrate these solutions into their financial frameworks. Similarly, the **Inland navigation** sector found it difficult to prove the benefits of NbS in real time. Although NbS can enhance flood resilience, demonstrating these effects immediately has been challenging, leading to reluctance in investment. The **Peat extraction** sector faced its own set of challenges, particularly the lack of reliable data on the impact of restoration, which slowed wider adoption of NbS. Stakeholders noted ongoing disagreement over effective peatland restoration, causing fragmented efforts and confusion. Without clear guidelines or success metrics, evaluating NbS projects and ensuring consistent outcomes remains difficult. In the **Hydropower** sector, stakeholders discussed that companies possess vast amounts of valuable data, but they are often reluctant to share it due to the significant time and financial investment involved in its collection. Lastly, in the **WSS** sector, participants noted that clear examples are needed to effectively assess the benefits of biodiversity restoration. They suggest that new tools and artificial intelligence could help organise databases with examples and calculate the costs of both action and inaction. This would provide decision-makers with tools to compare benefits and costs when considering the implementation of solutions.

One common barrier across five of the six sectors is the **conflict between economic interests and environmental goals**. In the **Hydropower** sector, it was argued that stakeholders from hydropower and conservation often have conflicting objectives, which can hinder the mainstreaming of NbS, as economic interests do not always align with conservation goals. However, stakeholders argued that common ground can still be found on issues like restoration and sustainable water management, and emphasised the need for a balanced, holistic approach that does not prioritise climate targets at the expense of biodiversity goals. The **Peat extraction** sector faced its own economic challenges, specifically the lack of financial incentives for large-scale restoration. Without a clear economic rationale, companies in this sector were hesitant to undertake restoration, which is viewed as costly without external support. In **Agriculture**, stakeholders similarly focused on the need for stronger financial incentives to address the difficulty of monetising the long-term benefits of NbS. While there is growing interest, particularly amongst farmers focused on soil health, the long-term benefits, such as improved biodiversity, water retention, and carbon storage, must be clearly demonstrated to encourage wider adoption. The **insurance** sector recognised the potential of NbS to mitigate climate risks, with large global insurance groups gradually incorporating them into sustainability strategies, and exploring ways to align NbS with broader environmental and biodiversity goals. However, the sector remains cautious about investing without concrete data and clear comparisons to traditional infrastructure. The Inland navigation and WSS sectors emerged as notable exceptions. For the **Inland navigation** sector, stakeholders argued that NbS should be seen as part of a broader strategy to enhance resilience, rather than a complete alternative. NbS can reduce maintenance efforts like dredging and enhance outdated infrastructure to support ecological and sustainability goals. Initially, there was resistance, particularly concerning lower depth conditions, but NbS gained acceptance as a tool to maintain optimal river width and depth. NbS also align with EU Green Deal goals, helping reduce

emissions in inland waterways and supporting environmental objectives like river restoration. Stakeholders advocated for institutionalised cooperation between navigation and ecological restoration, with programmes like Germany’s Blue Belt serving as models for NbS implementation. Similarly, the **WSS** sector argued that NbS, when additional benefits such as health, biodiversity, and wellbeing are considered, they demonstrate clear superiority over traditional (grey infrastructure) solutions, offering a more comprehensive and sustainable approach.

Despite these barriers, participants also discussed enablers to support NbS on the ground, primarily through the **demonstration of benefits**. In the **Agriculture** sector, stakeholders emphasised the need to showcase successful case studies that clearly demonstrate both the economic and ecological benefits of NbS. They noted the importance of generating more scientific data to quantify these benefits and help persuade farmers to adopt NbS. Similarly, the **Inland navigation** sector highlighted the value of demonstrating how NbS can reduce maintenance costs, such as through less dredging and enhanced flood protection, to gain broader support. Stakeholders noted that NbS offer favourable cost-benefit ratios. In the **Peat extraction** sector, monitoring the impact of restoration efforts on greenhouse gas emissions has become an important tool for encouraging further adoption, with clear data on environmental benefits helping convince stakeholders of NbS value. NbS, such as peatland rewetting, support carbon sequestration and biodiversity restoration, and stakeholders argued that the growing carbon credit market offers financial opportunities. In the **Hydropower** sector, while dam removals are still contentious, there is potential to demonstrate how such actions can lead to long-term ecological and community benefits. The Hydropower sector recognised NbS for providing multiple benefits, including water management and energy reduction. In the **Insurance** sector, there is a growing realisation of the need to create robust metrics for measuring the risk-reduction benefits of NbS, particularly in the context of climate adaptation. Stakeholders in the **WSS** sector emphasised that long-term monitoring and transparent evaluation systems are essential for tracking the success of NbS projects, arguing that these tools are key to justifying broader adoption. They also highlighted that NbS provide benefits beyond single objectives like water security. By assessing their effectiveness across multiple factors, such as biodiversity and public health, stakeholders contended that NbS often outperform traditional grey infrastructure.

**Local stakeholder engagement** also plays a key role in enabling on-the-ground mainstreaming of NbS. In the **Peat extraction** sector involving local stakeholders in monitoring has proven effective in building support for restoration initiatives. When local actors see tangible results, resistance decreases, and cooperation improves. However, better engagement with landowners and local stakeholders - often resistant due to lack of awareness or financial incentives - is needed. Knowledge gaps within the industry about restoration techniques also hinder progress, making upskilling and improved communication essential for overcoming these challenges. Similarly, in the **Inland navigation** sector, stakeholders noted that engaging local actors in NbS monitoring and implementation projects increased acceptance of these solutions. Stakeholders also advocated for collaboration between navigation and ecological restoration sectors, citing programmes like Germany’s Blue Belt as models. **Insurance** stakeholders noted that public resistance, especially to infrastructure changes, can hinder NbS efforts where public support is crucial. The sector sees value in public-private partnerships, allowing insurers to co-finance NbS projects, contributing to risk reduction while lowering their exposure to climate risks. In **Agriculture**, direct involvement of farmers in demonstration projects with clear evidence of NbS benefits was seen as key to accelerating adoption. Stakeholders emphasised the need for catchment-wide collaboration, particularly for water management, and stressed that multi-level cooperation between farmers, municipalities, and environmental authorities is vital for maximising NbS benefits across regions. In the **Hydropower** sector, stakeholders recognised that successful implementation requires strong local stakeholder engagement, as collaboration within the sector and across sectors, along with a shared understanding of goals and tools are key to maximising their effectiveness. Stakeholders argued that successful mainstreaming of NbS requires leadership and coordination at local, national, and European levels. Stakeholders in the **WSS** sector increasingly recognise the importance of involving local municipalities and stakeholders in decision-making, emphasising that adopting interdisciplinary teams is crucial for a more integrated approach to water management. This collaborative approach, they argued, is essential for securing the necessary buy-in to drive wider adoption of NbS.

Sectors differed in their views on who should bear the **costs of NbS** implementation and who should benefit. In the **Agriculture** sector, stakeholders consistently argued that government subsidies and policymaker support are essential for widespread NbS adoption. Without this financial backing, many farmers are unwilling to take on the risks associated with long-term investment in NbS. Stakeholders emphasised that public funds, carbon credits, and tailored programmes are motivating farmers to

implement NbS and address environmental challenges. Similarly, in the **Insurance** sector, stakeholders felt that the public sector should provide a framework, particularly for projects that deliver public goods, such as flood protection or water quality improvements. **Peat extraction** sector stakeholders recognised the role of private companies in financing restoration but concerns remain about the financial viability of large-scale NbS. Stakeholders noted that without strong incentives like subsidies or grants, private companies and landowners are unlikely to pursue restoration, arguing that current CAP funding and mechanisms do not sufficiently support NbS adoption in the sector. The **Inland navigation** sector saw NbS as a cost-effective solution to reduce long-term maintenance costs, though initial investments remain a barrier. In **Hydropower**, the question of who should bear the costs is more complex, as cultural and regulatory hurdles make it difficult to assign responsibility. Lastly, the **WSS** sector emphasised the need for public investment, particularly in large-scale NbS projects. The sector's separation from land-use planning hinders a holistic approach, and many municipalities lack the financial and human resources to implement NbS effectively.

There are **discrepancies between sectors** in their readiness to adopt NbS. The **Hydropower** sector is open but remains cautious, primarily due to cultural and social opposition to dam removal, as well as concerns about energy production impacts. The **Peat extraction** sector remains sceptical about the feasibility of large-scale NbS. Peat extraction companies typically rent land, leaving them disconnected from post-extraction land use decisions. As a result, landowners may opt for alternative uses like agriculture or forestry over restoration. The **Agriculture** sector stakeholders highlighted a disconnect between public funding and private sector engagement. While public funding often supports environmental goods, coordination with private players remains challenging, limiting large-scale NbS adoption. They also noted that advisory services tend to focus on intensive farming, with limited support for nature-based approaches. The **Insurance** sector noted the gap between insurance companies and public regulations. Enforcing legal requirements for NbS investment could encourage greater private sector participation in NbS. Stakeholders in the **WSS** sector expressed growing interest in NbS, however, they noted a significant lack of awareness about NbS benefits amongst professionals and policymakers, with inconsistent terminology and misunderstandings hindering effective communication and broader adoption. Successful implementation, they argued, requires strong public-private partnerships and coordination across governance levels, including the integration of NbS into water master plans and ensuring cooperation between spatial planning, water management, and other relevant sectors. Although it was argued that many stakeholders in the **Inland navigation** sector still view rivers primarily as transport routes, stakeholders discussed how integrating NbS into the transition toward zero-emission transport could modernise the sector while supporting environmental goals like river restoration and pollution reduction.

Overall, significant barriers remain, particularly around data availability, financial feasibility, and stakeholder engagement. Demonstrating NbS benefits and involving local stakeholders in monitoring efforts are helping to build momentum, but further efforts are required to align economic and environmental interests and establish the financial mechanisms necessary to scale up NbS across all sectors. Table 4 summarises the common barriers to mainstreaming NbS, as well as the corresponding enablers that could help overcome these challenges. It's important to note that at the time of drafting this report insights from the project's work on cost-benefit analysis were not yet available.

*Table 4: Overview of common barriers and enablers across the six economic sectors.*

Barriers	Enablers
<b>Clarity and communication of NbS</b>	
Lack of Conceptual Clarity of NbS	Enhancing Conceptual Clarity of NbS
Lack of Clarity Surrounding NbS Actions	Improved Communication Strategies
<b>Data, Evidence, and Measurement</b>	
Challenges in Measuring Results	Developing Standardised Tools and Metrics
Difficulties in Demonstrating Benefits	Adopting Methods to Demonstrate NbS Benefits
Limited Access to Data and Evidence	Enhancing Monitoring and Evaluation
<b>Awareness and Knowledge Sharing</b>	

Low Public Awareness and Engagement	Raising Awareness – General Public
Insufficient Knowledge and Expertise Amongst Sector Stakeholders	Raising Awareness – Sector Stakeholders
Poor Understanding by Policymakers	Raising Awareness – Politicians
Limited Knowledge Exchange	Developing Knowledge Exchange Networks
<b>Complexity and Integration of NbS</b>	
Complexity Due to Different Approaches and Strategies	Hybrid Approaches and Strategies for Integration
Site-Specific Nature of NbS	Integrating NbS with Existing Infrastructure
Unclear Responsibilities	Clarifying Roles and Responsibilities in NbS Implementation
<b>Sectoral and cross-sectoral coordination and collaboration</b>	
Difficulty in Establishing Partnerships	Enhancing Stakeholder Engagement and Collaboration
Challenges in Multi-Sector Collaboration	Promoting Cooperation Within and Across Sectors
<b>Policies, Regulations, and Governance</b>	
Fragmentation, Bureaucracy, and Rigidity of Policies	Coherent Policies and Frameworks
Insufficient/Inconsistent Guidelines and Standards	Simplification and Alignment of Guidelines with NbS Criteria
Challenges in Environmental Requirements Administration	Improved Governance in NbS Implementation
Top-Down vs. Bottom-Up Approaches	Balanced Governance Approaches
Green Deal Implementation Challenges	Green Deal as a Catalyst for Sustainable Practices
<b>Funding and Economic Viability</b>	
Concerns About Economic Viability	Targeted Financial Support
Concerns About Funding for Restoration Beyond Site Level	Exploring Innovative Financing Mechanisms
Public vs. Private Sector Funding Gaps	Private Sector Involvement and Public-Private Finance Models
Lack of Incentives for Restoration	Providing Incentives for NbS Restoration

### 4.3 Changes in perceptions and views on NbS

From 2022 to 2024, the MERLIN project’s longitudinal engagement with stakeholders across various sectors revealed evolving perceptions of NbS. The engagement activities addressed sector-specific barriers and enablers, leading to varying degrees of progress and openness to mainstreaming NbS.

In the **Agriculture sector**, initial discussions in 2022 highlighted confusion about the practical application of NbS, with stakeholders struggling to differentiate NbS from traditional sustainability practices. Farmers were particularly sceptical about the value of NbS, feeling that environmental initiatives could threaten their livelihood. By 2023, stakeholders began to discuss NbS potential benefits, especially for soil health and water quality. Open dialogues allowed stakeholders to discuss and breaking down the false dichotomy between agricultural production and conservation efforts.

**"The more nature-based solutions are applied, the more we know about them, and in the future, it's easier to implement them" (Agriculture RT3, May 2024)**

This shift reflects an increasing willingness to consider NbS, although financial and policy support remained critical enablers.



The **Hydropower sector** was initially sceptical towards NbS, with many stakeholders questioning how dam removal could align with energy production and ecological restoration goals. By 2023, participants began to recognise that NbS could provide ecological benefits, although it was discussed that local resistance to dam removal persisted. By 2024, stakeholders advocated for a more holistic approach, calling for a vision that integrates multiple factors.

**"We need a holistic vision and approach that balances energy and environmental needs" (Hydropower RT3, May 2024).**

Despite an improved understanding of NbS, socio-cultural concerns and local opposition continued to be the main concern.

The **Insurance sector** followed a similar trajectory. In 2022, stakeholders expressed frustration over the lack of clear metrics for assessing NbS effectiveness. By 2023, there was growing interest in NbS as a tool for mitigating climate risks, particularly in the context of flood prevention. However, there were concerns about greenwashing, with participants stressing the need for robust evidence to support NbS investments. By 2024, insurance representatives were favourable to a proposed action relating to the creation of standardised tools and databases to assess NbS risk-reducing benefits, especially in relation to floods.

**"Sharing of data is something regulators should step up" (Insurance RT3, May 2024).**

While support for NbS was increasing, stakeholders remained cautious, calling for clear cost-benefit analyses and regulatory support before committing to large-scale investments.

In the **Inland navigation sector**, early discussions in 2022 reflected limited understanding of how NbS could be integrated with traditional infrastructure. Stakeholders initially equated NbS with ecological restoration, questioning its relevance to navigation projects. By 2023, participants began to recognise NbS's potential for reducing maintenance costs, such as dredging, and improving riverbank resilience. By 2024, navigation stakeholders were more supportive of NbS, particularly as participants discussed that NbS could complement existing infrastructure.

**"NbS should not necessarily be seen as a complete alternative but as part of a broader strategy to improve resilience" (Navigation RT3, May 2024).**

Clarifying the benefits of NbS helped align ecological goals with the sector's needs, fostering a cautious acceptance that NbS could enhance rather than impede navigation.

In the **Peat extraction sector**, stakeholders were initially sceptical about the feasibility of large-scale NbS, particularly due to the lack of financial mechanisms and practical support for restoration efforts.

**"There's a lot more work that's needed on that to actually make it financially feasible to do anything. A lot of the carbon farming things that we see now are effectively small scale and just done as sort of experiments and nothing really large scale." (Peat Extraction RT1, May 2022)**

By 2023, there was increased openness to NbS, with discussion around carbon credits and emissions reductions from rewetting projects. However, concerns about cost and scalability persisted.

**"The incentive should be drawn... I don't see money coming from the CAP currently, and I don't see money coming from the member states" (Peat Extraction RT2, July 2023)**

By 2024, participants recognised the role NbS could play in large-scale restoration, with one participant emphasising the need for **"cooperation with actors outside the industry"** to enable these efforts (Peat Extraction RT3, May 2024). So, continuous engagement led stakeholders to gradually accept their part in peatland restoration and to discuss the broader environmental and corporate responsibilities and opportunities.

In the **WSS sector**, discussions in 2022 revealed barriers related to the coordination of land use and water management policies. Stakeholders struggled to see how NbS could be integrated into existing governance frameworks. By 2023, there was growing openness to NbS as a tool for addressing water quality and climate resilience, particularly in response to extreme weather events like floods. By 2024, there was increasing recognition of NbS potential, but challenges remained in coordinating municipal departments and securing long-term funding.

**"You cannot solve this with grey measures... a more comprehensive approach where all sectors and all levels of governance need to be involved" (WSS RT3, June 2024)**

Overall, continuous engagement fostered a shift toward accepting NbS. From 2022 to 2024, the MERLIN project's stakeholder engagement revealed increasing openness to Nature-based Solutions (NbS) across sectors, though challenges remained. Agriculture, hydropower, and insurance sectors showed growing recognition of NbS benefits, while inland navigation and peat extraction sectors gradually accepted NbS as complementary to existing practices. Despite progress, financial, policy, and coordination barriers persisted.

#### 4.4 Implications for mainstreaming NbS

Over the course of MERLIN, progress was made in raising awareness, fostering dialogue, and identifying the key enablers and barriers for mainstreaming NbS, leading to the collaborative design of sectoral strategies. Engagement with various sectors helped highlight important achievements but also exposed ongoing challenges.

There was consensus across the six sectors that regulatory support and policy incentives are needed for mainstreaming NbS, particularly when it comes to aligning private sector interests with broader environmental goals.

**“To me it is the role of the EU to motivate the nature-based solution policies” (Insurance RT2, May 2023).**

The importance of partnerships and collaboration was another shared recognition across the sectors, with sectors such as peat extraction realising the value of learning from successful international partnerships, particularly in fostering cooperation between governments, scientists, and NGOs over the long term.

**“The CSPMA has a longer history of partnerships with governments and scientists and NGOs... but I don't see those same things in Europe though” (Peat Extraction RT3, May 2024).**

This highlights the need for Europe to strengthen its own collaborative frameworks to ensure that NbS projects are based on shared knowledge and long-term partnerships. Sector-specific communication and understanding was enhanced through the RT discussions. These dialogues were essential in building mutual understanding. For instance, participants from the peat extraction sector underscored the need to understand the perspectives of different stakeholders to ensure cooperation and resolve conflicts.

**“There is a lot to take into consideration and we hope to have discussions with partners from other sectors to understand their views and work together” (Peat Extraction RT3, May 2024).**

However, there are ongoing concerns about regulation and the potential for one-size-fits-all solutions. Some sectors expressed apprehension that roundtable discussions could lead to overly prescriptive, top-down regulations.

**““(...) so, that's why I was saying that we all of these conflicting goals and targets in Europe and some countries or member states are better at implementing some of them than others and so we have all of these different playing fields in Europe.” (Hydropower, RT3, May 2024)**

This concern indicates that while progress has been made in dialogue and understanding, there is still wariness about how NbS policies will be implemented across different socio-economic contexts. Across sectors, stakeholders realised that current tools do not fully capture the diverse benefits of NbS. This recognition is crucial for building robust, evidence-based support for NbS and increasing confidence in its economic, social, and environmental returns.

**“The challenge with NbS is that it's hard to measure long-term benefits, especially in terms of river health and biodiversity. The time frame for results is often much longer than traditional interventions.” (Inland Navigation, RT3, June 2024)**

Various concerns remain, particularly around upscaling NbS and ensuring financial viability. The need for financial incentives, particularly for large-scale restoration efforts, was shared across discussions, with stakeholders calling for clearer mechanisms to support long-term investment.

**“We need other funds to finance green transition...for instance, we need a regional development fund to finance climate actions. (...) CAP is not providing a generous amount for rural development and for nonproductive investments. Therefore, we need other parallel financing also because of this big lobby power.” (Agriculture, RT3, June 2024)**

Additionally, the inclusion of key stakeholders, such as landowners, remains a challenge. In some cases, the absence of key actors at RT discussions was seen as a missed opportunity to engage at a

landscape level. This points to the need for more inclusive engagement processes to ensure that all critical actors are involved in NbS planning and implementation.

**"The roundtable process should have included the landowners right from the beginning" (Peat Extraction RT2, September 2023).**

Finally, participants stressed the importance of tailored, case-specific solutions that account for the socio-economic complexities of each sector. This perspective underscores the importance of flexibility and adaptability in NbS strategies to ensure they meet the specific needs of different regions and industries.

**"I do not believe that single, prescriptive NbS solutions exist to address the issues... I believe that case-specific solutions will likely be a combination of many different elements that should also take just transition aspects for stakeholders and landowners into account" (Work Package 4 economic sector questionnaire report, Ibrahim et al., 2022)**

Moving forward, the mainstreaming of NbS will likely depend on tailored approaches that respect regional social-economic conditions:

- In the **Agriculture sector**, there was increased willingness to adopt NbS, particularly as demonstration projects provided clearer evidence of benefits for soil and water systems. However, stakeholders continued to stress the need for financial incentives and policy support to ensure widespread adoption.
 

**"Merlin can widen the views of policymakers and even green activists. If there would be a turn in the policy, financing would follow." (Agriculture RT3, June 2024)**
- The **Hydropower sector** remained cautious, primarily due to cultural opposition to dam removal and concerns about the impact on energy production. Although there was a better understanding of NbS potential, socio-cultural barriers continued to be a concern.
 

**"There is still a cultural and local resistance to removing obsolete dams." (Hydropower RT3, May 2024).**
- In the **Insurance sector**, support for NbS increased, with stakeholders recognising its potential for mitigating climate risks. They agreed that there is a need for more robust cost-benefit analyses and practical metrics.
 

**"We are awaiting tools and frameworks to measure these investments." (Insurance RT3, May 2024).**
- The **Inland navigation sector** exhibited the most marked progress in adopting NbS, with stakeholders recognising its potential for reducing maintenance costs and improving resilience. By 2024, navigation stakeholders were more likely to support NbS as part of broader infrastructure improvement strategies.
 

**"NbS is welcome in fairway development projects if it supports the longer-term conditions of the rivers." (Coordinator / Sectoral Lead Interview, June 2024).**
- In the **Peat extraction sector**, there was increased openness to NbS, particularly around rewetting and carbon credit schemes. However, financial and regulatory support remained essential for large-scale implementation.
 

**"It has to make economic sense for people to do rehabilitation." (Peat Extraction RT2, July 2023).**
- Finally, in the **WSS sector**, support for NbS grew, particularly as a tool for addressing water management challenges and climate threats. However, stakeholders emphasised the need for improved coordination across municipal departments and long-term funding mechanisms to ensure full adoption of NbS.
 

**"There is a need for more interdisciplinary collaboration and long-term funding." (Coordinator / Sector Lead Interview, June 2024).**

In conclusion, the engagement process from 2022 to 2024 helped sectors better understand NbS, yet significant barriers remained, particularly around financial incentives, data standardisation, and socio-cultural resistance. Table 5 presents a comparative overview of sectoral capacity to engage with NbS, highlighting key differences in transformative potential and emerging good practices that can inform future efforts to mainstream NbS across sectoral contexts.

Table 5: Sectoral Differences in Capacity Building and Good Practices for Mainstreaming NbS

Sectoral Differences in Capacity Building and Good Practices for Mainstreaming NbS		
Sector / CoP	Transformative Potential / Capacity Building	Emerging Good Practices / Examples
Peat Extraction	Strong ownership; embedded in international sector networks; proactive leadership from IPS supported sectoral narrative on sustainable restoration.	IPS leadership in positioning restoration as strategic goal within the sector; potential replicable model for sector-led CoPs.
Water Supply and Sanitation	Good integration with public water providers; co-benefits of NbS aligned with public service goals, fostering readiness for future collaboration.	Cross-border dialogue through Aqua Publica; positioned NbS as a utility-wide opportunity; model for inter-municipal collaboration.
Hydropower	No sectoral partner; initial hesitancy due to unclear responsibility; policy drivers are starting to push change; room for leadership if structures emerge.	Use of RTs to gradually introduce NbS concepts; engagement improved when concrete climate risk strategies were discussed.
Agriculture	Fragmented engagement; lack of local actors limit transformation; potential exists if better connected to farming communities.	Highlighting farmer absence helped expose policy disconnect; learning moment for designing more inclusive CoPs.
Insurance	Engaged from data and risk lens; transformation possible through strategic partnerships with active sectors (e.g. agriculture, water).	Application of NbS in insurance modelling showcased analytical strength; data-driven framing may be shared across sectors.
Inland Navigation	Low baseline engagement; transformation dependent on building sector-wide forums and identifying relevant examples of NbS.	Initiating dialogue was in itself a success; mapping stakeholders is a good first step towards sector mobilisation.

## 4.5 Reflection on engagement process

The first roundtables shared similar goals across sectors, aiming to build a Community of Practice (CoP), introduce the MERLIN project, and explore the sector-specific role in mainstreaming NbS. These early discussions primarily focused on understanding how NbS could help sectors overcome potential barriers and gaps, with some sectors choosing a more policy-focused approach. **Peat extraction** and **Hydropower**, for instance, looked closely at their role in achieving Green Deal outcomes. The **Agriculture** sector opted for interviews at this stage rather than roundtables, but the focus was similar—exploring the challenges and opportunities associated with NbS.

As the engagement progressed into the second round of virtual roundtables, efforts were directed towards building on the cooperation established in the first round and strengthening the CoP. Progress on MERLIN’s work was presented, and several sectors brought in external speakers to provide good practice examples. For example, peat extraction included four short presentations, and both Insurance and Water Supply and Sanitation featured two external presentations. These examples helped to encourage more detailed discussions, as they provided real-world inspiration. Agriculture and Insurance also shifted their focus toward discussing relevant policies impacting their sectors, such as the Common Agricultural Policy (CAP) and the EU Taxonomy, reflecting an increasing awareness of the policy dimensions of NbS. However, challenges emerged in some sectors where participants struggled with the complexity of integrating NbS into policy, as noted by the Insurance sector lead:

**"Maybe they wouldn't know how NbS would be implemented in policy. So, we kind of had some good insights still, but maybe not to the extent that we were looking to get." (Coordinator / Sector Lead Interview, 2024)**

The third round of virtual roundtables emphasised gathering feedback on sectoral strategies and specific actions, with sectors such as **Hydropower** and **Navigation** using these sessions to refine their strategies. Other sectors, including **Peat extraction**, **Insurance**, and **WSS**, focused on value chain work and sought feedback from participants. In this final stage, presentations continued to play a key role in illustrating good practices. Agriculture's roundtable included external presentations, which slightly limited the depth of discussion and feedback. This evolution in roundtable organisation highlighted the growing recognition of the value of providing non-research-based examples and real-world case studies to engage participants effectively.

While the engagement process was largely successful, it faced challenges typical of multi-sector, multi-region projects. Achieving high levels of participation was a continual challenge, requiring substantial efforts to coordinate schedules across time zones and work patterns. Ensuring the right balance of participants so that moderation could be effective was another ongoing consideration. This was critical for maintaining active engagement and avoiding frustration.

**"The challenge is in getting people involved and participating and engaged... you need to send a lot of invites well in advance, send reminders to people." (Coordinator / Sectoral Lead Interview, 2024).**

There were also challenges related to introducing new actors into the process later on. Sectors like **Navigation** and **Hydropower** expressed concerns that new participants would require significant onboarding, leading to repeated explanations of foundational concepts and potentially frustrating long-standing participants, which led to some sectors choosing not to bring in new participants in the later stages of the engagement.

**"Introducing anyone new at that stage would mean time-consuming explanations." (Coordinator / Sector Lead Interview, 2024)**

The **Inland navigation** sector, in particular, faced challenges with horizontal discussions due to the diverse nature of motivations and geographical differences within the sector. This made it difficult to apply universally relevant examples or solutions, prompting the sector lead to suggest that future efforts should focus more on regional or local engagement to better address specific needs.

**"Ninety percent of the motivations or interests are different... That's why it was a bit frustrating." (Coordinator / Sector Lead Interview, 2024)**

There was consensus that making better use of existing sector-specific events could help maintain momentum and strengthen sectoral connections, an approach echoed by other sectors such as Peat extraction and WSS.

The overall sentiment from the sector leads was that the engagement activities have made a contribution to raising awareness and building sectoral capacity. Across sectors, the work has helped reduce opposition to the nature restoration law and has created potential for the future adoption of NbS strategies. The sector strategies developed in collaboration with the CoP are meant as a guide to support future changes, with sector leads hoping that these strategies will be taken forward and built upon by the sectors themselves.

In summary, the stakeholder engagement process has demonstrated the importance of adaptable, context-specific approaches in fostering collaboration and building sectoral strategies around NbS. The evolution from initial awareness-building to more detailed policy and practical discussions as well as feedback highlights the value of continuous engagement and the role of practical examples in driving meaningful dialogue. Despite the challenges of maintaining participation and balancing diverse perspectives, the CoPs may have helped to lay the groundwork for future efforts to mainstream NbS across Europe. Table 6 summarises the success factors and challenges in sector stakeholder engagement.

Table 6: Success and Failure Factors in Sector Stakeholder Engagement

Success and Failure Factors in Sector Stakeholder Engagement		
Factor	Success Factors	Challenges / Failures
Integration with existing sector networks	Strengthened leadership and ownership	Lack of integration led to fragmentation and unclear leadership in sectors like insurance and navigation
Presence of a dedicated sectoral partner	Facilitated consistent engagement and sectoral representation (e.g. IPS in peat sector, Aqua Publica in water supply; I-Catalist in the insurance sector; BfG in Inland Navigation)	Inconsistent across sectors; some leads lacked sectoral background or continuity
Sector-specific clarity on NbS relevance	Improved understanding and alignment with sector goals	Ambiguity remained a barrier to full engagement
Use of virtual engagement formats	Allowed broad participation and flexibility despite logistical limits	Hindered deeper interaction and trust-building (e.g. site-based learning)
Involvement of high-level vs. local stakeholders	Engaged strategic actors capable of influencing policy	Exclusion of grassroots actors limited relevance of strategies on the ground
Continuity of stakeholder engagement	Built trust and familiarity over time	High turnover or low continuity reduced momentum in some CoPs
Pre-existing trust and relationships	Enabled quicker alignment and effective dialogue	Difficult to establish in newer or less coordinated sectors
Clear incentives for participation and leadership	Encouraged proactive contributions from sector actors	Stakeholders deferred responsibility to others (e.g. EU, government)
Balance of power amongst stakeholders	Ensured multiple voices and sectoral concerns were represented	Dominance of large organisations sometimes sidelined voices of smaller organisations

## 5 How could considering justice principles in mainstreaming NbS help achieve just transformation?

This section assesses the extent to which MERLIN’s approach to stakeholder engagement supported a just transformation in the mainstreaming of NbS across economic sectors. Building on the methodology outlined earlier, the analysis is guided by a justice framework comprising three core dimensions – representation, involvement, and distribution – each assessed using a set of indicators (Figure 8). These indicators, developed from relevant literature, were used analytically to interpret how justice principles were reflected in stakeholder engagement processes and outcomes. The findings are drawn from data presented in Sections 3 (RQ1) and 4 (RQ2) as well as the coding of interviews, virtual roundtables together with presentations of MERLIN demonstration projects, and stakeholder feedback, and are organised thematically according to the three justice dimensions.

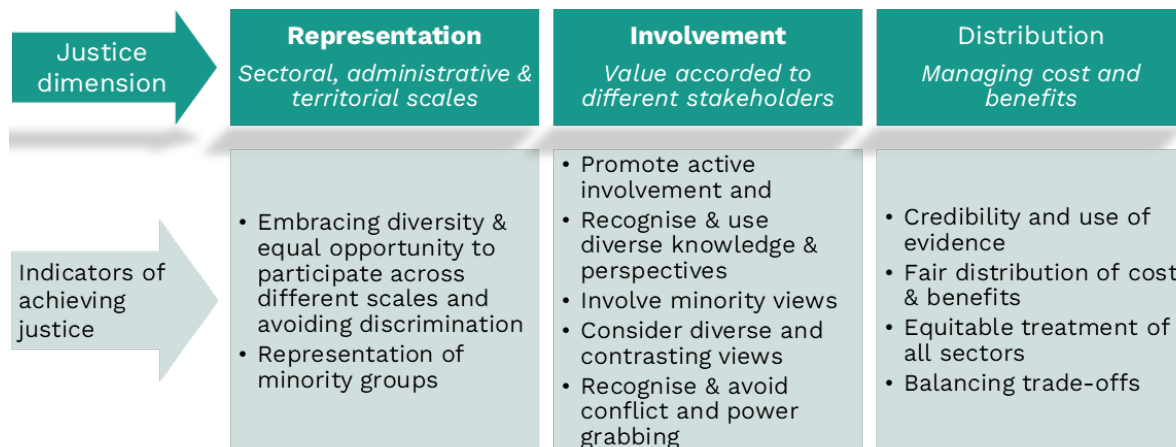


Figure 8: Dimensions and indicators used to assess just transformation

## 5.1 Representation

Representation was assessed using two indicators (Figure 8). The first considers whether stakeholder engagement reflected diversity across sectoral (e.g. public, private, NGO), administrative, and territorial levels, offered equal opportunities to participate, and avoided discrimination in the selection process. The second focuses on the inclusion of minority or underrepresented groups, and what their presence – or absence – means for enabling a just transformation.

### 5.1.1 Diversity, Equal Opportunity, and Avoiding Discrimination

A key aspect of the justice in this was ensuring that the stakeholders were given a fair chance to participate to ensure that the findings fairly represent the actual situation within the sectors. Representative justice was not just about involving minority groups. Given the scale of the project, it was impossible for all stakeholders to be represented directly in the community of practices. Therefore, the idea was to ensure that those participating in the CoP offered a strong possibility of representing the wider stakeholders’ interests. As shown in Section 3, there were diverse stakeholders representing a range of sectors (agriculture, insurance, hydropower, navigation, peat extraction and water supply), multiple administrative scales and territories. Our rationale was to prioritise powerful and influential stakeholders from the for-profit economic sector to get them to take responsibility for mainstreaming NbS, particularly as the wider MERLIN case studies were involving mainly non-economic stakeholders at the local level. First, all the 6 economic sectors had a considerable level of representation, covering the most affected and influential stakeholders. The approach to involve umbrella organisations was essential because there were limited resources and space to involve every individual organisation within the sectors. Hence, the umbrella organisations helped to represent the interest of the individual organisation in most cases.

These umbrella and network organisations covered European and international scales, some of which have membership from national associations as Shown in Section 3. Therefore, apart from covering the sectors, the European scale representation ensured that overall NbS issues within Europe were discussed based on the experience of selected Member States. This was evident in most of the sectors. For example, the agriculture sector was represented by major European level networks such as Naturland, ClientEarth, Agroecology Europe and ECOLISE, while in the Peat extraction sector, there were International Peatland Society and Growing Media Europe together with their national associations. The rest of the sectors such as Insurance, Hydropower, Water Supply and Sanitation, Navigation also exhibited such representation.

Given that major networks are influential, having them represented could help mainstream NbS. For instance, Naturland performs operates standards for organic farming internationally, and by virtue of their broader coverage and expertise, broad to the fore some of the major concerns of the organic farming sector. However, it does not mean every stakeholder considers the particular umbrella association as better representing their interests. For instance, in relation to one of the sectors, one respondent mentioned that:

**“While the ‘Stakeholder 31’ is industry funded, they are not Industry representatives, and it would have been more beneficial to allow ‘Stakeholder 50’ to be a main point of contact for**

**the project. Nonetheless, I am glad we got to join the meetings and give our input, and this is in no way slander to the hard work the ‘Stakeholder 31’ has done for the project. I hope to keep engaging further.” (Response to feedback form, July 2023)**

In addition, the breath of representation sometimes depended on the scale of the sector in question. Sectors such as **Hydropower** and **Peat Extraction** were considerably smaller with less EU level umbrella organisations, so there was more representation from the national level. In contrast, large sectors such as **Agriculture, Water Supply** and **Insurance** mostly have other important stakeholders who were not represented. For example, given that **Agriculture** is a very large sector with multiple sub-sectors (e.g. food supply chain, animal production, crop production, etc.), representation did not cover every other sub-sector, which was either because they declined to get involved or they were deliberately excluded. While it was not clear which stakeholders was deliberately excluded, the challenge presented by the size of the sectors was highlighted:

**“I would say in general, the smallest [the] sector is, the easier it is to get a good representation because very large sector, such as, um Agriculture, also water [supply and] sanitation, it is naturally a bit more difficult.” (Coordinator / Sector Lead Interview, June 2024)**

Public sector representation was still important because it helped to have a balance view of perspective of state and non-state actors’ perspective. However, not all sectors were covered by policy representatives, which was due to less recognition of such sectors within the policy domains at European level. For instance, getting a representation for hydropower, navigation and peat extraction sectors from the European Commission proved challenging.

As to whether the representation contributed to social justice, it can be said that stakeholders were identified and invited to participated based on their interest and potential of affecting and being affected by institutional transformation for mainstreaming NbS. It is obvious from Section 3 that most economic sector stakeholders identified were invited to participate through the roundtable following the appropriate ethical procedures. Hence, several and diverse stakeholder groups were offered the opportunity to represent their constituents and shape sectoral strategies to mainstream NbS. However, it is evident that several other organisations approached declined to participate. While the reason for the declines w not clear, it could imply that more deliberate and diverse efforts were needed to enable them to participate beyond email invitation.

## 5.1.2 Representation of minority groups

Another aspect of representation concerned having minority voices heard. As mentioned earlier, this task for just transformation focused on Economic Sectors at the European and international scale who already had dominant voices. Therefore, it was beyond the scope of this task to consider direct representation of local-level stakeholders and minority groups (such as citizen groups or local communities) or balance representation between different genders, who are ordinarily be excluded<sup>8</sup>. However, this absence caught the attention of sectoral stakeholders, who expressed that NbS should not just focus on economic sectors, instead, it should be linked with communities and enabling new generations to stay in rural communities. This concern was particularly raised by the agriculture and peat extraction sector, who thought that state actors and land managers from national level should have been represented due to their role in mainstreaming NbS on wider peatlands. For instance, in the peat extraction sector the following concern was raised:

**“The RT process should have included the landowners right from the beginning. Without having their representatives around the table, we cannot talk seriously any committing “landscape level” actions.” (Peat Extraction RT2, July 2023)**

However, MERLIN was planned for local and community representation to occur in case studies instead of the sectoral work. In addition, some of stakeholders engaged offered a better chance of understanding national and local-level situation regarding mainstreaming of NbS. For instance, in the **Peat extraction sector**, many national level associations and large companies from most dominant peat producing countries in Europe were represented from the beginning. These were deliberately selected following consultation with the International Peatland Society, ensuring that the most affected stakeholders and scales were considerably covered. Also, stakeholder who emerged in later RTs (e.g. ECOLISE) have strong interest in promoting community led initiatives and represent civil society (e.g. EESC). For instance, one participant stated that:

<sup>8</sup> These stakeholders were engaged in the 18 local MERLIN case studies, and will be discussed in the complementary deliverable D4.9 due in summer 2025.



**“We all try to create a bridge between decision makers and citizens and agree on issues before we close the debate and have a good or bad”. (Agriculture RT3, June 2024)**

Therefore, while the direct representation from the local level was absent, some organisations potentially bridged this gap. Particularly, the concerns helped to shape sectoral strategies to understand when and how communities and local groups could be brought to the table.

The dominance of private organisations, NGOs and Network groups in the CoP means the CoP went beyond the usual norm of state-actor dominance decisions regarding mainstreaming of NbS, which is top-down and sometimes excludes most important voices. It also means that decisions jointly taken through the CoPs are not being unfairly imposed on the stakeholders.

The sectoral leads believed that good representation was achieved, particularly because those involved were deliberately chosen. For instance, one sector lead mentioned that “Yeah. I think we always had, yeah, we always had representatives of the groups that we wanted.”

**“I think we had nice participation, different approaches of private and public sector; nice contributions; people opposing; people agreeing. So, I think a nice diversity and although maybe we didn't have as many people for some of the sectors like agriculture as we have wished, yeah, I think it was a good cluster of people to provide feedback.” (Coordinator / Sector Lead Interview, June 2024)**

These outcomes meant we could focus the process on those with more time/knowledge and influence; and create shared and agreed outcomes in terms of sectoral strategies, targeting those most likely to have a role in delivery. However, it meant that those affected at the local level did not have a direct voice in the discussions at the EU level (see D4.9 due summer 2025). Moreover, it is important for the strategies resulting from this CoP to stress the role and importance of engaging local communities and marginalised groups in achieving social justice. Importantly, outcomes from the strategies should not lead to marginalisation through recommendations that may strengthen the power of already powerful actors and exclude the less power actors.

## 5.2 Involvement

This section focuses on the extent to which the diverse views of the various stakeholders were recognised and acknowledged across the different scales/sectors and reflected in the various outputs such as the inputs from the RTS that will underpin sector strategies and value chain analysis. Core indicators for justice under this dimension is active involvement, recognising and using diverse views and knowledge and involving minority views and recognising and avoiding and addressing conflicts and power grabbing.

### 5.2.1 Promotion of active involvement

The RTs and bilateral discussions were planned as the main modes for active engagement. Therefore, these modes could be viewed as co-deciding, which is suitable for active engagement as opposed to merely informing the stakeholders. From the onset, the project leads recognised the depth of knowledge and experience held by the stakeholders about their sectoral operations and how that shapes freshwater resource management. This recognition was used to structure the different discussions. Therefore, all participating organisations had equal opportunities to present their views and discuss the transformative measures to mainstream NbS. It was evident that limited number of RTs and bilateral discussion could occur. Hence, interviews, questionnaire survey and collection of feedback for written reports were also used for consultation to get extra inputs from wider stakeholders who could be involved in the RTs or bilateral discussions. Consultation was therefore necessary to gain expert views and opinions instead of having a thorough discussion.

Despite these efforts, it appears that some stakeholders would have preferred to have more control over the process so that they determine what is said and how that is said (for example as mentioned by stakeholder 50 in Section 4.2.1). Some sector stakeholders such as The World Association for Waterborne Transport Infrastructure (PIANC) (Navigation), Aqua Publica Europea (Water Supply) and Naturland (Agriculture), and ICA (Insurance) were sector partners and had opportunity to regularly attend internal work package meetings to plan and shape discussions and lead the drafting of the sectoral strategies. However, stakeholders such as IPS (Peat extraction) and SYKE (Hydropower) did not have such level of control over the process despite having regular bilateral meetings with James Hutton Institute as the sectoral leads.

As to whether these indicators (promote active involvement & recognise diverse knowledge & perspectives) were just, conducting the roundtables virtually may have not led to the same interactions

as it would have been with in-person roundtables. The IPS in some cases complained through emails about lack of full control of the process and sometimes felt the sectoral strategy was being developed for them as opposed to them developing it themselves. While this was a genuine concern, it was important for the James Hutton Institute to lead the process to ensure that the core goal of MERLIN to mainstream NbS were the subject of the strategies. Hence, complaints like these shows the difficulty in keeping everyone happy in a just transformation process and potential for power play to emerge (see Section 4.3.2 and 4.3.5).

### 5.2.2 Recognition and use diverse knowledge and perspectives

This indicator concerns whether the engagement process recognised the different types of knowledge stakeholders brought – ranging from technical expertise to practical and institutional experience—and how these were incorporated into discussions and outputs.

The main goal was to consider expert views and learn from existing practices and experience within the sectors. The RTs, interviews, and sector questionnaires allowed for general consideration of each sector’s position. The more intensive bilateral discussions, however, were mostly done with main sector partners who were considered experts on sectoral issues. Their knowledge helped shape RT discussions and informed outputs such as policy analysis, sector briefings, and strategies.

From the onset, the project leads recognised the depth of knowledge held by stakeholders about their sectoral operations and their relevance for freshwater resource management. This acknowledgement shaped the structure of discussions, ensuring that stakeholders had the opportunity to share insights that went beyond general opinions to sector-specific technical and operational realities.

For example, the Navigation sector used the CoPs to gain recognition and “share knowledge” (expressed by the Navigation sector) of their experience in ways that had previously been overlooked in policymaking spaces. Similarly, a stakeholder from the Peat extraction sector explained:

**“Role and knowledge of peat extraction industry in mire conservation is very often neglected and participation in any kind of political decision making is denied.” (Response to Feedback form, July 2024)**

Although for the **Peat extraction sector** there was no direct involvement of policy actors, sectors such as Navigation, Hydropower, and Insurance used the RTs to directly engage with public actors. Interviews with European Commission actors were also used to gather public sector perspectives and ensure the accuracy of claims made about them.

These examples show that different forms of knowledge, practical, sectoral, and institutional—were acknowledged in the process and that sectoral expertise informed the content and direction of the discussions.

### 5.2.3 Involvement of minority voices

This indicator focuses on whether underrepresented or less powerful voices were included in the process. were included in the process. Given the objectives and scope of MERLIN’s EU-level CoPs, local communities or grassroots actors were not the main focus. As such, the absence of community voices should not be viewed as an injustice in this context. The task was to engage strategic EU stakeholder organisations – often seen as enablers or blockers of systemic change – rather than to engage local implementation actors.

However, concerns were raised about missing perspectives, particularly around local authorities, landowners, and sub-national governance actors who are critical for implementing landscape-scale NbS. In relation to the peat extraction sector, one stakeholder pointed out:

**“The RT process should have included the landowners right from the beginning. Without having their representatives around the table, we cannot talk seriously any committing “landscape level” actions. Those having a peat extraction licence cannot tell or persuade the landowners to accomplish certain actions; the extractors can only advice and consult them.” (Peat Extraction RT2, General comments and remarks, July 2023)**

In this sense, landowners and local planning authorities could be viewed as underrepresented voices whose involvement would have contributed to a more inclusive and grounded discussion. Some stakeholders also mentioned the need for cross-sector dialogue at local levels – for example, between agriculture and planning authorities – where some of the most difficult trade-offs around NbS would likely emerge.

Although it was acknowledged that involving these actors might have made the process more complex, MERLIN encouraged sectors to adopt frameworks (such as the IUCN NbS framework) that would integrate local engagement into their operations. This means that while the CoPs themselves did not directly involve local actors, sectors are expected to build participatory approaches into their future NbS planning and delivery.

#### 5.2.4 Consideration of diverse and contrasting views

As shown in Section 4, the approach to the CoP offered opportunities to consider diverse views, including that of private, public and non-governmental stakeholders. In particular, the engagement helped to acknowledge how the sectors operate, issues about funding, responsibilities of different actors and possible impacts of mainstreaming NbS. These have been generally the main topics in the various RTs and draft report discussions.

Given that the discussion was focused on persuading private actors or farmers to mainstream freshwater NbS, views strongly concerned who pays for NbS and the economic benefits of NbS to businesses. Some of the views for the **Agriculture** and peat extraction sectors concerned land ownership rights and the need for NbS not to displace landowners from exercising their own property rights without appropriate procedures. For instance, the **Peat extraction** sector strongly expressed the challenging nature of diverse landownership in facilitating peatland restoration at a landscape scale. This view was recognised and integrated into the sectoral strategy, highlighting that such challenge needs to be addressed before NbS on landscape scale can occur. Similar opinions were recognised in the **Hydropower** sector about the ownership of barriers no longer in active use or ownership and their cultural significance. We also learnt about the interests of sectors (such as **Peat extraction** and **Hydropower sectors**) whose footprint is small within the catchment (although conservationists argued that their impacts were large).

Section 4 has shown there is indeed diverse views in terms of funding, governance and policy barriers and opportunities, some of which contradict and raise controversies. While this is an essential part of social justice, acknowledging these diverse views and expertise within the sectors does not mean every view expressed could be included in developing the outputs such as sectoral strategies for mainstreaming NbS. This is because the sectoral leads facilitating the process acted as intermediaries to ensure that views and suggestions of the sectors were not skewed towards the economic interest alone at the detriment of safeguarding freshwater management or their corporate social responsibilities. Therefore, as part of justice, consideration of societal and nature's interest was needed. Moreover, what matters as part of social justice is doing so with respect for every opinion and difference with the aim to achieve common outcomes for all. As we continue to understand these views, further opportunities will be provided for the sectors to consider where their strengths can be optimised, and weaknesses addressed to jointly mainstream NbS in Europe.

#### 5.2.5 Recognise and Mitigate Conflict and Power Disparities

This indicator addresses whether potential power imbalances and conflicts were acknowledged, avoided where possible, and addressed respectfully when they arose. Conflict was an inevitable aspect of the MERLIN engagement process due to the range of sectors involved, differing interests, and the transformative goals of the project.

Some conflicts were anticipated and helped shape the engagement strategy. For instance, in the **Agriculture sector**, discussions around the Nature Restoration Law (NRL) were so contentious that EU policymakers were deliberately not invited to the initial RTs. Instead, interviews were used as a more neutral format to gather views. As explained by a sector coordinator:

**“We didn't invite people from DG Agri because it was the restoration law being discussed at that point, and the agriculture sector was very, very reluctant to support it. They were very resisting, and we didn't want to have the people from the European Commission in a call to have the agricultural sector talking or telling them about the restoration law, ...they didn't want it and that it was bad and that the Farm to Fork was well not thought [through].”**  
(Coordinator / Sector Lead Interview, June 2024)

Other types of conflict involved authority and legitimacy. For instance, in **the Peat extraction sector**, some of the stakeholders expressed the view that academics who lead the projects cannot tell them how to position their businesses to address environmental challenges using NbS since those leading the projects don't have practical experience of how the sectors operate. In **Hydropower**, similar tensions were noted, as some stakeholders initially expected more technical expertise from the sector

leads. These concerns were mitigated by conducting early literature reviews and openly acknowledging the limits of project team knowledge, which helped build credibility and trust.

More broadly, there were tensions about whose views should carry the most weight. Some NGOs, such as WWF, were critical of private sector actors in **Hydropower** and **Peat extraction**, pushing for stronger accountability. These disagreements took time to navigate and often required project leads to redirect discussions back to the shared objective of mainstreaming NbS. Such tensions also brought out competing views on the financial responsibility for NbS. Some stakeholders argued that sectors should not be expected to invest without a clear return, while others feared greenwashing and called for stronger public funding mechanisms.

These conflicts mean that not all issues have been resolved to fully mainstream NbS by the sectors. Hence, further engagement will be required to reach consensus to mainstream NbS. Particularly, an implication for social just is that a concrete mechanism is needed for conflict resolution. These may include ensuring the processes are transparent, ensuring that the decisions are equitable and economic, respecting environmental and tenure rights, and securing informed consent before interventions are implemented.

### 5.3 Perceptions regarding distribution of outcomes

Distributive justice concerns whether the possible benefits and costs of undertaking NbS are fairly distributed, emphasising social justice as opposed to ecological justice. This section focused on sectoral perceptions of fairness regarding how in general NbS costs and benefits might be distributed and measures to address their grievances. The indicators considered as part of distributive justice in this section are (1) credibility and use of evidence, (2) fairness in cost and benefit sharing, (3) equity across freshwater-dependent sectors, and (4) balancing socio-economic and ecological trade-offs.

#### 5.3.1 Credibility and use of evidence

There was a perception that certain sources of evidence are either not substantiated or biased towards the operation of the sectors and cannot be used to make decisions. **Peat extraction sector** particularly argued that some of the sources shaping the discussions and strategies are anti-peat extraction or are not based on facts and could not be used as evidence. For instance, the sector felt that claims of peat extraction contributing to peatland degradation (irrespective of extent) are not substantiated, unfair, and are only used as basis to target the sector. To this effect, one of the companies during a bilateral discussion stated that **“sometimes there is one-sided argument, with lots of misinformation and lack of information”** (Forth Field visit bilateral talk, 2023).

The **Navigation sector** also made similar expression that **“information is not sufficiently known”** (Navigation RT transcript), while in **Water supply and sanitation sector**, one stakeholder recommended the need **“improve the evidence-base”** as existing studies **“don’t often take place at scales of relevance of drinking water providers”**. Similar views were expressed by other sectors such as **Agriculture** and **Hydropower**.

These comments raise questions about whose knowledge is recognised as legitimate and whether all sectors have equal influence in shaping the narrative. While efforts were made to use scientific literature and referenced sources, some sectors perceived that their concerns and expertise were not given equal weight, particularly when the evidence presented did not align with their interests. There was generally more acceptance of data highlighting positive sectoral contributions than evidence indicating environmental harm or regulatory need.

To help address these concerns and support more balanced discussions, MERLIN demonstration projects were used during the roundtables to provide practical, place-based examples of NbS implementation. These helped ground abstract discussions in empirical reality and offered relatable insights. For example, the Komppasuo peatland rewetting project in Finland (Peat extraction), the Deba barrier removal site in Spain (Insurance), and the Forth river restoration in the UK (Water supply) were used to illustrate how evidence can be generated and applied in specific contexts. By showcasing results, challenges, and stakeholder involvement in these projects, the demonstrations helped lend credibility to the discussions and opened space for sectors to offer evidence and case-based contributions of their own.

To promote justice in knowledge use, the engagement encouraged stakeholders to contribute their own evidence and offer corrections or additions to the sources in use. This was particularly important to build legitimacy and trust across the sectors. It became clear that transparency about how evidence

is selected, interpreted, and applied is not just a technical matter, it is also central to ensuring distributive fairness and preventing marginalisation of certain stakeholder perspectives.

### 5.3.2 Fairness in cost and benefit sharing

Across all the sectors, a common concern related to approach to how the NbS were going to be funded and the incentives for the private sector supporting implementation. Some stakeholders believed that private sector cannot be responsible for undertaking NbS, particularly, outside the sites within their jurisdiction as that add extra financial cost to their business or deprive them of investing their lands in a way that yield better financial returns. The lack of a clear financial benefit for investing in NbS was another layer of distributional justice.

**“So, people are like: why would [I] invest or incentivise the use of an NBS that might cost me money if the [beneficiary] will then leave in one year and go to someone who is cheaper, who will benefit from my investment but will not pay anything.” (Coordinator / Sector Lead Interview, June 2024)**

There are also issues of fairness if public funding is to be used for NbS:

**“...but again if things are publicly funded basically taxpayers’ money is used and only certain people benefits some benefit more and others benefit less, but that’s of course always an issue.” (Coordinator / Sector Lead Interview, June 2024)**

These concerns expose a deeper tension about whether NbS should be treated as a public good funded through collective mechanisms, or as a private-sector responsibility reflecting environmental accountability. Surprisingly, many sector stakeholders did not acknowledge the “polluter pays” principle embedded in EU law, where those contributing to environmental degradation are expected to help finance its reversal. Instead, they tended to view NbS as an add-on requiring external incentives, rather than a form of ecological restitution.

This framing shows that justice in cost and benefit sharing depends not just on technical financing models, but on shared values and expectations about responsibility. Stakeholders need clearer and sector-specific policy signals – about when compensation is warranted, when co-investment is expected, and when sectors should act based on their historic or ongoing environmental impacts. For example, while the Water Framework Directive provides a cost-recovery basis, some stakeholders, such as those in the hydropower roundtable, asked for clearer interpretation of how such provisions would support or burden their operations.

### 5.3.3 Equitable treatment of freshwater dependent sectors

Fair treatment of all freshwater dependent sectors emerged as a major aspect of distributive justice, which relates to whether certain economic sectors were favoured over others or less-targeted in terms of their contribution to ecosystem degradation and role in mainstreaming nature-based solutions. This was a common concern in the sectors such as **Peat extraction, Navigation** and **Hydropower sectors**. The sectors felt they operate on small proportion of catchment areas compared to other sectors. For instance, there was expression about how sectors within the industry should be fairly regulated:

**“But we need to have a [level] playing field for the operators, and they know that we will all be regulated in the same way, whether it’s tight or loose. It’s just a matter of choosing it.” (Coordinator / Sector Lead Interview, May 2024)**

The **Peat extraction sector** was concerned that Agriculture and Forestry sectors have caused far more peatland degradation given that these sectors operate on significantly large proportion of peatlands. Therefore, the sector doesn’t agree that they should be responsible for large-scale restoration of peatlands especially without clear compensation. For instance, one stakeholder in the peat extraction sector highlighted:

**“Peat extraction is only one, rather small activity in terms of hectares using peatlands. It would be fair to deal it parallelly with agriculture and forestry, when talking about landscape level restoration.” (Peat Extraction RT3, May 2023)**

These concerns suggest that justice cannot rely on a ‘one size fits all’ approach. While stakeholders may ask for equal treatment, equitable justice requires that differences in sector size, impact, and capacity are considered in assigning responsibilities and benefits. In some cases, smaller sectors downplayed their environmental footprints, which risked weakening shared accountability for ecosystem degradation.

At the same time, many sectors rightly noted inconsistencies in how expectations were applied across different industries. There was often a lack of clarity around which principles – spatial impact, turnover, historic degradation, or capacity to implement – should determine what is fair. This made it difficult to assess whether policies or engagement strategies were distributing burdens in a truly equitable manner.

Moreover, equitable distribution of benefits does not necessarily mean equal use of all ecosystem services but rather fair access to the benefits, considering the needs of different stakeholders. Even when choices like using a freshwater ecosystem (such as rivers and peatlands) for hydropower, navigation, peat extraction, agriculture or water supply negative consequences for the functioning of other ecosystem services, equitable distribution could mean ensuring that all affected groups have a voice in decision-making and that compensatory measures or alternative services are provided for those who may experience trade-offs. This could help balance the needs of human and environmental well-being while addressing any disparities in access to the resulting benefits (See Section 5.3.4).

#### 5.3.4 Balancing trade-offs

Although stakeholders engaged acknowledge the need to protect nature, they think there should be a balance with other social and economic needs. This was borne out of the concern that conservation advocates seem to neglect the need to safeguard employment and livelihoods. For instance, hydropower sector raised the need not to just frame barrier removal as only addressing ecological challenges, but should have social benefits as well:

**“...but certainly, you don’t want to focus it on just...we’re only going to restore rivers, we have to understand that there’s a balance and that’s the key thing is you want to get people to be...sign on for doing improvements to rivers it’s got to benefit everybody to some extent” (Hydropower RT2, May 2023)**

This perspective reflects a key justice issue: whether restoration efforts will account for those who may bear economic or social costs – such as job loss, changes in land use, or reputational damage – without direct benefit from the ecological gains. Many stakeholders were not opposed to NbS in principle but wanted to be assured that social and economic dimensions would not be secondary to environmental priorities.

Mainstreaming NbS under distributive justice therefore requires more than technical feasibility. It means acknowledging competing priorities and ensuring that decisions about trade-offs are made transparently and fairly. The IUCN Global Standard for NbS provides a benchmark by requiring that trade-offs result in net socio-economic benefits. But for this to happen, sectors must be given space to express concern, propose mitigation, and receive support where necessary. When NbS planning creates winners and losers, it must also create mechanisms to prevent injustice.

### 5.4 Planning to mainstream NbS: Challenges and opportunities in taking a ‘Just Transformations’ approach

It is difficult to claim whether taking a justice approach has led to mainstreaming of NbS or not, given that the project findings are yet to fully reflect on the ground. However, engagement processes and activities were about planning how to transform economic sectors to mainstream NbS, and how the transformation process unfolds (who is considered and how), and how that underpins social justice in relation to implementing NbS. This section therefore aims to reflect not just on the challenges and opportunities involved, but also on how the CoPs established by MERLIN have helped to build transformative capacity across different economic sectors.

#### 5.4.1 Emerging challenges in taking just transformations approach

##### 5.4.1.1 Less willingness, interest and availability to get involved

One of the key challenges was the unwillingness of some organisations to get involved which is evident from the number of organisations that declined invitations (Section 3). Unwillingness is due to different reasons, including availability, and perceptions about the relevance of NbS or possible negative impacts of the project on sectoral operations. However, this makes it difficult to have dialogue if some influential and affected parties do not want to be at the table. An Agriculture sector lead provided the following observations:

**“Well, it has been proven difficult to engage people into the agricultural roundtables. Well, I think in general into all roundtables, but agriculture especially. We sent out many emails and for the first roundtable I did the follow up individually one by one. There were some people**

**that didn't reply. Other people were telling us Well nature-based solutions: I mean it's about nature. We want to talk about agriculture, okay?" (Coordinator / Sector Lead interview, June 2024)**

The issues of unwillingness were not just for economic sectors, but some public sector actors were either unwilling or not available to get involved. In some cases, it was not just about willingness or availability, but that the stakeholders contacted felt the sectoral issues were not within their jurisdiction. This was the case with the **Peat extraction, Hydropower** and **Navigation sectors** which struggled to have representation from the European Commission.

This challenge was sometimes due to power dynamics as some powerful organisations do not want to share power and discuss issues with other actors who may have opposing views as theirs. In contrast, some actors wanted to know the position of public sector actors who are policy makers before they commit their support for NbS. Therefore, the overall effect of this challenge is the difficulty in developing a shared vision to balance ecological, environment and social goals as required by a just transformation.

There was agreement amongst sector leads that logistically there are several challenges to organising a RT event that centre around ensuring high levels of engagement. Invites must be sent frequently and in advance, as stakeholders are often very busy in their own jobs and lack the time to participate in a time-consuming event, stakeholders forgetting about the event or not letting the organiser know whether or not they plan to attend or uncertainty around whether or not they had received the email at all. All can result in low levels of attendance and limit the impact of the event within the sector.

**"(...) the challenge is in getting people involved and participating and engaged and from my experience anyway, you need to send a lot of invites well in advance, send reminders to people. It might be that people are just too busy to answer, but they're not against attending, but just missed your e-mail or said, "I will reply" and just forgot. And yeah, like block the agenda with an invite as soon as people say "yes" ... It's hard also to do logistically" (Coordinator / Sector lead interview, June 2024)**

Due the difficulties in getting commitment, the RTs were kept short, which meant we couldn't have in depth discussions and built more trust. For social justice implications, it also means that more deliberate efforts, including resource commitment to enable stakeholders get involved. The reasons for reluctance need to be investigated: for examples, whether experience of such similar engagements did not yield positive results or left negative impressions, which disincentives particular stakeholders from getting involved in similar initiatives. Despite these challenges, some CoPs demonstrated strong engagement (e.g., the Insurance and Water Supply sectors), showing that with time and persistence, trust and mutual understanding can be gradually built.

#### **5.4.1.2 Inadequate knowledge and trust in the NbS concept and how that help balance environmental, social and economic needs**

NbS as concepts are still new to most of the stakeholders engaged. Although concepts such as restoration, rehabilitation or barrier removal are common within the economic sectors, these are conventional practices which are not necessarily aligned with NbS principles such as designing and implementing at scale and mainstreaming within policy frameworks. It was difficult for stakeholders to accept NbS as a better alternative to their usual practices. Therefore, some stakeholders often argued that they were already doing NbS, although that was not the case if their practices are strictly compared with the IUCN Global Standard for NbS. Due to this, repeated efforts were needed to convince them about the difference between NbS and traditional sectoral operations instead of discussing the pathways to mainstream NbS. In some cases, also, the issue of knowledge concerned the ability of the project leads to clearly explain NbS concepts and build trust. The sectoral leads could not always convince the sectors that NbS concept was transformative compared with the conventional land and water management practices among the sectors.

Even when sectoral leads were familiar with the NbS concept, there were concerns of trust in the NbS concept and the just transformation process. For instance, some sectors found it difficult to be on the same table with pro-environmental activists for the fear that pushing NbS to the sectors could lead to their economic activities being banned or imposing extra costs on them.

**"Other people were telling us the nature-based solutions is the new way of land-grabbing." (Coordinator / Sector Lead Interview, June 2024)**

A similar concern was expressed in the **Hydropower sector** with some participants feeling that removing barriers as part of NbS could impose negative impacts on communities and affect livelihoods:

**“And it’s that it’s a running river plant that’s providing very, very critical water to a nuclear asset so we have to be very sensitive about dam removal because it has follow on impacts on other...communities are having to be forcibly shifted away so if we’re talking about dam removal we have to be so sensitive that this is going to have a huge knock on impact and in this case its literally destroying lives, livelihoods, energy infrastructure as a result.” (Hydropower RT2, May 2023)**

Sometimes, these complaints were borne out of the fact that the project leads are not from within the sectors and do not represent their interests.

**“And then sometimes, of course, we are academics, so there is that feeling that you are an outsider. So, you cannot speak for them (Coordinator / Sector lead interview, June 2024)**

These types of concerns made it difficult to openly discuss NbS as transformative in addressing the range of freshwater and environmental challenges while offering better economic and social outcomes than the status-quo. Project leads often expressed that NbS actions would not be undertaken without proper and in-depth scientific analysis and engagement. The reluctance of some stakeholders in accepting the NbS approach reflects sometimes their prejudiced view of NbS and determination to portray their practices as not having any negative environmental impacts.

#### **5.4.1.3 Embracing diversity and changes**

As evident from Section 3, stakeholders from different Member States and diverse interests came together. While this presented opportunities to learn from different experiences, it was sometimes difficult to present an overall view of events without attracting opposition from some stakeholders. As the discussions proceeded, it became obvious some Member States had already embraced contested issues, for example, the need for economic sectors to take more responsibility in mainstreaming NbS, while others are doing business as usual. Some stakeholders were opposed to an EU-wide approach to mainstream NbS because they felt their Member States operate differently in terms of landownership and licensing procedure, and EU-wide approaches could impose restrictions.

**“Towards the end of the report there are rather harsh demands for policy changes. We think that as peat industry we cannot say much about them as they require legal considerations what belongs to the mandate of the EU and the Member States. From e.g. Finnish and Swedish perspectives those demands can be seen as conflicting with the Constitution.” (General comments and remarks from the peat extraction sector on RT2 report, July 2023)**

This concern was raised to indicate that a top-down approach could lead to bureaucracy and would not consider the peculiar conditions of Member States and the right of landowners and businesses to use their land as they see fit. It was also challenging to expand the CoP to introduce new stakeholder groups halfway through the discussion because this could lead to going back to previously discussed issues and delay deeper interrogation of topics. Although attempts were made to open up the CoP for new entrants, not every important stakeholder (e.g. Landowners’ association in Peat extraction) was introduced and in cases where new stakeholders emerged, there were tensions.

**“...I think one of the challenges that could've been more severe, but it wasn't because I had a continuous group, was if you get new people coming in halfway through the process, you're going to have to go back over the same ground explain it all on board them. And that could be that can delay getting deeper into the topic and it can potentially cause frustration. (Coordinator / Sector Lead Interview, June 2024)**

While embracing diversity is central to just transformation, this experience reveals the importance of phased engagement and the need for separate preparatory spaces for different groups. Some CoPs (e.g., Navigation) managed this by engaging separately with subgroups, then merging perspectives later.

#### **5.4.1.4 Project time sometimes affects the process**

Just transformation can occur if there is adequate time and resource investment into planning and engagement. However, it emerged from both the project leads and sectoral partners that there was not enough time to carry out all the activities, including giving advance notice to stakeholders, sending preparatory materials, soliciting their views, and particularly building trust and relationships.

**“I think probably it has also proven tricky to send the invitations with long time in advance. So, if maybe we send things like 3 months in advance it would have worked better and then do a follow-up. But this is like... As I was telling you, we underestimated the time it would take. We didn’t have the time, so we did our best and at the end the invitations were maybe**



sent with a tight deadline and that also didn't ease the participation of some of some partners.” (Coordinator / Sector Lead Interview, June 2024)

Inadequate time affected transparency and inclusion. Draft reports were sometimes shared too close to feedback deadlines, leaving stakeholders unable to provide meaningful responses. In some CoPs, delays in agreeing meeting dates led to cancellations or shortened RTs. Despite this, a few CoPs (e.g., Water Supply) showed how internal organisation and early outreach could mitigate time constraints.

#### 5.4.1.5 Uncertainty

Having certainty about the future seems to be an important driver for stakeholder involvement. At the moment, private sector stakeholders lack certainty in terms of (1) future policy direction for their business and (2) how their inputs in the present CoP can continue after the MERLIN project. Some stakeholders sought a firm guarantee that what has been achieved so far would not be lost post-project. They also wanted reassurance that participation would not lead to restrictions on their business.

Project leads continuously stressed that implementation of findings would depend on policymakers. This uncertainty sometimes prolonged discussions or led to withdrawal threats. For instance, the peat extraction sector was concerned that MERLIN would lead to peat extraction being banned, while the **Hydropower sector** raised similar concerns about dam decommissioning.

Some of these threats may have been genuine, while others may reflect strategic resistance to change. CoPs that allowed space for these concerns to be openly discussed (e.g., Hydropower) helped to de-escalate tensions. This shows that transparency about project scope and legacy can enhance stakeholder confidence.

#### 5.4.1.6 Keeping the conversation focused and setting out boundaries

Given that efforts were made to be transparent and have open discussion (despite obvious limitations), it was difficult to focus discussion solely on freshwater NbS. Stakeholders brought a range of interests, including broader climate agendas, land rights, or sector-specific regulations. In **Peat extraction sector**, for instance, some stakeholders focused on whether the project would lead to banning extraction, rather than discussing restoration.

Policy stakeholders and NGOs sometimes rejected the idea that sectors like Peat extraction had a legitimate role in NbS, leading to polarisation. Similar issues arose in the Hydropower CoP, where discussions risked being derailed by opposing views on dam operations.

In response, sector leads in some CoPs used clearer agendas and structured facilitation to keep discussions on track. Where this was done well (e.g., Insurance CoP), it helped maintain momentum while allowing dissenting views to be voiced respectfully. This shows that just transformation processes benefit from flexible but structured facilitation.

### 5.4.2 Opportunities for mainstreaming NbS through just transformation approach

Despite the challenges, there are some opportunities to for adopting just transformation approach to mainstream NbS in the future. Some of these opportunities are expressed in terms of the lessons learnt by the stakeholders engaged. Five such opportunities are detailed below:

#### 5.4.2.1 Bridging the gap between protection of nature and economic needs

It is obvious from the beginning of the process that economic sectors in particular were protective of their businesses compared to their responsibilities to protect nature. While contested, the transformation approach has made major progress in attempts to bridge the gap between protection for nature and sectoral economic practices. Even though sectors have not completely accepted their responsibilities for mainstreaming NbS, there is clear awareness of the need to accelerate understanding of and space for NbS in business practices. In some Sector CoPs, such as Navigation and Water Supply, actors began to articulate how NbS could serve sectoral goals without undermining environmental responsibilities.

#### 5.4.2.2 Combination of different forms of knowledge

This CoP and just transformation approach helped to combine different forms of knowledge, including those related to NbS, private sector interests, landscape diversity, and the varying legal regimes across Europe. It enabled transdisciplinary dialogue and comparative learning between sectors and Member States. A key contribution of the MERLIN project was the use of demonstration sites to connect theory with practice. For instance, the Tisza floodplain rewetting project in Hungary, shared during the

Agriculture CoP, illustrated how NbS design and implementation are shaped by local governance and land use conditions. These real-world examples helped participants reflect on how scientific, policy, and practical knowledge must be brought together to develop effective and context-sensitive strategies. While contrasting perspectives sometimes created tensions, they ultimately enriched the discussions and supported more adaptable approaches to mainstreaming NbS.

#### 5.4.2.3 Consideration of all elements of justice

A major success of the transformation approach was the deliberate inclusion of all three justice dimensions. Representation was advanced through the involvement of umbrella organisations and representative networks. Involvement was ensured through varied formats including RTs, interviews, and bilateral engagements. In terms of distributional justice for instance, just transformations raised the standard for engagement, ensuring that no one sector, or organisation has an unfair share of NbS responsibilities.

Some sector leads actively promoted the idea that those contributing more to environmental degradation should assume more responsibility for mainstreaming NbS. In contrast, sectors showing leadership in restoration (e.g., Insurance) were highlighted as deserving greater visibility. These efforts reflect a growing acceptance of differentiated responsibilities within a just transition.

#### 5.4.2.4 Expanding the CoPs based on willingness of some actors to engage

Despite persistent contestation, some sectors showed strong willingness to engage. Particularly, the just transformation approach enabled both non-state and state actors to co-create NbS discussions. Building on these relationships could allow CoPs to expand in future. It is important that the efforts made by these actors over the course of MERLIN does not die out. Hence, building upon the gains and efforts by the existing CoP could help get different actors to learn and support NbS initiatives.

MERLIN's CoPs also provide examples of when and how to scale participation. For instance, staggered engagement worked well in some sectors (e.g., Hydropower), while others benefitted from consistent core participation (e.g., Insurance). Identifying the right timing to open and close participation is a valuable lesson. Therefore, the findings in this deliverable should rather be used as opportunities to make more deliberate efforts to involve diverse stakeholders at different administrative and sectoral scales. But it is important to know when to open-up the CoP and associated discussions and when to close-down to have a focused discussion.

#### 5.4.2.5 Embedding NbS within economic sectoral practices

An innovative aspect of the just transformation task was the deliberate attempt to involve industry stakeholders and gain their support for NbS. While challenges remain, progress has been made in embedding NbS within sectoral thinking. This includes opening the discussion around corporate stewardship, climate risk, and long-term sustainability.

In some CoPs, participants gradually showed openness to recognising NbS as more than a regulatory imposition. Where trust-building was prioritised and CoPs allowed for informal, repeated exchanges, understanding improved. Demonstration projects played a key role in this shift by showcasing tangible examples of NbS in practice. For instance, presentations of the Komppasuo peatland rewetting project in Finland and the Deba barrier removal site in Spain helped participants in the Peat extraction and Insurance sectors respectively to connect theoretical discussions to real-world applications, illustrating both feasibility and sectoral relevance. These concrete cases supported dialogue by grounding abstract concepts in operational experience. This suggests that allowing time, space, and real-life examples for relational engagement may increase sectoral confidence in NbS over time. More broadly, these examples show that sectors are open to framing NbS as an asset rather than a burden. In future, this framing could be reinforced by encouraging sectors to lead implementation efforts and coordinate with policymakers on enabling conditions. The CoP model, when resourced and structured well, provides a strong foundation for this next step in transformation.

## 6 Discussion – Challenges and Opportunities in Mainstreaming Nature-based Solutions: Insights from MERLIN’s Stakeholder Engagement Process

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MERLIN Work Package 4 ‘Just Transformations’ aimed to integrate Nature-based Solutions (NbS) into key economic sectors to promote just transformations. Drawing on literature and best practices in stakeholder engagement and Communities of Practice (CoPs), MERLIN aimed to address several challenges and barriers in mainstreaming NbS. However, the stakeholder engagement process revealed varying levels of success across different sectors, with many barriers persisting, such as conceptual ambiguity, unclear responsibility distribution, and resistance to taking ownership of leadership roles in driving the CoPs forward. The success factors and continuing challenges are summarised in Table 6.

One of the major challenges across sectors was a lack of understanding of what NbS entails. In sectors like agriculture and hydropower, NbS was often viewed as a vague concept, reinforcing the literature’s call for clearer definitions (Cousins, 2021). This ambiguity led to confusion and limited buy-in, as stakeholders struggled to see how NbS could be applied to their contexts. While MERLIN sought to present NbS as providing ecological, social, and economic benefits, stakeholders expressed the need for more concrete examples to guide implementation, which is consistent with other studies (Pagano et al., 2019; Giordano et al., 2020) – presentations by MERLIN Case studies did not seem to be sufficient. The CoPs wanted more engagement with actual practices, although achieving this using virtual platforms was challenging – and the difficulties in engaging people even for short virtual meetings meant in-person field trips seemed overly ambitious.

A central finding was the variable uptake of leadership roles by stakeholders across sectors. Structuring the WP through sectoral teams, involving sectoral partners Drawing from Ibrahim et al.’s (2024) model, MERLIN successfully initiated early stakeholder engagement based specific rationales and, in some cases, delegated roles to stakeholders, but failed to fully empower stakeholders to assume leadership. Many sectors experienced hesitation, with stakeholders deferring responsibility for implementing NbS to others, whether neighbouring landowners or government bodies. This reluctance was particularly evident in hydropower and insurance sectors, where no clear entity has stepped forward to lead NbS efforts so far. In both sectors, stakeholders pointed to EU or governmental bodies as necessary drivers for NbS, further illustrating the tendency to defer responsibility to higher authorities. This gap in leadership is consistent with the broader literature, which emphasises the difficulty in moving from participation to ownership in multi-stakeholder initiatives, especially where the incentives for leadership are unclear or perceived risks are high (Kauark-Fontes et al., 2023; Raška et al., 2022; Davies et al., 2021).

However, this pattern was not consistent across all sectors. In contexts where MERLIN activities were embedded in broader sector-led networks, stronger stakeholder ownership and leadership were observed. The peat extraction sector, through the International Peat Society (IPS), and the water supply and sanitation sector, through Aqua Publica Europa, exemplified this more integrated model. In these cases, stakeholders were better positioned to coordinate, mobilise, and represent sectoral interests, enhancing the effectiveness of engagement and the likelihood of sustained action. IPS assumed responsibility throughout the MERLIN project and demonstrated a strong willingness to continue leading efforts related to restoration and sustainable practices. However, within the peat extraction sector, the deferral of responsibility to landowners and government agencies or highlighting mitigation of their impacts on the environment was also evident. This was particularly true when it came to restoration activities, with stakeholders in the sector pointing out that peat producers could only go so far without collaboration from landowners and guaranteeing the future of the sector. The failure to establish clear leadership in several sectors can perhaps be attributed to the broader structural challenges that often hinder effective stakeholder engagement (Mitincu et al., 2023; Raška et al., 2022; Dorst et al., 2022). This reluctance to assume ownership created barriers to effective long-term commitment, which is not unique to MERLIN. As Blackstock and Richards (2007) argue, stakeholders often hesitate to engage deeply or assume leadership roles without clear incentives. This divergence in leadership capacity underscores the importance of context. Sectors with established platforms and pre-existing relationships, such as peat and water supply, were able to align MERLIN activities with broader agendas, thus fostering trust and continuity. In contrast, in sectors like insurance, navigation, or agriculture, engagement was often more fragmented. This was especially the case when stakeholders lacked shared spaces or incentives to collaborate outside the MERLIN project’s structure.

MERLIN's approach to stakeholder engagement focused on involving influential sectoral stakeholders, following a targeted strategy that aligned with literature advocating for the representation of key actors (Abord-Hugon Nonet et al., 2022; Gupta et al., 2020; Young et al., 2014). The project successfully fostered dialogue across sectors, including planning, policy, and for-profit businesses, while balancing the need for sectoral diversity. However, the engagement process faced challenges in ensuring continuous participation.

While MERLIN aimed to foster just transformations, power dynamics limited the inclusion of smaller stakeholders, especially in complex sectors like agriculture. Larger umbrella organisations often represented local interests, but this led to concerns that grassroots perspectives were not fully captured, a known issue in large-scale environmental governance (Frantzeskaki et al., 2019). In sectors such as agriculture, the absence of local actors, including farmers, highlighted tensions between policy-level discussions and on-the-ground implementation. This disconnect may hinder the practical application of sectoral strategies unless further efforts are made to engage local stakeholders in future phases. The tension between local autonomy and the reliance on government policies for NbS implementation was particularly evident, further complicating leadership development across sectors (De Carvalho-Filho et al., 2020).

The representation of stakeholders and engagement strategies varied across sectors. Peat extraction and Hydropower sector participants exhibited proactive engagement, largely due to clear policy drivers indicating inevitable regulatory shifts - an alignment with the "policy push" effect often described in sustainability transitions literature (Frantzeskaki et al., 2019). These sectors discussed a readiness to incorporate NbS into their future practices, fostering a more positive atmosphere for stakeholder engagement. However, as observed in previous studies, defining concrete NbS actions within complex sectors like hydropower and peat extraction proved challenging, reflecting the broader difficulty of applying nature-based concepts to industrialised contexts (Seddon et al., 2020). In contrast, Agriculture, which is typically seen as a sector where NbS practices such as water conservation are more clearly defined, faced difficulties in securing participation from some key actors, particularly farmers. The absence of farmers in the dialogue reveals deeper tensions around policy demands and their perceived impact on agricultural livelihoods. This mirrors findings from other studies, where agricultural stakeholders have been reluctant to engage due to perceived policy misalignments or the lack of direct benefits (Nygaard et al., 2021; Brown et al., 2021). The Insurance sector's indirect role in NbS, focusing on data and risk assessment rather than direct involvement, highlights a recurring theme in the literature, where sectors such as insurance engage in NbS through a more quantitative and risk-based lens, reflecting their focus on long-term financial stability rather than immediate ecological action (Fougères et al., 2020; Graveline et al., 2017).

Building trust and shared knowledge within CoPs was a key objective of MERLIN. Different sectors employed varying approaches, with some fostering deeper relationships, while others prioritised broader representation. Consistent with Wenger's (2022) work on CoPs, MERLIN's engagement roundtables facilitated knowledge exchange, though persistent confusion about roles in sectors like hydropower limited the development of a cohesive shared understanding. The use of digital platforms during the project further complicated trust-building, as in-person interactions are often more effective in fostering deeper, collaborative relationships (Wickenberg et al., 2022).

The sectoral CoPs were successful in raising awareness about NbS and bringing sectoral stakeholders together, but key challenges remain in fostering leadership and ensuring equitable outcomes. Maintaining equity while balancing trade-offs remains challenging, raising questions about who determines what constitutes equitable distribution of benefits and when it can be considered achieved. More adaptive engagement processes, such as the Life Cycle Co-Creation Process (LCCCP), could have perhaps better supported the development of leadership within CoPs, as suggested by DeLosRíos-White et al. (2020). In future CoPs, deeper, sustained engagement, coupled with clearer incentives, will be necessary to bridge the gap between high-level project goals and on-the-ground realities. Addressing structural challenges and power imbalances will be crucial to achieving truly just and inclusive NbS implementation across sectors.

While the voluntary engagement of key sectoral stakeholders has been valuable, a significant challenge remains in encouraging them to take proactive responsibility for implementing sector-specific NbS. Although many stakeholders express a willingness to support NbS initiatives, there has been a tendency to shift responsibility either upwards to government authorities or downwards to local actors. This creates a gap in ownership of NbS. However, this response is not unusual in voluntary, multi-stakeholder initiatives, where stakeholders may aim to enhance their reputations by

participating in discussions, yet hesitate to fully assume responsibility for implementing actions (Wright & Nyberg, 2017; Fritsch & Newig, 2012).

To maintain constructive relationships and ensure continued participation, it is important to navigate this delicate balance without alienating stakeholders. As research suggests, the CoPs aimed to foster a shared sense of responsibility by aligning NbS with sectoral benefits, such as enhanced ecosystem services and long-term operational sustainability. However, achieving the goal of having stakeholders take greater responsibility will require an approach that not only encourages accountability but also actively promotes more direct involvement, possibly by providing additional opportunities for co-design and co-benefit sharing, while ensuring stakeholders feel both valued and empowered. Such an approach may help secure their sustained participation and foster a stronger sense of ownership in the implementation of NbS (van der Jagt et al., 2017).

A key challenge was the persistence of disagreements, often stemming from conflicting priorities and a tendency to shift responsibility to other parties, such as higher authorities or local actors, which hindered progress. Without a governance framework to formalise accountability, these voluntary engagements remain limited in their ability to drive concrete action. Research indicates that sustained engagement, coupled with mechanisms for co-design and co-benefit sharing, can help resolve such conflicts and build a stronger sense of ownership (Hölscher et al., 2024; Busse et al., 2023). However, reflections on this stakeholder engagement process suggest that without clear governance structures to hold stakeholders accountable, this process may be slow. This underscores the importance of developing frameworks that not only foster dialogue but also encourage stakeholders to take responsibility, which is crucial for the long-term success of NbS implementation (Luyet et al., 2012).

## 7 Conclusions and recommendations

### 7.1 Conclusions – navigating the barriers and opportunities for mainstreaming nature-based solutions in economic sectors

The MERLIN WP4 project’s engagement process offered key insights into the challenges and opportunities associated with integrating NbS into different economic sectors. Despite successes in raising awareness and fostering dialogue, the engagement process revealed significant barriers, which varied by sector.

While MERLIN successfully brought together stakeholders across various sectors, the level of engagement and continuity varied significantly. Sectors like peat extraction and hydropower demonstrated relatively higher levels of engagement, influenced by clear policy drivers and regulatory pressures. However, sectors such as agriculture and insurance were more challenging to engage consistently, often due to conflicting economic interests or the complexity of applying NbS to their specific contexts. Furthermore, the perception of NbS as a vague or unclear concept limited stakeholder buy-in, particularly in sectors like agriculture and hydropower.

Sectoral perceptions of NbS reflected a combination of openness and hesitation. Stakeholders recognised the potential ecological and economic benefits of NbS, but many expressed confusions regarding its practical application. The ambiguity surrounding NbS definitions, as well as a lack of concrete examples, hindered deeper engagement, especially in sectors that viewed NbS as peripheral to their core activities, such as insurance. Financial concerns also played a significant role in limiting stakeholder commitment, particularly in agriculture, where perceived policy misalignments created tensions around the viability of NbS for farmers. The engagement process highlighted a need for clearer communication, practical case studies (see the [Case Study Portal](#)) and aligned financial incentives to increase sectoral participation in NbS initiatives.

Justice principles – representation, procedural fairness, and distributive equity – played a crucial role in shaping the engagement process and guiding efforts to mainstream NbS across sectors. MERLIN’s focus on engaging influential umbrella organisations helped ensure broad representation, but it also led to concerns that smaller, local stakeholders were not adequately included in the decision-making process. Procedural justice, which involved integrating diverse perspectives and knowledge, was partially achieved, though power imbalances and the dominance of larger actors sometimes limited smaller stakeholders’ voices. Distributive justice emerged as a critical issue, particularly in discussions around the costs and benefits of NbS. A key concern was who would bear the financial burden, especially in sectors like peat extraction and agriculture. While some stakeholders emphasised the need for government support and clear financial mechanisms to ensure fair distribution of resources, others pointed to the polluter pays principle, arguing that industries contributing to ecosystem

degradation should take on a greater share of the responsibility for restoration efforts. Balancing these perspectives will be crucial to developing equitable frameworks for financing NbS initiatives.

## 7.2 Recommendations for advancing just transformations through stakeholder engagement and mainstreaming nature-based solutions

To ensure the successful mainstreaming of NbS across sectors, a sustained and inclusive stakeholder engagement process is essential. The following recommendations focus on fostering long-term collaboration, addressing sector-specific challenges, and incorporating justice principles to promote just transformations.

**1. Strengthen long-term stakeholder engagement:** To enhance the sustainability of stakeholder engagement, it is essential to focus on long-term collaboration rather than short-term goals. Having sectoral partners with ongoing networks is a model that may be useful to replicate. Developing clear, actionable plans for sustaining the CoP beyond the project's lifespan will help maintain momentum and foster deeper relationships amongst sectoral actors. In-person workshops and field visits, along with more structured opportunities for feedback can improve the quality of engagement and strengthen inter-personal connections between stakeholders. However, where conflicts over what is 'equitable distribution' of NbS costs and benefits exist, this engagement will continue to be challenging.

**2. Tailor engagement strategies to sector-specific needs:** The variability in engagement across sectors underscores the importance of tailoring approaches to the specific dynamics of each sector. Sectors like agriculture and inland navigation, would benefit from targeted discussions around financial mechanisms and policy alignment to overcome existing barriers. Meanwhile, sectors struggling with socio-economic and regulatory challenges, such as hydropower, may require more nuanced approaches, addressing sector-specific concerns through tailored engagement strategies and clear financial incentives.

**3. Incorporate Justice Principles more explicitly:** Future NbS mainstreaming efforts should more explicitly incorporate justice principles into stakeholder engagement frameworks. Ensuring fair representation, transparent procedures, and equitable distribution of benefits and burdens is critical to building trust and gaining acceptance. Facilitating power-balanced dialogues and offering a platform to discuss incentives to stakeholders can help to ensure a more equitable approach to NbS. Clear communication of how NbS initiatives align with both ecological and economic goals will further strengthen support.

**4. Resolve conflicts between private and public interests:** A key tension in NbS mainstreaming lies in balancing the responsibility of private sector stakeholders with the use of public funds and policies to implement NbS. More research and targeted interventions are needed to develop governance frameworks that ensure equitable burden-sharing, where private actors contribute fairly to restoring the ecosystems they use, while public funds are strategically deployed to support broader public benefits. Mechanisms for resolving these conflicts, such as participatory governance, transparent policy frameworks, and financial incentives, must be explored to align private sector contributions with public goods provision. Additionally, further work is required to address power imbalances and facilitate dialogues that balance economic and environmental interests, ensuring that both private and public stakeholders are invested in the long-term success of NbS.

**5. Develop governance frameworks to enhance accountability:** Establish clear governance frameworks that not only formalise stakeholder accountability but also connect sectoral engagement to broader policy and planning systems. Structured opportunities for co-design, co-benefit sharing, and clearly defined roles will help resolve conflicts, align sector-specific responsibilities, and ensure more durable collaboration. Embedding these frameworks within existing regional and governance structures, such as those referenced in the interim RSPs (Pietilä 2023, D4.3), will support both vertical and horizontal integration, making it easier for sectoral strategies to influence and align with long-term NbS implementation efforts at multiple scales.

**6. Recognise and build on sectoral differences in capacity and readiness:** Stakeholder engagement and capacity-building efforts must acknowledge that sectors vary in their leadership structures and readiness to mainstream NbS. The MERLIN CoPs showed that sectors embedded in established networks or supported by committed sectoral partners (e.g. WSS, peat extraction) demonstrated stronger ownership, while others, such as hydropower and insurance, faced challenges due to the absence of dedicated leadership or sectoral coordination. Future projects should assess sectoral starting points and leadership dynamics, designing differentiated strategies that strengthen

governance links and regional uptake. Comparative analysis of sectoral experiences can also support peer learning, help identify capacity gaps and inform more targeted and scalable NbS implementation.

In conclusion, the MERLIN project demonstrates the importance of flexible, inclusive, and justice-oriented approaches to stakeholder engagement. Addressing the persistent challenges in financial and regulatory alignment, while maintaining open, continuous dialogue, is essential for mainstreaming NbS across Europe.

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## 9 APPENDICES

### Appendix 1: Stakeholder organisations

Sector + Engagement	List of Organisations that participated
Agriculture Interviews and RTs	<ul style="list-style-type: none"> <li>→ ARVALIS-Institut du vegetal</li> <li>→ Chamber of Agriculture Lower Saxony</li> <li>→ Consejo Superior de Investigaciones Cientificas (CSIC)</li> <li>→ Czech Agricultural University (Landscape Protection and Use of Natural Resources)</li> <li>→ Deutscher Verband für Landschaftspflege e.V.</li> <li>→ DG AGRI</li> <li>→ DG BUDGET</li> <li>→ DG ENVIRO</li> <li>→ DG R&amp;I</li> <li>→ Ecolise (European Network for Community-Led Initiatives on Climate Change and Sustainability)</li> <li>→ Ecologic</li> <li>→ ELARD (European Leader Association for Rural Development)</li> <li>→ EU COM Joint Research Centre (JRC)</li> <li>→ European Carbon Farmers</li> <li>→ European Conservation Agriculture Federation</li> <li>→ European Economic and Social Committee</li> <li>→ Farm association Kněžství</li> <li>→ Food for Sustainability</li> <li>→ French National Institute for Agriculture, Food, and Environment (INRAE)</li> <li>→ ILVO Research Institute for Agriculture, Fisheries and Food, Belgium</li> <li>→ James Hutton Institute</li> <li>→ kennis &amp; innovatie bij Regieorganisatie GLB (Netwerk Platteland)</li> <li>→ Naturland</li> <li>→ TESCO</li> <li>→ Tullstorp Stream Project &amp; Jordberga Estate</li> <li>→ Universidade de Évora, Portugal</li> <li>→ University of Bologna</li> <li>→ University of Lisboa</li> <li>→ Vrije Universiteit Amsterdam</li> <li>→ Vytautas Magnus University (VMU), Lithuania</li> <li>→ WUR</li> <li>→ WWF (various offices across Europe)</li> </ul>
Hydropower RTs	<ul style="list-style-type: none"> <li>→ Hydropower Network – name redacted</li> <li>→ DG Climate</li> <li>→ Hydropower Company – name redacted</li> <li>→ Hydropower Company – name redacted</li> <li>→ Hydropower Network – name redacted</li> <li>→ Hydropower Network – name redacted</li> <li>→ Hydropower Company – name redacted Instituto Superior de Agronomia/U of Lisboa</li> <li>→ Hydropower Network – name redacted</li> <li>→ James Hutton Institute</li> <li>→ Joint Research Centre (JRC)</li> <li>→ Swedish Agency Marine and Water Management</li> <li>→ SYKE</li> <li>→ The University of Natural Resources and Life Sciences, Vienna (Boku)</li> <li>→ The Nature Conservancy (TNC)</li> <li>→ University of East Finland</li> <li>→ University of Kent</li> <li>→ University of the Basque country</li> <li>→ Hydropower Company – name redacted WWF – various offices</li> </ul>

	Some participating organisations requested they are not identified. The names of these organisations and networks have therefore been redacted. See the <a href="#">Hydropower Sector Strategy</a> for more information.
Insurance RTs	<ul style="list-style-type: none"> <li>→ AgroSeguro</li> <li>→ Association Française pour la Prévention des Catastrophes</li> <li>→ AXA Climate</li> <li>→ Business Development Group (BDG)</li> <li>→ Caisse Centrale de Réassurance (CCR)</li> <li>→ CMS Albiñana &amp; Suárez de Lezo</li> <li>→ Connectology</li> <li>→ Consorcio de Compensación de Seguros (CCS)</li> <li>→ DG CLIMA</li> <li>→ DG ENV</li> <li>→ DG RTD</li> <li>→ Dutch Association for Sustainable Investors – VBDO</li> <li>→ Dutch Association of Insurers</li> <li>→ DZI (Bulgaria State Insurance Institute)</li> <li>→ Ecologic</li> <li>→ European Environment Agency (EEA)</li> <li>→ ERRIN (European Regions Research and Innovation Network)</li> <li>→ Fédération Française de l'Assurance (FFA, also known as France Assureurs)</li> <li>→ German Insurance Association (GDV)</li> <li>→ Grupo Unipol</li> <li>→ Helmholtz Centre for Environmental Research</li> <li>→ iCatalist</li> <li>→ Insurance and Pension Denmark (F&amp;G)</li> <li>→ Insurance Europe</li> <li>→ James Hutton Institute</li> <li>→ PIK (Potsdam Institute for Climate Impact Research)</li> <li>→ Poznan university of economics and business</li> <li>→ Universidad del País Vasco</li> <li>→ Universität Duisburg-Essen</li> <li>→ University of Antwerp</li> <li>→ Vienna Insurance Group (VIG)</li> <li>→ WWF – various offices</li> <li>→ Zurich Insurance</li> </ul>
Navigation RTs	<ul style="list-style-type: none"> <li>→ BOKU</li> <li>→ Bundesanstalt für Gewässerkunde (BfG)</li> <li>→ Central Commission for the Navigation of the Rhine</li> <li>→ Danube Commission</li> <li>→ Deltares</li> <li>→ European Barge Union</li> <li>→ European Boating association (EBA)</li> <li>→ European River Cruise Association</li> <li>→ Inland Navigation Europe</li> <li>→ James Hutton Institute</li> <li>→ Recreational Navigation Commission RecCom</li> <li>→ Rijkswaterstaat</li> <li>→ Sava Commission</li> <li>→ The World Association for Waterborne Transport Infrastructure (PIANC)</li> <li>→ Universität Duisburg-Essen</li> <li>→ US Army Corps of Engineers</li> <li>→ Viadonau</li> <li>→ WWF Hungary</li> </ul>
Peat Extraction RTs	<ul style="list-style-type: none"> <li>→ Bord na Mona</li> <li>→ Canadian Sphagnum Peat Moss Association</li> <li>→ Estonian Peat Producers Association (ETL)</li> <li>→ Griendtsveen</li> <li>→ Growing Media Europe</li> <li>→ Hofer &amp; Pautz GbR</li> <li>→ International Peatland Society</li> <li>→ James Hutton Institute</li> <li>→ Klasmann-Deilmann</li> <li>→ Latvian Peat Producers Association</li> <li>→ Moorkultur-Ramsloh</li> <li>→ NatureScot</li> </ul>

	<ul style="list-style-type: none"> <li>→ Neova Group</li> <li>→ Responsibly Produced Peat</li> <li>→ SYKE</li> <li>→ The Bioenergy Association of Finland</li> <li>→ UDE</li> <li>→ UK Centre for Ecology and Hydrology (UKCEH)</li> <li>→ University College Dublin (UCD)</li> <li>→ Westland Horticulture</li> <li>→ Wetlands International</li> <li>→ WWF -various offices</li> </ul>
<p>Water supply and Sanitation RTs</p>	<ul style="list-style-type: none"> <li>→ Alliance for Water Stewardship</li> <li>→ Aqua Publica Europea</li> <li>→ Aqualia</li> <li>→ Barcelona water cycle Barcelona Cicle de l'Aigua, SA (BCASA)</li> <li>→ DG Clima</li> <li>→ DG Environment</li> <li>→ DG RTD</li> <li>→ Ecologic</li> <li>→ European Federation of National Associations of Water Services (EurEau)</li> <li>→ European Federation of Public Service Trade Unions (EPSU)</li> <li>→ European Union of Water Management Associations (EUWMA)</li> <li>→ International Federation of Private Water Operators (AquaFed)</li> <li>→ International Office for Water (OiEau)</li> <li>→ James Hutton Institute</li> <li>→ MPWiK Warsaw S.A.</li> <li>→ Office of the United Nations High Commissioner for Human Rights</li> <li>→ Syndicat des Eaux et de l'Assainissement Alsace-Moselle (SDEA)</li> <li>→ The Consortium for the Management of Environmental Services of the Badajoz Provincial Council</li> <li>→ UK Centre for Ecology and Hydrology (UKCEH)</li> <li>→ VEOLIA</li> <li>→ WWF – various offices</li> </ul>

## Appendix 2: MERLIN Stakeholder engagement activities

Sector	2022	2023	2024
Agriculture	19 semi-structured Interviews	Roundtable 1	Roundtable 2
	<p>Goal: to better understand the concerns and interests of the agricultural sector in terms of 'sustainability', the views on NbS, and the way roundtables can serve as a public participation tool in the bridging process of the agricultural sector and nature restoration.</p> <p>Questions:</p> <ul style="list-style-type: none"> <li>→ A sectoral view of sustainability; definitions and barriers</li> <li>→ Nature-based solutions and its challenges and opportunities</li> <li>→ Feedback from the sector on roundtables as an engagement method</li> </ul>	<p>Goal: To present preliminary results from MERLIN and hold an open discussion on the potential role of CAP for NbS implementation and upscaling, and the complementary role of market measures</p> <p>Questions:</p> <ul style="list-style-type: none"> <li>→ Who pays for and who benefits from NbS?</li> <li>→ How can CAP help farmers to implement NbS?</li> <li>→ How can the market help?</li> </ul> <p>Presentation: NbS examples: on-farm, micro-catchment and river restoration evel cases</p>	<p>Goal:</p> <p>Build our community od practice Share ideas, Benefit from your expertise, gather inputs for upcoming steps</p> <p>Questions:</p> <ul style="list-style-type: none"> <li>→ View or examples on enabling NbS in rural landscapes?</li> <li>→ Is there any immediate / long term action that can be taken? CAP and outside CAP?</li> <li>→ How can future policies support transformation of agriculture and food systems?</li> </ul> <p>Presentations:</p> <p>Engaging agricultural sector in NbS</p> <p>Creating a market for NbS in agriculture</p> <p>Supporting collective action in rural area</p> <p>Adapting the policy framework to support NbS in agriculture</p>
Hydropower	Roundtable 1	Roundtable 2	Roundtable 3

	<p>Goals: Building Community of Practice to deliver the overall objective of MERLIN</p> <p>Bringing together Hydro-Power sector representatives &amp; researchers working on NbS</p> <p>Introduce MERLIN project and WP4 in particular</p> <p>Explain purpose of the roundtables and role of sector participants</p> <p>What is transformation and how we can work together to achieve it</p> <p>Hear from the sector about their role in Green Deal outcomes</p> <p>Questions:</p> <ul style="list-style-type: none"> <li>→ What are the future trends for hydropower in Europe?</li> <li>→ How does the Hydro power sector view sustainability?</li> <li>→ What (theoretical) opportunities are there for small dam removal?</li> </ul>	<p>Goal: Encourage you to share ideas and your knowledge to advance these cooperation points (and find win-wins)</p> <p>This will enable us to co-develop a sector strategy for contributing to the EU green deal through NbS</p> <p>Questions:</p> <ul style="list-style-type: none"> <li>→ What should be included in tools to make them useful and usable by the sector?</li> <li>→ What can we build on (and how)?</li> <li>→ What new things are needed (that is new)?</li> <li>→ What needs to be overcome (that is limiting)?</li> <li>→ What could support more holistic decision making about future viability of existing hydropower dams (what is needed and <u>when</u>)?</li> <li>→ How to finance dam removal at scale?</li> <li>→ How to foster cross sector collaborations for dam removal?</li> </ul> <p>Presentation: Why barrier removal is being undertaken by an energy company?</p>	<p>Goals: Feedback on the proposed sector strategy</p> <p>Questions: Do you agree with this vision for the sector? Anything to add?</p> <p>In regard to all actions:</p> <ul style="list-style-type: none"> <li>→ Do you agree that this action is needed (use this as an intro question to get discussions going)</li> <li>→ Anything missing?</li> <li>→ Is there a role for the sector in steering this action and what could this be?</li> <li>→ If delivered, what would change (how do we know this has been achieved)?</li> </ul> <p>Presentations:</p> <p>Decision support for small hydropower operators under the NOUSU programme (Finland)</p>
<p>Peat extraction</p>	<p>Roundtable 1</p>	<p>Roundtable 2</p>	<p>Roundtable 3</p>
	<p>Goals: Building Community of Practice to deliver the overall objective of MERLIN</p> <p>Bringing together Hydro-Power sector representatives &amp; researchers working on NbS</p> <p>Introduce MERLIN project and WP4 in particular</p> <p>Explain purpose of the roundtables and role of sector participants</p> <p>What is transformation and how we can work together to achieve it</p> <p>Hear from the sector about their role in Green Deal outcomes</p> <p>Questions:</p> <ul style="list-style-type: none"> <li>→ How do you restoration your extraction sites?</li> <li>→ Funding</li> <li>→ Skills and knowledge requirement</li> <li>→ Regulatory requirements</li> <li>→ Motivations / drivers</li> <li>→ Responsible extraction/wise use</li> <li>→ What do you understand NbS in your sector and how is it integrated in restoration of extraction sites?</li> <li>→ How do you respond to the Green Deal objectives and how does your industry balance climate,</li> </ul>	<p>Goals: Strengthening our Community of Practice</p> <p>Sharing ideas and having deeper understanding about the cooperation for PE sector's net zero transition</p> <p>Questions:</p> <ul style="list-style-type: none"> <li>→ What does it mean for restoration to go beyond the site level for the peat extraction sector?</li> <li>→ How can policy help to go beyond site level?</li> <li>→ What needs to change and improve in the licensing process?</li> <li>→ What are the financing options for restoring beyond site level to the sector?</li> <li>→ How can the peat extraction sector cooperate with other sectors within the catchment to restore beyond the site level?</li> </ul> <p>Presentations:</p> <p>Upscaling of peat extraction nature-based solutions – A MERLIN case study, Komppasuo, Finland</p> <p>After-use solutions at peat extraction sites - experiences of the peat extraction industry in Finland</p> <p>Getting actors in peat extraction value-chain to support nature-</p>	<p>Goals: Discuss the sector strategy for upscaling rewetting and revegetation and the role of value chain actors</p> <p>Questions:</p> <ul style="list-style-type: none"> <li>→ After reading the strategy, what else are looking forward to see?</li> <li>→ Which actors are going to take the strategy forward for implementation?</li> <li>→ Which action points will the peat extraction sector directly take responsibility of?</li> <li>→ How will the peat extraction sector directly enable their uptake of the lessons from their own restoration efforts?</li> <li>→ How can NbS be used to enhance the peat substrate value chain?</li> <li>→ What role should standardisation play?</li> <li>→ What is the role of peat substrate consumers?</li> </ul> <p>Is there any other way the value chain be enhanced?</p> <p>Presentations: Role of RRP certification in promoting large-scale restoration: value chain opportunities</p>

	<p>environmental, economic and social goals?</p> <p>→ What needs to change to allow you to do more to meet the Green Deal?</p> <p>Presentation: “Best practice in restoration of peat extraction sites: Views from Canada”</p>	<p>based solutions: experience in peatland’s rehabilitation</p> <p>Status of rewetting large-scale peat extraction areas in Germany</p>	
Insurance	Roundtable 1	Roundtable 2	Roundtable 3
	<p>Goals: Building Community of Practice bringing together the Insurance sector and researchers working on NbS</p> <p>Introduce MERLIN project</p> <p>Hear from you about: The relationship between Nature-based solutions and the insurance sector</p> <p>Questions:</p> <p>→ Based on the flooding example, we are interested to hear about what role you can play, what risk reduction measures you can think of and what data you need, knowing that there is a 35% peak flood reduction in the example presented.</p> <p>→ We do not know the actual effect of reduced damage using Nature-based Solutions (NbS), but we would like you to discuss how the insurance sector can help with realising and scaling up upstream NbS aimed at flood reduction.</p> <p>→ Do you have examples on how NbS fit into your product already today (green roof), and if so, and does it affect the risk/premium?</p> <p>→ What innovations are needed in your sector in order to incentivise NbS through your products and services?</p> <p>→ What challenges and/or obstacles are there for implementing these innovations?</p>	<p>Goals: Understand the current and potential future role of the current regulatory and policy framework to allow the insurance sector to contribute to nature restoration through large scale river restoration.</p> <p>Questions:</p> <p>→ What is the importance of global guidelines (eg. UNEP PSI and TNFD) in influencing the dialogue in Europe and motivate/hinder the insurance sector to consider nature restoration?</p> <p>→ How can the insurance sector collaborate with policy-makers and regulators to ensure that the EU Taxonomy framework is implemented effectively and facilitates the growth of the freshwater restoration market?</p> <p>→ To what extent do you think current solvency II directive helps or hinders long term investments in e.g large nature restoration projects? If there are some problems, what would you recommend?</p> <p>→ Can you see a link between the current nature restoration law and non-life insurance (disaster risk reduction/non-life)? How can it help or hinder nature-based investments (life insurance)?</p> <p>→ Does the current flood directive or other related legislation help insurance companies incentivise customers to build back better for flood risk reduction (non-life)? If not, how could this be facilitated?</p> <p>→ Do you see any EU regulation that would be important for insurance when it comes to incentivising the use of NbS?</p> <p>Presentations:</p> <p>Modelling within MERLIN and the insurance sector</p>	<p>Goals: Feedback on the proposed sector strategy and value chain</p> <p>Example questions (more were asked about specific actions of the strategy):</p> <p>→ Relating to the value chain work:</p> <ul style="list-style-type: none"> <li>○ Which steps would you modify? How?</li> <li>○ Which actors would you add/remove? Who?</li> </ul> <p>→ Relating to the general aspects of the strategy: Do you agree the vision is well formulated to reflect the ambition of the sector to include NbS in their activities?</p> <p>→ Relating to the specific actions of the strategy:</p> <ul style="list-style-type: none"> <li>○ What criteria do you look for in a standard or tool that could help you to make sure a project is sustainable?</li> <li>○ Who would be responsible for developing these standards/tool?</li> <li>○ Through which kind of innovative non-life product or services can the sector incentivise the use of water-related NbS for floods or drought risk reduction?</li> </ul>

		Basque country case study and insurance sector synergies	
Water supply and Sanitation	Roundtable 1	Roundtable 2	Roundtable 3
	<p>Goals: Building Community of Practice bringing together WS sector and researchers working on NbS</p> <p>Introduce MERLIN project and WP4 in particular</p> <p>Explain purpose of the roundtables and role of water supply sector participants</p> <p>What is transformation and how we plan to achieve it</p> <p>Hear from the sector about: The relationship of restoration and Nature-based solutions and water supply sector (threats, gaps- how can NbS help overcome them, opportunities for upscaling NbS work)</p> <p>Questions:</p> <ul style="list-style-type: none"> <li>→ What are some of the most significant water-related environmental challenges faced by your sector?</li> <li>→ In what way do you believe freshwater restoration can have an effect or impact on the water supply sector?</li> <li>→ To what extent do you think that restoration with Nature-based Solutions (NbS) should be an integral aspect of your freshwater management?</li> <li>→ What do you think is needed, (i.e. awareness, knowledge, data, policy, finance) to help the water supply sector have a more active role in upscaling nature restoration through the design and implementation of NbS?</li> <li>→ What do you think are the most significant challenges to undertaking freshwater restoration in your sector?</li> <li>→ What are the main windows of opportunity to influence the water supply sector? What kind of information should be supplied by MERLIN and in what format?</li> </ul>	<p>Goals: Understanding of the (ever-changing) context in which we are operating</p> <p>Sharing MERLIN work so far in relation to WSS</p> <p>Learn from the group!!</p> <p>Provide feedback and continue exchanging knowledge</p> <p>Questions:</p> <ul style="list-style-type: none"> <li>→ What do we need to establish partnerships to mainstream NbS in the water supply?</li> <li>→ What are the main barriers and constraints of working “upstream”?</li> <li>→ Do you have any good examples of NbS applications in the sector to share?</li> </ul> <p>Presentations:</p> <p>Water quality improvement through restoration - the example of Forth, UK</p> <p>Stakeholder involvement for better water supply - the example of Liberty Island, Hungary</p>	<p>Goals: Present overall progress of the project, particularly findings from D4.3, essence of sectoral strategy and value chain, Route map concept and how that helps with the strategy.</p> <p>Questions:</p> <ul style="list-style-type: none"> <li>→ The ‘industrial culture’ of water operators</li> <li>→ The lack of data for evaluating the effectiveness of NbS O</li> <li>→ The complex governance of NbS</li> </ul> <p>Presentation: NbS for restoration</p>



Navigation	Roundtable 1	Roundtable 2	Roundtable 3
	<p>Goals: Building Community of Practice bringing together navigation sector and researchers working on NbS</p> <p>Introduce MERLIN project and WP4 (Transformation) in particular            Explain purpose of the roundtables and role of navigation sector participants            Hear from the sector about:            The relationship of restoration, Nature-based Solutions (NbS) and navigation sector            threats, gaps - how can NbS help overcome them, opportunities for upscaling NbS work</p> <p>Questions:</p> <ul style="list-style-type: none"> <li>→ What are some of the most significant water-related environmental challenges faced by your sector?</li> <li>→ 2. What do you think would be the most appropriate restoration approaches (channel or riverbank restoration, floodplain reconnection) for your sector to consider? And on what scale? (EU, or basin level)?</li> <li>→ Which difficulties the NbS and restoration may help address?</li> <li>→ what would be the potential disadvantages to your organisation?</li> <li>→ What kind of conflicts did you experience?</li> <li>→ Which actions and changes will most likely motivate you to lead or contribute to nature-based solutions implementation?</li> <li>→ What is your overall view regarding the existing policies and frameworks affecting your sector?</li> <li>→ Which financing mechanisms do you see as having the most potential to support implementation of restoration by your sector?</li> </ul> <p>Presentations:            Inspirational presentation – how using NbS in practical examples</p>	<p>Goals: discussing cooperation points and about roles of stakeholders; NbS in the context of navigation.</p> <p>Questions:</p> <ul style="list-style-type: none"> <li>→ What does Nature Based solutions mean in the context of navigation?</li> <li>→ How to make the briefing's cooperation points alive in practice? How to reach the target audience? Who is the target audience</li> <li>→ Stakeholder mapping: identify roles, knowledge gaps and synergies</li> <li>→ Low hanging fruits – on selected waterways and on horizontal levels</li> </ul>	<p>Goals: Feedback on the sectoral strategy to improve key messages. To provide examples of NbS in navigable rivers and to understand the NbS potential to serve both nature and navigation.</p> <p>Questions:</p> <ul style="list-style-type: none"> <li>→ Discussion around presentations</li> <li>→ Role of MERLIN sectoral strategy towards more environmentally friendly navigation</li> </ul> <p>Presentations:            NbS examples in navigable waterways (Germany, Netherlands)</p>

## Appendix 3: Interview Guide Sectoral leads

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### Part 1: What did you do?

1. **Background Information:** Collecting information about the interviewee's current role, disciplinary background, and involvement in MERLIN.
2. **Engagement History:** Exploring when and how the interviewee first engaged with MERLIN's sectoral work.
3. **Sectoral Work:** Discussing the specific sectors they engaged with, the reasons behind sector selection, and their understanding of the sector.
4. **Purpose and Activities:** Investigating the purpose of sector engagement and the activities conducted to build a CoP, including any changes over time.
5. **Roundtables and Feedback:** Evaluating the design and implementation of roundtables (RT), participant selection, and adjustments made based on feedback.

### Part 2: What happened?

1. **Community Building:** Assess whether a collective group or community was formed and if mutual understanding and a common purpose were achieved.
2. **Knowledge Sharing and Consensus:** Explore knowledge sharing, areas of consensus or conflict, and changes in positions and views.
3. **Distribution of Outcomes:** Discuss the role of outcome distribution, grievance management, and the extent to which justice principles were addressed.
4. **Aspirations and Advice:** Reflect on whether the initial aspirations for sector engagement were met, what could have been done differently, and advice for similar processes.
5. **Contribution to NbS Mainstreaming:** Evaluate the impact of sector engagement on the mainstreaming of freshwater NbS.

## Appendix 4: Stakeholder Feedback Form

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### Stakeholder feedback form

- 1. Sectoral Involvement:** Participants were asked to indicate which sector they were involved with in the MERLIN project and when they first engaged with this sector.
- 2. Stakeholder Type:** Participants specified their stakeholder type, such as policymaker, academic, or practitioner.
- 3. Usefulness of Engagement:** Participants were asked about the usefulness of being part of the MERLIN CoP, what they learned from their participation, and which aspects of the CoP they found most valuable.
- 4. Recommendations:** Participants were invited to offer suggestions for improvement if they were to participate in the process again.
- 5. Disengagement:** Those who had stopped engaging with the CoP were asked to provide reasons for their disengagement.

## Appendix 5: Stakeholder perceptions and views on mainstreaming NbS

### BARRIERS

Sectors	Quotes	References
<b>Conceptual clarity and communication of NbS</b>		
Terminology (lack of conceptual clarity of NbS)		
Agriculture	"I think there is also probably a lack of expertise in these because there are lots of interpretations of nature-based solutions, and the logic is really not clear (...)."	Agriculture, RT2, June 2023
Hydropower	<p>"(...) the struggle I think with Nature based solution is that I think it gets a lot of support...a lot of people supported it at the same time It's a container term, it's very broad and we are now talking about rivers and, and dams and hydropower sector. So, I think it's very important to be as specific as possible it might result in like longer documents with more text than you were intended to do, but I think only by being specific you can solve questions</p> <p>"So, I think some of the terminology has been a problem in the communication and in some of the reports people who are like, this isn't the right terminology that we, we would use in the sector. Yeah. So, trying to understand the private sectors terminology and language, like it's taken I'm not there yet. That's fine. Um, even just using the word online barriers, they're like, oh, we wouldn't use that word we wouldn't use that term."</p> <p>"(...) the 1st action in the strategy is understanding what the hell we're talking about, about barrier removal in nature-based solutions. So, yeah, I, the understanding has progressed in terms of we're not just talking about barrier removal, but I think there's a long way to go."</p>	<p>Hydropower, RT3, May 2024</p> <p>Coordinator / Sector Lead Interview, May 2024</p>
Insurance	"However, it's also true that what is a nature based solution, that is the key point. To me, because for instance I'm working also with the hydropower sector, I'm within the MERLIN project and I'm working with the dam removal. To me, dam removal is not a nature based solution... so yeah, what is a nature based solution and how we want to describe that and to manage you know this like the NBS policies is the first step and is the first thing that we must to define."	Insurance, RT3, 20 May 2024
Inland Navigation	"Nature-based solutions... it's a big issue at least maybe or still in the more in the academia world maybe. But I see it also in the in the waterway and shipping administration, it's increasingly being recognised at least as a term. Only a few people I believe, truly understand what it really means. Mostly, it would be used as a synonym for restoration."	Inland Navigation, RT3, June 2024

	<p>"I think that in some cases, NbS still lacks clear definition, and many stakeholders struggle to differentiate it from traditional methods of restoration."</p> <p>"The term nature-based solutions also had to be discussed because people have different ideas about what it actually is. During the last roundtable, we simply showed the definition used to support ecosystem services and nature."</p>	<p>Inland Navigation, RT3, June 2024</p> <p>Coordinator / Sectoral Lead Interview, June 2024</p>
Peat Extraction	<p>"There's a lot of discussion around what exactly needs to be done for effective restoration, but we don't always have a clear agreement on the specifics. This lack of consensus can lead to fragmented efforts and confusion amongst stakeholders."</p> <p>"I think it depends how you broadly you define nature-based solutions. I think that is a word that gets tossed around quite a lot, so they need a context and I think the peat extraction... there is quite a lot of interest from our members. But that's I think there are more questions than answers at the moment as to the feasibility and scalability and what actually comes from that."</p>	Peat Extraction, RT3, May 2024
Water Supply & Sanitation	<p>I can add that we work with also municipality on this issue, and they had to define nature based solutions themselves, so they sort of went from what is grey, what is grey/ green, blue and what is totally green. I mean so, so you have you have to leave the, the definition to the people who worked with it, like in municipalities or water and suits and the problem there is that the planning, the land use sector is not so much working with the water and sanitation sector. So, so within a large municipality, it's really hard even for them to sit down and have the money and resources to see the whole thing in a more holistic picture.</p>	Water Supply and Sanitation, RT3, April 2024
Lack of clarity surrounding NbS actions		
Agriculture		
Hydropower	<p>"...There were certainly disagreements because the interests of these sectors are not necessarily the same as for example WWF. That's quite obvious, especially with the Hydro power and the Peat sector. They have a viable economic interest that is not necessarily supporting nature so to say, or conservation. But on the other hand, also with these 2 sectors, this was possible to find a common ground in terms of restoration and I think that's the most important parts of it in these RT discussions."</p>	Coordinator / Sector Lead Interview, June 2024
Insurance		
Inland Navigation	<p>"Although the ecological view recommends reducing modification of riverbed conditions, sometimes deepening river channels is necessary. Stakeholders need to clarify how these decisions align with NbS objectives and responsibilities."</p>	Coordinator / Sector Lead Interview, June 2024
Peat Extraction	<p>"There's a lot of discussion around what exactly needs to be done for effective restoration, but we don't always have a clear agreement on the specifics. This lack of consensus can lead to fragmented efforts and confusion amongst stakeholders."</p>	Peat Extraction, RT3, May 2024

Water Supply & Sanitation		
<b>Data, Evidence, and Measurement</b>		
<b>Challenges in measuring results</b>		
Agriculture	<p>"I think it's quite difficult to measure results from a nature-based solution. [...] Provide some money for the kick-off of the practices and then have a top-up payment based on the results that are coming out of the practice."</p> <p>"We need to create and showcase good convincing examples. How much was it? What is the benefit? Are there any objective indicators, like water biodiversity, soil life, or carbon?"</p>	<p>Agriculture, RT2, July 2023</p> <p>Agriculture, RT3, June 2023</p>
Hydropower		
Insurance	<p>"But I would be a bit cautious about what you are informing about or what are what you are selling. I mean nature based solutions are they as good as the traditional solutions or not? This is something that it's yet to be tested for some of the solutions and I mean we shouldn't be selling something that is not working as well as we would otherwise give from an insurance company, and you would be liable of. Green washing is bad, but overselling is also a risk."</p>	Insurance, RT3, May 2024
Inland Navigation	<p>"The challenge with NbS is that it's hard to measure long-term benefits, especially in terms of river health and biodiversity. The time frame for results is often much longer than traditional interventions."</p>	Inland Navigation, RT3, June 2024
Peat Extraction	<p>"We need clearer guidelines and metrics for success. Without them, it's hard to evaluate restoration efforts effectively and reach a consensus on what constitutes successful restoration."</p>	Peat Extraction, RT3, May 2024
Water Supply & Sanitation	<p>"I think 70 or 80% of the of the water NbS projects have forgotten to start a monitoring before. It was not clear what were the objectives and which parameters or sometimes there was only one measurement one year after completion of the project and it was not a long-term monitoring and so I think the challenge is that we get more in a technical what is normal in the technical grey discipline of, is that we start to get I think we need more measurements, more development of, of solution for example treated wetlands as a part of water, water treatment."</p>	Water Supply and Sanitation, RT3, April 2024
<b>Difficulties in demonstrating benefits</b>		
Agriculture	<p>"It's really hard, I think. I don't think we want to be asking the consumer to pay more money for something that's produced sustainably, but equally price premiums can be a really important driver of different sustainability initiatives. (...). It's a hard space to get into."</p> <p>"There is a lack of data on the benefits. I mean scientifically based data which would help..."</p>	<p>Agriculture, RT2, June 2023</p> <p>Agriculture, RT2, June 2023</p>
Hydropower	<p>"But in general, I would say that the perception of the managers, at least those we have been talking to is that money is the smallest of their problems. Most of the time it's the social perception of the locals opposing to the removal of dams even if they are obsolete."</p>	Hydropower, RT3, May 2024

	<p>“It’s not only the local people who are against it, its in many cases the Cultural Heritage people so even those very small old dams might have a very important cultural value and that’s why at least our Heritage Agency is against everything what we are planning in the rivers.”</p>	
Insurance	<p>“(…) and the question is that some of the locals oppose, or they like the dams or they like the stagnant water and the waterfall created by these dams. And so, they simply refuse to believe in the flooding. This marks maps made by the water agency. So, I think that if they perceive that the insurance company is really taking it seriously, these maps and maybe using these maps to adjust their premiums, that would be important. Otherwise, they think, there is nothing bad with these dams. They are good for everything.”</p>	Insurance, RT2, May 2023
Inland Navigation	<p>"There is a lot of evidence to support NbS in theory but translating that into tangible results that stakeholders can see on the ground is another issue. Demonstrating these benefits in real-time is challenging."</p>	Inland Navigation, RT3, June 2024
Peat Extraction	<p>"My main problem and I think it is that of my colleagues in the peat extraction sector, is why they should be doing this. And if they should be doing it. What would be the mechanisms?"</p>	Peat Extraction, RT3, May 2024
Water Supply & Sanitation	<p>“I want to echo what has been said a lot already by many participants about the need to integrate all the co- benefits of nature-based solutions in the analysis. I think very often what we still see is that nature-based solutions effectiveness is evaluated against one single objective like, I don't know water security for instance and if you only evaluate the, evaluate, them in this way you can find that their effectiveness is, comparable to grey solutions, but if you incorporate other objectives in terms of health, biodiversity, protection, well-being, you know, for people who have more access to nature, then usually they, they compare really better than that traditional grey infrastructure.”</p>	Water Supply and Sanitation, RT3, April 2024
Limited access to data and evidence		
Agriculture	<p>“(…) and really, there is a lack of data on the benefits. I mean scientifically based data which would help.”</p>	Agriculture, RT2, June 2023
Hydropower	<p>“Yeah, I have several collaborations with hydropower companies in the scientific terms or publication of scientific papers, and I must say that they have a huge amount of data, but sometimes obviously they don't want to share them because they collect them in a lot of years, obviously they invest a lot of money, a lot of time in collecting all this data on Hydropower technical characteristics...so involvement of hydropower company could be very beneficial.”</p>	Hydropower, RT3, May 2024
Insurance	<p>“the main barrier was that there was no cost benefit analysis done widely about these measures, and that because the sector is very sort of, you have to have results on what you implement and what you invest in. So they wouldn't know how an NBS performs compared to a grey solution. So that was one of the main barriers.”</p>	Coordinator / Sector Lead Interview, June 2024

	<p>“ So, in some sense outsiders, but in their data, which is global, you may see those countries who are advancing the this sustainable insurance reporting from not driven necessarily by EU. It's global, but they have a database and I can ask them if they share into that. Yeah, I I know them in person, but I I'm not sure it's publicly available. But they really follow, monitor the implementation of sustainable insurance principles globally, including Europe.”</p>	
<p>Inland Navigation</p>		
<p>Peat Extraction</p>	<p>"I think you start from knowledge building. [...] One of the things I know that is an issue is we don't really have a baseline for emissions from restoration, which is key. [...] Basically you have to create a baseline to then understand at what point are you not emitting and at what point are you suppressing carbon to then know when you can actually start counting those removals, and because there isn't really a baseline and I'm not saying this is the case everywhere but specifically in one of the cases I visited in Estonia, and they don't have the baseline. So then you're unable to sort of quantify when the emissions have stopped and at least neutral or sequester carbon because that's when you know that you can actually certify those removals. Otherwise, you could say that it's sequester carbon, but it's actually probably still emitting, and that's really crucial to actually certifying anything under the CRC framework (carbon removal certification framework)."</p> <p>"There is tremendous variation between different brands of peat. [...] I was tasked to do some analysis of different bags of peat from different manufacturers and they were all different. [...] There are no standards at the moment for what goes into those bags. And I'm sure the same applies to whatever is mixed there is and then called growing media. The commercial market is different. [...] But for using your garden, I don't think those that sell that care very much as long as they get the money so it's quite a minefield. [...] And by the way, when Defra did its analysis of what peat was in a bag, when they were devising the policy to fade out, peat, I think they looked at 7 bags and from that was their statistical sample to decide the government policy to phase out the use of peat. [...]"</p>	<p>Peat Extraction, RT3, May 2024</p> <p>Peat Extraction, RT3, May 2024</p>
<p>Water Supply &amp; Sanitation</p>	<p>“Well, it's, it's, it's, it's very difficult to see that until we have a we have a clear examples. We can organize like now we have, with, now we have, with, with the, new, the new tools and artificial intelligence. We can probably search into database for, for, benefits and organized database of examples with these different aspects. In terms of cost, in any case restoring biodiversity. We can evaluate the costs, also the cost of non-action that, is there... We will have lots of participant in this discussion. Let's say we have a climate impact. We have biodiversity impact. And all this can be categorized also in different in different categories but and try for the decision-maker to have to have tools that allow for a coupling these different benefits with the cost and</p>	<p>Water Supply and Sanitation, RT3, April 2024</p>



	with the cost of non, not implementing these kind of solutions, having kind of different differences in the evaluation.”	
<b>Awareness and knowledge sharing</b>		
Low public awareness and engagement		
Agriculture	“I think it's really, really hard to engage the general public on these issues. Unfortunately, [climate related change events] will happen more [...] as there's more in the news about floods and droughts [...] but that's not really the way that we want to go about it.”	Agriculture, RT2, June 2023
Hydropower		
Insurance		
Inland Navigation		
Peat Extraction	<p>“[...] I mean, our main thing is just communicating to people what growing media are at all first so there's lots of things that we would like to talk about specific policies that affect growing media, but we've got to get a foot in the door first.”</p> <p>“I mean one point that I don't know how to communicate properly, but there's clearly a disconnect or a paradox between trying to give a message to consumers about the benefits of rewetting and restoration versus extracting peat at all. I think it's very clear that if somebody is very anti-peat, they're not going to care about restoration efforts for peat products.”</p> <p>“If the industry standards are there, then it gives people comfort in using peat and it can highlight the positive actions that are going on and that they are responsibly produced. It can be used to counteract negativity surrounding the use of peat for horticultural purposes.”</p> <p>“I think the industry is just too silent. We should communicate more, not very aggressive, but in a subtle way and just tell facts. I think that that is super important.”</p>	Peat Extraction, RT3, May 2024
Water Supply & Sanitation	“I have to say at NBS, we have specific courses on NBS and there's no demand, no request for them. So, I mean, there's a problem of awareness in the profession. For that. So, it exists, but we need to push.”	Water Supply and Sanitation, RT3, April 2024
Insufficient knowledge, awareness and expertise amongst sector stakeholders		
Agriculture	<p>“Most farmers and farmers association they just end up hiring the business-as-usual companies to fix whatever is happening in the river. (...) They require specialised knowledge, and it's not available as it could have been.”</p> <p>“In Hungary, there is no activity in this field (...) farmers are not prepared for that. So, the general knowledge is not enough yet, so there should be activity there as well. I don't know how to engage farmers more effectively.”</p>	<p>Agriculture, RT2, June 2023</p> <p>Agriculture, RT2, June 2023</p>

	<p>“There is a lack of expertise in these because there are lots of interpretations of nature-based solutions and the logic is really not clear in materials. It's developing very well but still not very good probably. And really, there is a lack of data on the benefits. I mean scientifically based data would help...”</p>	Agriculture, RT2, June 2023
Hydropower		
Insurance	<p>“(…) I think there might be a bit of a competitive aspect that they're like: why would I share my knowledge to my competitors? So, you would have to get further than that and say: well, I'm saying -- I'm doing it for nature. I'm doing it for biodiversity, for a better world and stuff, but at the end of the day, they're a business. So why...”</p>	Coordinator / Sector Lead Interview, June 2024
Inland Navigation	<p>"There are still lots of people that view rivers primarily as a transport route [...] ecological considerations are not always a top priority."</p>	Inland Navigation, RT3, June 2024
	<p>"The thing with the awareness [...] the waterway authorities are certainly aware, but the shipping industry is not yet so aware, so there are some gaps."</p>	Inland Navigation, RT3, June 2024
Peat Extraction	<p>"Peat extractors don't think about restoration; they think about after use, and there are numerous after uses that don't all involve trying to restore and bring back the original peat-forming ecosystem"</p>	
	<p>"The second one is about the knowledge. We have few experts... So this is also something on policy that work on getting into account those kind of conditions that shows that it's also a way of restoring and about knowledge we don't have as much. There are kind of failures. So we have to count more on universities and experts about how to restore these kinds of wetlands."</p>	Peat Extraction, RT1, July 2022 Peat Extraction, RT3, May 2024
	<p>"I think RPP is a good example of directly linking rewetting to value. It is a little bit tricky in terms of actually perception of this because there's not a huge amount of awareness of what RPP does, and that awareness will vary significantly between stakeholders."</p>	Peat Extraction, RT3, May 2024
	<p>“Peatland restoration has accelerated rapidly, and I think that some of these upskilling things or maybe just lagging a little bit. It is important to ensure that there is the capacity to carry out some of this stuff.”</p>	Peat Extraction, RT3, May 2024 Peat Extraction, RT3, May 2024
	<p>"[...] I think it would help if there is more communication about it. I think most people don't have an idea where that comes from. Not directly from the consumers [...] but also from retailers where it comes to question like, oh, we want peat free material because they have heard somewhere that peat is bad for emissions, so we don't contribute to climate. So, there's a lack of proper information and I think that is important and there it could help."</p>	Peat Extraction, RT3, May 2024
	<p>"But it's about, yeah, telling the full story we really hope our LCA helps with this [...]. I think that whole picture is hugely important for the use of peat and</p>	

	the continued use of peat. But in bringing to mind RPP, the LCA, the uses and horticulture, it's a bit more of a nuanced discussion than just saying stop Peat right now because it's something, it is just not possible right now."	
Water Supply & Sanitation		
<b>Poor understanding by policymakers</b>		
Agriculture	"Advisory service is focused on intensive crop production and they don't really have the knowledge to give advice on any other alternatives... For instance, in Hungary, the Agro-ecological scheme, which is launched under the new CAP strategy, it says that you can get the extra money on your hectares if you get 2 scores from certain interventions... And everybody 99 out of 100 hundred farmers have selected... [the] input-based intervention [spraying microbiological additives on your land]... it's little extra cost... no annual coverage etc... So the other very nice interventions are ignored completely. But that's probably a Member State level mistake, but it made this scheme completely vague. And that shows that some things in CAP probably should be...made mandatory?"	Agriculture, RT2, June 2023
Hydropower		
Insurance		
Inland Navigation	"Policymakers are not necessarily aware. We see that very often with overall transport policymakers that they are not aware."	Navigation, RT3, June 2024
Peat Extraction	"In terms of peatlands that cover Canada, we have 113.6 million hectares across Canada [...] But in terms of our harvest operations within the last 30 years [...], we've only worked or harvested 0.03%. [...] When I'm speaking to politicians, even they have no idea. The really big conversation starts off with what is a peatland; most people don't really understand what it is, and then secondly, they really have no idea where horticultural peat comes from or where their food is grown, or how their food is grown."	Peat Extraction, RT2, July 2023
Water Supply & Sanitation	"I think a lot of people and even people working in, policymaking. They are they are not aware that much of, of, the of the benefits so it's all about how do you explain different levels, the core element of a nature-based solution and If you have some of those examples, communicated in a clear way. I think then people start to realize, okay, okay, this is what is meant."	Water Supply and Sanitation, RT3, April 2024
<b>Complexity of NbS</b>		
Different approaches and strategies		
Agriculture		
Hydropower	"(...) there were certainly disagreements because the, the interests of these sectors (peat and Hydro) are not necessarily the, the same as for example WWF. That's quite obvious, especially with the Hydro power and the Peat sector so they have a viable economic	Coordinator / Sector Lead Interview, June 2024

	<p>interest that is not necessarily supporting nature so to say, or conservation. But on the other hand, also with these 2 sectors, this was possible to find a common ground in terms of restoration and I think that's, that's the most important parts of it in these roundtable discussions</p>	
Insurance	<p>"I said before I see two approaches, one is that you see a voluntary individual action as described by this large global insurance group that they say It's part of their sustainability strategy. It's part of their sponsorships that they develop their own, you know, system of qualification and coordination system. But that's pretty much what they do by themselves. They come up with such individual approach. Two would then be that you have a kind of a public framework that attributes certain roles of, let's say, Co financing or whatsoever, but that it's already a framework that is there that you can find your places, insure in it to let's say, Co-finance the restoration if you want so..."</p>	Insurance, RT3, May 2024
Inland Navigation	<p>"But with the navigation it is quite challenging sometimes impossible to talk about horizontal topics [...] the Danube can't be compared with the Rhine."</p>	Coordinator / Sector Lead Interview, June 2024
Peat Extraction	<p>"This idea of how we make our strategy a bit more sophisticated that we recognise, there's kind of strategy or actions for people who are [...] extracting peat and then there is strategy actions for how we go about looking at past peat extraction sites. And in some Member States, there are ones that were extracted and need more restoration but are not currently owned by an active commercial company. They may be owned by the state or under some other Land Management. So I think, yeah, Hannu reminded us just to be clearer that there are different actions for different types of sites and therefore different types of actors"</p>	Peat Extraction, RT3, May 2024
Water Supply & Sanitation	<p>"But I fully agree with what (participant name) mentioned about the multi-benefit approach. So, when we look into cost benefit analysis, we should consider the multi benefit of whatever possible solutions we are looking into. But I think also what is probably lacking is a holistic approach when we address solutions"</p> <p>"...it's important also to incorporate in the decision making framework the impact of climate change based on the most recent data because far too often we see that for instance in river basin management plants and now I know I'm moving towards the bottom governance and but we see that the projections are still based on not on the most recent data and climate change scenarios. So it's very important, to incorporate, those, up to date, climate change scenarios into the decision-making framework."</p>	Water Supply and Sanitation, RT3, April 2024
Coordinator	<p>"The main barrier was that there was no cost benefit analysis done widely about these measures, and that because the sector is very sort of, you have to have results on what you implement and what you invest in. So, they wouldn't know how an NbS performs compared to a grey solution. So that was one of the main barriers."</p>	Coordinator / Sector Lead Interview, June 2024

Site-specific nature of NbS		
Agriculture	<p>“For farmers, it's much more interesting to invest in nature-based solutions that are improving their own soil. [...] When you focus on water, the benefits are not for the farmer creating retention on his field, it's for the neighbours downstream. (...) Collaboration on a catchment scale is very difficult.”</p>	Agriculture, RT2, June 2023
Hydropower	<p>“We need to look at hydropower on a case-by-case basis, taking account of the age of the infrastructure, ownership model, potential and actual power generation, and fit within the wider catchment. It is not as simple as big or small-scale hydropower.”</p>	Hydropower, RT2, June 2023
	<p>“We need to look at hydropower on a case-by-case basis, taking account of the age of the infrastructure, ownership model, potential and actual power generation, and fit within the wider catchment. It is not as simple as big or small-scale hydropower.”</p>	Hydropower, RT2, June 2023
	<p>“I believe this is something that really requires an unbiased holistic vision and approach because if we only see this from a climate energy side then we run the risk of overlooking at other targets which are crucial. There is the usual conundrum between the climate targets and the Biodiversity targets and if we just look at the climate targets, we are not going to reach our Biodiversity targets and this is an issue.”</p>	Hydropower, RT3, May 2024
Insurance		
Inland Navigation	<p>"It was a challenge, and at least this is my opinion. I would have formulated this work package in a different way because there are some sectors where it's possible to discuss horizontal topics, but with navigation, it is quite challenging, sometimes impossible, to talk about horizontal topics without mentioning specific rivers or stretches."</p>	Work Package 4 economic sector questionnaire report. <a href="https://www.hutton.ac.uk/sites/default/files/files/MERLIN-all%20sector%20questionnaire%20report_20221125.pdf">https://www.hutton.ac.uk/sites/default/files/files/MERLIN-all%20sector%20questionnaire%20report_20221125.pdf</a> , Ibrahim et al., 2022
	<p>"It is important to look at case-by-case issues and consider specific sites. In very populated areas the situation is different from completely natural environments."</p>	Inland Navigation, RT2, June 2023
	<p>"We just need to look which nature-based solution is appropriate at which location so it doesn't fit everywhere."</p>	Inland Navigation, RT3, June 2024
Peat Extraction	<p>“Different actions for different types of sites, requires different actors. Other stakeholders have to join in. We can look at good examples from Canada. The discussion highlighted the need for adopting a nuanced strategy that recognises the diversity of peat extraction sites. It emphasised the distinction between active extraction sites and those in need of restoration, each requiring tailored approaches involving different actors. Although the Canadian example (CPMA) provided valuable insights, participants recognized the ongoing challenge of finding the right groups/ bodies within Member States. Establishing clear roles and promoting collaboration amongst stakeholders emerged as key priorities for effective action.”</p>	Peat Extraction, RT3, Notes, May 2024
	<p>“How restoration is undertaken, however, varies across countries. In some cases, restoration is only one option for the after-use of the sites. In other</p>	Peat Extraction, RT3, Notes, May 2024

	cases, the land is returned to the landowner to carry out after-use, which is often forestry, agriculture (e.g., paludiculture), wetlands or pilot projects such as generation of green/solar energy.”	
Water Supply & Sanitation		
Unclear responsibilities		
Agriculture	<p>“For bigger projects, I think one of the obstacles can be the access and the control of larger contiguous land, which is also a problem.”</p> <p>"The moment you're focusing on water...it's the neighbours downstream, and so it's much more complicated to find collaboration on a catchment scale that is needed."</p>	<p>Agriculture, RT2, June 2023</p> <p>Agriculture, RT2, June 2023</p>
Hydropower	<p>“You know, we as in Merlin team, we're not gonna be around to coordinate. So, it does require someone to step into that leadership role... I'm not sure on the how the community of practice will go forward. I've, I've integrated it into the strategy, so action five at the strategy is we need some mechanism for building leadership capacity cause I was like, nobody's gonna lead this, but yeah, you need someone to lead that to get the lead, you know, yeah, you know.”</p> <p>“I think all the participants, representatives from the hydro sector associations themselves and also from national and European level and they could be the greatest ambassadors maybe to reaching out or ask them how, what would be helpful for, for them as professionals in their organisation to reach their board, or the ones that are directors to decide on policies because so it, it could for example be that that exchanging the results of this MERLIN hydro sector work the... maybe it's key that this is presented in a way of learning and inviting them to step up and have a have a commitments.”</p>	<p>Coordinator / Sector Lead Interview, May 2024</p> <p>Hydropower, RT3, May 2024</p>
Insurance	<p>“...To me it is the role of the EU to motivate the nature-based solution policies.”</p> <p>“... but then he investors who is paying these actions to me is another, another issue and to me the ones that are taking advantage economic advantage of the presence of this structure, for instance in the stream or whatever have to pay or invest partially the money in the demolition, for instance, of a barrier to solve the problem. This is the electric power, t hydroelectric sector. Yeah, of course. Because they are taking advantage. Economic advantage of that and also in that case the insurance if they are saving more money because this area is an area with a high risk and also the government because is also a governmental responsibility.”</p>	<p>Insurance, RT2, May 2023</p> <p>Insurance, RT3, May 2024</p>
Inland Navigation		
Peat Extraction	"Also, the industry cannot necessarily control how landowners use land once peat companies complete their activities. Older peat extraction licences issued 20+ years ago mostly have no restoration conditions, so companies have no obligation to restore such sites"	<p>Peat Extraction, RT1, July 2022</p> <p>Peat Extraction, RT2, July 2023</p>

	<p>"In one production area can be numerous landowners. When the rented areas are no longer needed for peat production, the areas are handed over to the landowner after the aftercare works have been completed. The landowner has the right to make decisions of the next land use."</p> <p>"I think from talking to members of the extraction sector, a lot of them would be happy to do these, but the parties and stakeholders that they need to reach out to also have to be willing, so it has to be two ways."</p> <p>"If it's not mandatory for farmers or for agriculture... there's only so much peatland the peat extraction sector can restore."</p> <p>"The landowners as big in peat production companies, they don't use their land, they rent it from government. [...] So actually, peat production cannot influence any way how they use their land."</p> <p>"Nowadays we talk very much of watershed management. We have quite scattered land use and landowners, especially in the peat sector, and if you like to do restoration in the watershed, several landowners should plan it at the same time. Different landowners may have varying interests and methods, impacting overall restoration efforts."</p> <p>"I think we're tackling this from the wrong end... at the moment, the aspects that deal with peatlands and peat seem to be devolved to Member States."</p> <p>"We need to have, we need to know what each Member State does under the EU would need to know and then decide whether in fact, that it came from the top... I know that there will probably be some resistance, but unless there is some direction from above, then you're not going to get things happening on the bottom... Why would you change what's happening at the moment if you don't see that it's getting any bother?"</p> <p>"So we're asking, let's say, a fairly small enterprise in terms of its area of impact to be considering upscaling to do large scale restoration. And while I'm sure they could be part of it and part of partnerships, I can't see that they could be the driving force. They don't have the authority of the law, the resources. So how would all of this come about, you know. How would you get the whole thing started if it's actually something that is possible and I know many of my colleagues think that we're actually talking about the impossible or the unlikely, but fortunately, that's what Merlin's about."</p> <p>"There are quite a lot of public land or land in public ownership that could be restored [...] But to get these ideas to private owners, it's just another thing. What they are asked to do, but nothing is given back for them"</p>	<p>Peat Extraction, RT3, May 2024</p> <p>Peat Extraction, RT3, May 2024</p> <p>Peat Extraction, RT3, May 2024</p> <p>Peat Extraction, RT3, May 2024</p> <p>Peat Extraction, RT3, May 2024</p> <p>Peat Extraction, RT3, May 2024</p> <p>Peat Extraction, RT3, May 2024</p> <p>Peat Extraction, RT3, May 2024</p>
<p>Water Supply &amp; Sanitation</p>	<p>"In France and then at the international level so we have a view on, on both sides and as it has been mentioned before I think SDA is a bit special as it's water utility drinking, water sanitation, running</p>	<p>Water Supply and Sanitation, RT3, April 2024</p>

	<p>water, but also managing the water resources and usually these are different entities. And I think we need to, looking at this, the role of this, of the water utilities, we need to think about the traditional roles on wastewater, stormwater, run off management...”</p> <p>“(...) we know they are very eager to implement nature-based solutions and they're very interested in the benefits that it can have...so from, from our, our perspective, there is a lot of interest really a lot of interest in it...but they, they need support and they need a mandate to do so, so from our, our perspective that's the main the main point.”</p> <p>“(...) a second thing is we see regrettably now a sharp increase of climate, climate threats, climate change threats like extreme heat waves or intensive rainfall and floods. And I think people start realizing that we really need to act and I think more and more we see that you cannot solve this with grey measures you have to have a more comprehensive approach where all sectors and all level of governance needs to be involved. So, having the narrative right and having more forward-looking approach will help I think to mobilize everyone to act and that realization that you can only act if you work well with higher level”</p>	<p>Water Supply and Sanitation, RT3, April 2024</p> <p>Water Supply and Sanitation, RT3, April 2024</p>
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**Sectoral and cross-sectoral coordination and collaboration**

Difficulty in establishing partnerships (institutional)

<p>Agriculture</p>	<p>"The farmers are a little bit left alone at the moment in terms of the technicalities of nature-based solutions."</p> <p>"Collaboration on a catchment scale is much more complicated to find."</p> <p>"The moment you focus on water, you need catchment-wide collaboration, and that's very often very difficult... especially for total retention and nature-based solutions focusing on water, it's much more complicated to find a collaboration on a catchment scale."</p>	<p>Agriculture, RT2, June 2023</p> <p>Agriculture, RT2, June 2023</p> <p>Agriculture, RT2, June 2024</p>
<p>Hydropower</p>	<p>"Well, yeah, I would, if you've not had stakeholder engagement experience, like, you really need to understand what relationship building, like how it, how it happens and how you draw people in slowly but surely and build trust... you go oh yes trust and relationship building is really important, but actually how to do that and being clear with your emails, being clear with your communication, your terminology, you know, not being too distant."</p>	<p>Coordinator / Sector Lead Interview, May 2024</p>
<p>Insurance</p>	<p>"(...) the challenge is in getting people involved and participating and engaged and from my experience anyway, you need to send a lot of invites well in advance, send reminders to people. It might be that people are just too busy to answer, but they're not against attending, but just missed your e-mail or said "I will reply" and just forgot. And yeah, like block the agenda with an invite as soon as people say "yes"... It's hard also to do logistically"</p>	<p>Coordinator / Sector Lead Interview, June 2024</p>
<p>Inland Navigation</p>		



<p>Peat Extraction</p>	<p>"I'm really challenging landowners and other sectors using peatlands also to participate in the partnership. I think there is no question about willingness to share the lessons with the stakeholders and participate in discussions and also help to embed the sector experience in policies."</p> <p>"I don't think there's a problem getting people together to discuss things [...] but they need the mechanism that will bring them together and that you know, there are different ways and models of doing that [...] but it's not overall joined together to work towards a positive and acceptable policy that will deliver what the EU wants [...]. You know, the complicated things tend to put off administrators from moving very quick. [...] The good thing is we're talking about it and that I think is what's important."</p> <p>"There is a lot to take into consideration and we hope to have discussions with partners from other sectors to understand their views and work together."</p> <p>"Integrating various stakeholder perspectives into a single strategy is challenging. We often face difficulties reconciling different viewpoints, which makes it hard to develop a unified approach for peatland restoration."</p>	<p>Peat Extraction, RT3, May 2024</p> <p>Peat Extraction, RT3, May 2024</p> <p>Peat Extraction, RT3, May 2024</p> <p>Peat Extraction, RT3, May 2024</p>
<p>Water Supply &amp; Sanitation</p>	<p>"Often, it's said, yes, we need to work in a multi sectoral approach at the same governance level for example a national or local level, but I think we all know that's hard work because you, you need really to invest in relationship and trust and, and exchange of, of information. Develop a common language, for example, is also very important. Because I often witness that people are working on spatial planning or working on soil health. They don't speak the, the language of people who work on water management or on biodiversity."</p>	<p>Water Supply and Sanitation, RT3, April 2024</p>
<p><b>Challenges in Multi-Sector Collaboration for Implementing NbS (on the ground)</b></p>		
<p>Agriculture</p>	<p>"We have to take a holistic approach (...) if we were to drive people away from South American fruit, what would that do to local communities in those places if UK demand was suddenly reduced? (...) There are also environmental and nutrition impacts to consider."</p>	<p>Agriculture, RT2, June 2023</p>
<p>Hydropower</p>	<p>"There was also tensions between... DG Clima, and he pushed back against some of the defensiveness of the sector of the, of the companies because they basically were trying to reject the idea that hydropower or dams, barriers were a problem for rivers... you know, so actually it was quite useful for the, yeah for the (DG) to be involved because he could more easily push back because he seems more of an honest broker (...)"</p>	<p>Coordinator / Sector Lead Interview, May 2024</p>
<p>Insurance</p>		
<p>Inland Navigation</p>		
<p>Peat Extraction</p>	<p>"(...) A few weeks ago we met in Climate ministry with, umm, it was about the land use of peat production, so communication is good and</p>	<p>Peat Extraction, RT3, May 2024</p>

	everybody's aware, but nobody is actually doing anything."	
Water Supply & Sanitation	"I was wondering how much the cross sectorial approach and public private partnership are also considered. Because if we think of nature-based solutions and I think also (name) identified this, there are different, there are different quality size. So, the scale of the, of the solution is maybe bigger than one individual insured client and the time. So, I think in order to really create an impact and based on the research that as I said actually have these two dimensions are also quite important..."	Water Supply and Sanitation, RT3, April 2024
<b>Policies, Regulations, and Governance</b>		
Fragmentation, bureaucracy and rigidity of policies and regulations		
Agriculture	"In Hungary, the Agro-ecological scheme (...) says you can get extra money on your hectares if you get two scores from interventions. (...) But the scheme has become vague due to mistakes at the member state level."  "The scheme under the new CAP strategy...made this scheme completely vague."	Agriculture, RT2, June 2023  Agriculture, RT2, June 2023
Hydropower	"There are these 2 objectives that are not...it's not compatible and even when you look at European Directives and you look at REPower Europe then you can see that if you apply that the Water Framework Directive will never be accomplished. If you apply one you will never accomplish the other and by not accomplishing one member states also have something to a point where they need...they may need to pay fines and so Habitats Directive will never be achieved."  "...That's why I was saying that we all of these conflicting goals and targets in Europe and some countries or member states are better at implementing some of them than others and so we have all of these different playing fields in Europe."	Hydropower, RT3, May 2024  Hydropower, RT3, May 2024
Insurance	"So, so if you have the, the have used two or three-year two years at least to develop these specific how can insurance, what type of economic activities under the Taxonomy are defined and how could this new nature reservation law, Nature Restoration Law support the Taxonomy... But, but at least the suggestion would be that they talk to each other. And then they bring in insurance experts to see how, how the taxonomy can be fit for, for the, the new Nature, Nature Restoration law"	Insurance, RT3, May 2024
Inland Navigation		
Peat Extraction	"I think in Finland we could make more progress on that, the authorities are recognising that, as we have in Finland because of the Environmental Permit, after the end of the peat extraction you need to keep the water treatment structures up to 2 years and because then its hindering us to do restoring activities, we can't do that but yeah slowly getting improvement of that. Hopefully, that will continue. An important point that we need to have authorities with us on this work."	Peat Extraction, RT1, May 2022  Peat Extraction, RT1, May 2022

	<p>"Yes I am not working in the industry but what I thought about is for instance the bureaucratic barriers already hindering restoration right now. For instance, in Finland when you have to define the after-use, you have a schedule and things like that and if they stop extraction very suddenly or much earlier than expected, they need to apply again to get the permission for the restoration for the after-use. I mean while that is understandable so that everybody doesn't do what he feels would be right and there's some control by the authorities, I understand that it takes a while to get those decisions, but I think it is very difficult to...for the companies and also harmful for those areas if they just lie bare because some papers have to be moved from one stack to the other."</p>	
Water Supply & Sanitation	<p>"We also have this, separation in the, in, the European Commission, for instance, in DG environment, you have one unit that is looking at water and you have one unit that is looking at water services and they are talking together, they are on the same floor, but it's, it's, it's also we also have to, and we are the RTD in another building in another way. So hopefully we will have, in the future mandate, more occasion to discuss together and to show the, the connection that's that are in these different worlds but this is something that we have also to look to look at inside, inside, inside the commission and we try to do this regularly, but it's something that need to progress."</p>	Water Supply and Sanitation, RT3, April 2024
Insufficient / inconsistent guidelines, certification and standards		
Agriculture	<p>"Thinking about CAP, there is a need for a coherent and continuous policy instrument to enhance or incentivize nature-based solutions, which is not really there."</p> <p>"Some things in CAP probably should be mandatory."</p>	<p>Agriculture, RT2, June 2023</p> <p>Agriculture, RT2, June 2023</p>
Hydropower	<p>"(...) so, that's why I was saying that we all of these conflicting goals and targets in Europe and some countries or member states are better at implementing some of them than others and so we have all of these different playing fields in Europe."</p>	Hydropower, RT3, May 2024
Insurance	<p>"So currently the taxonomy only covers two types of activities for insurance companies and that's reinsurance and climate related perils for non-life insurance. So one idea on how to improve the taxonomies indeed to include more insurance activities and covering everything that has to do with the water is one avenue to improve the way, at least the insurance company is portrayed to be contributing to sustainability goals. This is of course very complex process that requires so level one changes to the taxonomy is quite difficult to do at this stage, but this is at least the way we see it already Including this activity in the taxonomy classification would be an improvement in the policy."</p>	Insurance, RT3, May 2024
Inland Navigation	<p>"Manuals and guidelines are available but not well-known. Many new ideas appear, which also should be considered, but it is difficult to follow all of them."</p>	Inland navigation, RT2, July 2023

	Developing guidelines and reaching the target audience are both long-term processes."	
Peat Extraction	<p>"If the policy says that you have to restore your land and there's a subsidy for that, or something compulsory, then of course, but is that against the kind of law that we have today, that landowners can decide what to do with their land?"</p> <p>"Although there are numerous laws proposing restoration projects, in practice, nobody is doing anything. There is a gap between the legislative framework and actual implementation."</p> <p>"The current text, if you know it's not finalised and yet to pass the final council session, is that if it's not mandatory for farmers or for agriculture, you know there's only so much peatland in the peat extraction sector can restore."</p> <p>"Existing frameworks like FloriPEFCR and PepsiCo focus on environmental footprints but not biodiversity... it's difficult to measure consistently."</p>	<p>Peat Extraction, RT2, July 2023</p> <p>Peat Extraction, RT3, May 2024</p> <p>Peat Extraction, RT3, May 2024</p> <p>Peat Extraction, RT3 Notes, May 2024</p>
Water Supply & Sanitation		
Challenges in administration of environmental requirements		
Agriculture	"There are serious attacks on cattle and ruminant breeding because of the methane issue (...) but some areas can only be used for grazing. It is a difficult question."	Agriculture, RT2, June 2023
Hydropower	"I believe this is something that really requires a unbiased holistic vision and approach because if we only see this from a climate energy side then we run the risk of overlooking at other targets which are crucial. There is the usual conundrum between the climate targets and the Biodiversity targets and if we just look at the climate targets, we are not going to reach our Biodiversity targets and this is an issue... we should really have an unbiased approach which is a multivariable analysis of all needs and objectives"	Hydropower, RT3, May 2024
Insurance		
Inland Navigation		
Peat Extraction	<p>"There are so many nature protection laws and protected areas that people cannot use their land freely. This complexity makes it difficult to introduce new restoration initiatives and gain support from landowners."</p> <p>"Part of the nature restoration law, it's very vague, but it states Member States shall be incentivised to make it an attractive option for farmers and private landowners."</p> <p>"To get a license for rewetting, you need to prepare an EIA and detailed planning for the whole area, including hydrological conditions. The licensing process can take several years, and in some countries, it takes even longer."</p>	<p>Peat Extraction, RT3, May 2024</p> <p>Peat Extraction, RT3, May 2024</p> <p>Peat Extraction, RT3 Notes, May 2024</p>
Water Supply & Sanitation	"Also looking into the governance issues. Apart from the multi-level nature of governance of water and nature-based solutions, meaning that you need to coordinate on the vertical scale of, of the governance. We also need to consider the need to	

	<p>better coordinate at the horizontal in each of the levels. You also need to coordinate in the same level of governments that are involved. And that shows, for example, at the local level, you need to coordinate between those competent authorities behind the water services and those behind the urban planning. So also, that level of coordination is very much needed.”</p> <p>“And, in a larger scale, our governments. Because when I see on the on my French republic, box ticking always is always there. You have farmers which are in their box. You have water activities; we have a little box and everyone is fighting between themselves. Locally, we have no problem with the farmer unions, but nationally it's we have a problem because they tend to not have the same objectives. And so, a big problem we will have is to make our local solutions none at wider levels because they are not implemented everywhere. And you have a kind of strengths, but we are most, most, much more, more, weak or not on, locally and politically.”</p>	<p>Water Supply and Sanitation, RT3, April 2024</p> <p>Water Supply and Sanitation, RT3, April 2024</p>
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**Challenges with Green Deal implementation**

Agriculture		
Hydropower		
Insurance		
Inland Navigation		
Peat Extraction	<p>“When the Green Deal came out, industries were not thrilled because it meant a lot of additional work and regulatory complexity. For our sector, it required hiring more personnel and navigating new legislative and non-legislative files.”</p>	Peat Extraction, RT1, May 2022
Water Supply & Sanitation		

**Funding and economic viability**

**Concerns about economic viability**

Agriculture	<p>"We've got targets to increase our healthy sales, which aligns with our sustainability work. (...) It's trying to find that balance between being a profitable business and encouraging our customers to shop sustainably."</p> <p>"It's really hard (...) we're not a premium retailer, but we are the largest retailer (...) we have to figure out how to charge a price premium for sustainably produced food while offering value add, quality, and packaging benefits."</p>	<p>Agriculture, RT2, June 2023</p> <p>Agriculture, RT2, June 2023</p>
Hydropower		
Insurance	<p>“Also, because I guess that if the climate change keeps increasing and disasters are more and more frequent and more extreme, then it would mean that some activities will be in trouble anymore, or the premiums would get too high and people won't insure. So, that results in a loss of market, I guess, for the insurance sector.”</p>	Coordinator / Sector Lead Interview, June 2024
Inland Navigation	<p>“There are lots still, people that view large rivers primarily as a transport route and traditional grey and then hard engineering solutions are often seen</p>	Inland navigation, RT3, June 2024

	more cost effective or more functional for navigation.”	
Peat Extraction	<p>"Encouraging private owners to participate in wetland restoration requires significant time and financial investment without direct benefits for them."</p> <p>"There's a lot more work that's needed on that to actually make it financially feasible to do anything. A lot of the carbon farming things that we see now are effectively small scale and just done as sort of experiments and nothing really large scale."</p> <p>"[...] The expression of paludiculture is interesting, but everything I've seen on it so far remains quite small scale. I'm not sure if there's a lot that you can actually grow on it that has some sort of economic benefit, but it is obviously still quite young so I'm not sure how much that has progressed."</p>	<p>Peat Extraction, RT3, May 2024</p> <p>Peat Extraction, RT3, May 2024</p> <p>Peat Extraction, RT3, May 2024</p>
Water Supply & Sanitation		
<b>Concerns about funding for Restoration Beyond Site Level</b>		
Agriculture		
Hydropower		
Insurance		
Inland Navigation		
Peat Extraction	"There is not a mechanism to finance activities beyond the sites of peat operations; if any 'levy' for restoration outside of the operation sites is suggested, it would be a major change of principle that should be initiated and thoroughly discussed first at the Member State level and involving all forms of land use considering also legal aspects like the constitutional private property rights."	General comments from peat extraction sector participants on Peat Extraction RT2, September 2023
Water Supply & Sanitation		
<b>Public versus private sector funding gaps</b>		
Agriculture	"There is no funding programme which is dedicated to the green deal, nor is there a funding programme which is dedicated to grassroots, bottom-up action and to community building."	Agriculture, RT2, June 2023
Hydropower		
Insurance	"Again as a Scientist, I think that the people don't want to invest in more in, in nature because yes or not everyone. So, I think that for that reason is really important legislation and just force to invest in money. I mean usually the private companies don't want or don't take care about that. I mean, yeah, but I mean the public sector, yes, yes. But the private companies you have to force them. So yeah, to me is more legal responsibilities....no, I know that it's not a really optimistic point of view."	Insurance, RT3, May 2024
Inland Navigation	"It's difficult to put a price on it because we have this multifunctional use where the waterways are used by many actors."	Inland navigation, RT3, June 2024
Peat Extraction	"A few weeks ago, we met in Climate ministry about the land use of peat production, so communication is good and everybody's aware, but nobody is actually doing anything."	Peat Extraction, RT3, May 2024

<p>Water Supply &amp; Sanitation</p>	<p>“There is a difference between how the public and the private sector look at NbS. MERLIN should aim to tackle all sides of the story. Public operators believe that the management of water, as an essential resource, belongs in the public domain and that all the revenues generated from water management services should be reinvested in the water cycle, while private operators advocate for the benefits of public-private partnerships. Both stances support sustainable use of water resources. Equally, private operators advocate for strong and efficient public leadership to maximize the benefits of public-private partnerships, with public authorities having the freedom to use private operators to efficiently execute tasks where and when appropriate.”</p> <p>“(…) it's follow the money. No, but sometimes I think with NBS we, we try to avoid a little bit the who is going to pay for it and who's going who is benefiting from it. But I think it's also good. To have it open on the table. I think one of the because otherwise you, you have a dance around this critical topic and for example there's a lot of optimism that banks or that public companies, no private companies will step in on NBS. The insight is that given that it's multi benefit and it's often related to flood prevention and good water quality and drought, etc. At the end of the day, it's often the public administration who has that task. Yes, so. Being deliberately quite vague on who has to pay can maybe slow down the implementation of NBS as well... it's very likely that 90% of the NBS is very likely have to be invested by, by public administration.” , WSS Roundtable 3, 25 April 2024)</p>	<p>Water Supply and Sanitation RT2 Notes, June 2023</p> <p>Water Supply and Sanitation, RT3, April 2024</p>
<p>Concerns about alternative funding mechanisms</p>		
<p>Agriculture</p>		
<p>Hydropower</p>		
<p>Insurance</p>		
<p>Inland Navigation</p>		
<p>Peat Extraction</p>	<p>"We need to make sure this is not green washing. It actually leads to true restoration and maybe we need a tool or some kind of metric to make sure that the investments actually do lead to true restoration"</p> <p>"We are very much awaiting for the UCDR of this carbon dioxide removal framework to happen, but actually it is - it seems to be a very long term period to getting that functioning"</p> <p>"There's a lot more work that's needed on that to actually make it financially feasible to do anything. A lot of the carbon farming things that we see now are effectively small scale and just done as sort of experiments and nothing really large scale."          "...The expression of paludiculture is interesting, but everything I've seen on it so far remains quite small scale. I'm not sure if there's a lot that you can actually grow on it that has some sort of economic benefit, but it is obviously still quite young so I'm not sure how much that has progressed."</p>	<p>Peat Extraction, RT1, May 2022</p> <p>Peat Extraction, RT2, July 2023</p> <p>Peat Extraction, RT3, May 2024</p>

Water Supply & Sanitation		
<b>Lack of incentives for restoration</b>		
Agriculture	<p>"No economic incentive for farmers to practice NbS...farming subsidies are not strong enough on remedial works."</p> <p>"The agriculture sector is in lockdown. They agreed internally they are not going to talk to anyone external until they have what they want. (...) Their concern is: we cannot make a living out of this."</p>	<p>Agriculture, RT2, July 2023</p> <p>Coordinator / Sectoral Lead Interview, June 2024</p>
Hydropower		
Insurance		
Inland Navigation		
Peat Extraction	<p>"It has to make economic sense for people to do rehabilitation"</p> <p>"There's no obligation for them, so in many cases... they're often just not going to meet the targets because they're not going to be forced to. So then it's about how to financially incentivise the farmers to actually want to restore."</p> <p>"The incentive should be drawn... I don't see money coming from the CAP currently, and I don't see money coming from the member states"</p>	<p>Peat Extraction, RT2, July 2023</p> <p>Peat Extraction, RT3, May 2024</p> <p>Peat Extraction, RT3, May 2024</p>
Water Supply & Sanitation		

## ENABLERS

SECTORS	QUOTES	REFERENCES
<b>Data, Evidence, and Measurement</b>		
<b>Developing Standardised Tools and Metrics</b>		
Agriculture	"Case studies and evidence-based metrics are crucial for showing that NbS can work and provide tangible benefits."	Agriculture, RT2, June 2023
Hydropower		
Insurance	"(...) if you if you have indexes, you know that your house is not efficient. You need this information and to me this is a really good way to incentive the companies and also the governments to apply nature based solutions. Try to reduce this this rise, this natural risk and consequently is a way to motivate the people to be in these areas in this high Risk areas."	Insurance RT2, May 2023
Inland Navigation		
Peat Extraction	"They can be diverse in different countries, and it makes...difficult to compare...we are looking more or less for a tool to make it possible to make comparisons between the different after uses"	Peat Extraction, RT2, July 2023
Water Supply & Sanitation		
<b>Adopting Methods to Demonstrate NbS Benefits</b>		
Agriculture	"It's essential to clearly demonstrate the economic and ecological benefits of NbS to convince"	Agriculture, RT2, June 2023



	<p>stakeholders, especially those who are sceptical like traditional farmers."</p> <p>"It is always an immediate profit, which we are looking for as farmers, but if you are dealing with soil or water systems and doing any improvements, it's not a short-term benefit. It's a long-term benefit..."</p>	Agriculture, RT2, June 2023
Hydropower		
Insurance		
Inland Navigation	<p>"...but people should know [the benefits] and also know that it's not purely for nature, but that they also serve other benefits."</p> <p>"The most striking argument in every case is to display the benefit-cost ratio. For example, the Madeira River project, where NbS had the best benefit-cost ratio."</p>	<p>Inland navigation, RT3, June 2024</p> <p>Inland navigation, RT3, June 2024</p>
Peat Extraction		
Water Supply & Sanitation		
<b>Enhancing Monitoring and Evaluation</b>		
Agriculture		
Hydropower		
Insurance		
Inland Navigation	"...So, by involving the stakeholders during these monitoring and research project, we saw that there's increasing support and appreciation in by them..."	Inland navigation, RT3, June 2024
Peat Extraction	"Also a need for better data on the actual greenhouse gas emissions coming from extraction sites, particularly year round and we need to think carefully about the...if we increase the burden on the industry what that means for food security and knock on down the value chain so lots of useful stuff."	Peat Extraction, RT1, May 2022
Water Supply & Sanitation	"I think 70 or 80% of the of the water NBS projects have forgotten to start a monitoring before. It was not clear what were the objectives and which parameters or sometimes there was only one measurement one year after completion of the project and it was not a long-term monitoring and so I think the challenge is that we get more in a technical what is normal in the technical grey discipline of, is that we start to get I think we need more measurements, more development of, of solution for example treated wetlands as a part of water, water treatment."	Water Supply and Sanitation, RT3, April 2024

	<p>So, for, this needs of, monitoring, I think, I think the evaluation of effective for NBS is very challenging because we have a lot of incentives because we're working with natural ecosystems which are not fully engineers I mean we depending on nature and then for this natural ecosystems, we need long times. I mean, we saw the examples of planting trees for examples. It's not with a duration of a project of 3 years or 5 years, but we will see the effects. So we really need to ensure a long-term and this is a real challenge for, for project and maybe we need to maintain or to have some kind of requirements for this long-term monitoring.</p>	<p>Water Supply and Sanitation, RT3, April 2024</p>
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**Awareness and knowledge sharing**

Raising Awareness – General Public

<p>Agriculture</p>	<p>"It's important to get the public to understand the value of nature-based solutions; that will make it easier to make the business case to local governments and companies."</p> <p>"I don't necessarily think eco labelling is the answer for nature-based solutions. So, I think we just need to find ways to embed it in the supply chain more generally, but I mean, even just, just programmes and initiatives that get consumers more, I don't know, understanding of nature and the role that nature can play would be really helpful."</p> <p>"Demonstrating the benefits to communities, whether economic or ecological, is key to gaining their acceptance and support."</p> <p>"I think we need to find ways of getting that knowledge out there. If we can get the public to understand the value of nature-based solutions, it will be much easier to make the business case."</p> <p>"...What you're looking for to involve communities into nature-based solutions and coordinate actions in small localities... So, it's basically a small group of people that represent a local community that gathers public authorities, private people, entrepreneurs, civic organisations, associations. It's basically a small representation of a given territory in Europe. So, this is called a Local action group, and they are spread all throughout Europe... That's 3,300 groups of people that are there on the ground, and that have been there for some of them since 1991. So, they do know their stakeholders pretty well."</p>	<p>Agriculture, RT2, June 2023</p> <p>Agriculture, RT2, June 2023</p> <p>Agriculture, RT2, June 2023</p> <p>Agriculture, RT2, June 2023</p> <p>Agriculture, RT3, June 2024</p>
<p>Hydropower</p>		

Insurance		
Inland Navigation		
Peat Extraction	"People need to see NbS working in real-world scenarios to fully understand their value and potential."	Peat Extraction, RT1, July 2022
Water Supply & Sanitation	"(...) and I agree with the, with (name) that we need to integrate all these NBS in the in the master plan of sanitation. In the case of Barcelona, it is It's important also to explain to, to the citizens to have the transparency and the rendition of all this investment, explain why it's important to develop a nature based solution that sometimes are not that all the citizens are waiting for. We need to explain that we need to change the way that we construct."	Water Supply and Sanitation RT3, April 2024
<b>Raising Awareness – Sector Stakeholders</b>		
Agriculture	"Farmers and municipalities lack technical knowledge about small stream regulation and the broader benefits of NbS. This gap needs addressing to enable effective implementation."  "We should concentrate on producing very convincing material to convince farmers about the economic and ecological benefits of such solutions."	Agriculture, RT3, June 2024  Agriculture, RT3, June 2024
Hydropower	"I also work on nature-based solutions in cities and they are highly recognised as a solution for benefits for water management, the reduction of energy demand in summer and so on. So just a common context, NBS deliver multiple benefits. Now they are highly recognised like solution."	Hydropower RT3, May 2024
Insurance	"Making it more interactive for them, more engaging but it's not like a... You know, we're not doing a webinar to give out information. We were doing roundtables, so they gave information to us and that was the point of all the roundtables. Maybe we could have found a way to make it more interactive to get more response rate and more engagement, but I wouldn't know how."	Coordinator / Sector Lead Interview, June 2024
Inland Navigation	"The umbrella organisations should know examples of how things can be done differently from real bottom-up experiences. This vertical communication from bottom-up to top-down is useful."  "The navigation sector has two or three big events each year. It would make sense to organize side events focused on NbS to connect the sector."	Coordinator / Sector Lead Interview, June 2024  Coordinator / Sector Lead Interview, June 2024
Peat Extraction		
Water Supply & Sanitation	"The the formation of a young engineer and the formation of older engineers and technicians is very important. I think it will permeate first from the younger generations. If there are accustomed to	Water Supply and Sanitation, RT3, April 2024

	<p>work in partnerships. They will do that for all their career.</p> <p>“(...) we know they are very eager to implement nature-based solutions and they're very interested in the benefits that it can have...so from, from our, our perspective, there is a lot of interest really a lot of interest in it, especially when it comes to tackling floodings but also more and more to tackling climate change and drought, water scarcity, this kind of risk, but they, they need support and they need a mandate to do so, so from our, our perspective that's the main the main point.</p>	<p>Water Supply and Sanitation, RT3, April 2024</p>
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**Raising Awareness – Politicians**

Agriculture		
Hydropower		
Insurance		
Inland Navigation	<p>"The waterway authorities are certainly aware, but the shipping industry is not yet so aware...policymakers are not also necessarily aware."</p>	<p>Inland navigation, RT3, June 2024</p>
Peat Extraction	<p>"...producers have a vested interest right because they'll want to hear what their constituents have to say and having those MPs on Parliament Hill that really champion us and understand our industry will be key in terms of, you know, when we appear before federal committees or we put in submissions, or we talk to National Resources Canada or Agriculture Canada..."</p> <p>"Official recognition and support from legislative bodies can significantly enhance the visibility and perceived importance of sustainable growing media, including peat, within the horticulture industry."</p>	<p>Peat Extraction, RT1, May 2022</p> <p>Peat Extraction, RT3, May 2024</p>
Water Supply & Sanitation	<p>"a second thing is we see regrettably now a sharp increase of climate, climate threats, climate change threats like extreme heat waves or intensive rainfall and floods. And I think people start realizing that we really need to act and I think more and more we see that you cannot solve this with grey measures you have to have a more comprehensive approach where all sectors and all level of governance needs to be involved. So having the narrative right and having more forward-looking approach will help I think to mobilize everyone to act and that realization that you can only act if you work well with more, higher level."</p>	<p>Water Supply and Sanitation, RT3, April 2024</p>

**Developing Knowledge Exchange Networks**

Agriculture		
Hydropower		

Insurance	<p>“They need to classify or to identify their risk reduction measures of course nature based solution could be such measure, solution especially related to the water related risk and floods which is one of the most significant for most of the insurers, so that will be very useful. And I think it's, uh, should be one of the first step also was the other colleagues said the sharing of those data is something that regulators should step up, I think, and other public players in order to have such shared database.”</p>	Insurance, RT3, May 2024
Inland Navigation		
Peat Extraction	<p>"The Canadian sphagnum Peat Moss Association has a longer history of partnerships with governments and scientists. Their structured partnerships have led to significant advancements in restoration techniques."</p>	Peat Extraction, RT1, July 2022
	<p>"It's not just about putting information out there, but ensuring it reaches the right people in a way that resonates with them."</p>	Peat Extraction, RT1, July 2022
	<p>"Then as you said, it will always depend on the Member State, the local circumstances...probably not platforms, but...discussions, groups, dialogue."</p>	Peat Extraction, RT3, May 2024
	<p>"So the in Peatland Code, for example, pre-certification before you go into that. And there's an issue about capacity, just generally in terms of restoration and about upskilling of not just upscaling but upskilling some of the people that are involved in this because obviously they need to have skilled contractors ...It's great if you can deal with a large-scale body which have extraction experts..."</p>	Peat Extraction RT3, May 2024
Water Supply & Sanitation		

## Complexity and Integration of NbS

### Hybrid Approaches and Strategies for Integration with Existing Infrastructure

Agriculture		
Hydropower		
Insurance		
Inland Navigation	<p>"NbS should not necessarily be seen as a complete alternative but rather as part of a broader strategy to improve resilience"</p>	Inland navigation, RT3, June 2024
	<p>"Nature-based solutions can reduce maintenance efforts such as dredging or maintenance, or if infrastructure is outdated and needs to be repaired..."</p>	Inland navigation, RT3, June 2024

	<p>it can be used as an enhancement or an additional measure"</p> <p>"If infrastructure is outdated and needs to be repaired, a nature-based solution can be used as an enhancement or an additional measure to support ecological goals and promote sustainable approaches."</p> <p>"The navigation sector, for the companies, they don't want to hear about lower depth conditions...but after a while everyone thought that NbS is welcome...if this supports the longer period of proper width and depth conditions of the rivers"</p>	<p>Inland navigation, RT3, June 2024</p> <p>Coordinator / Sector Lead Interview, June 2024</p>
Peat Extraction		
Water Supply & Sanitation		

### Clarifying Roles and Responsibilities in NbS Implementation

Agriculture	"The more nature-based solutions are applied, the more we know about them, and in the future, it's easier to implement them."	Agriculture, RT2, July 2023
Hydropower		
Insurance		
Inland Navigation		
Peat Extraction	"So we're asking, let's say, a fairly small enterprise in terms of its area of impact to be considering upscaling to do large scale restoration. And while I'm sure they could be part of it and part of partnerships, I can't see that they could be the driving force. They don't have the authority of the law, the resources. So how would all of this come about, you know. How would you get the whole thing started if it's actually something that is possible and I know many of my colleagues think that we're actually talking about the impossible or the unlikely, but fortunately, that's what Merlin's about."	Peat Extraction, RT3, May 2024
Water Supply & Sanitation		

### Sectoral and cross-sectoral coordination and collaboration

#### Cooperation Within the Sector and Across Sectors (institutional)

Agriculture	<p>"Establishing networks of practice, like what MERLIN aims to do, is crucial for spreading knowledge and coordinating efforts across sectors."</p> <p>"Some advocate for formal networks led by governmental or international bodies, while others prefer more grassroots, informal networks that may be more adaptable."</p>	<p>Agriculture, RT2, June 2023</p> <p>Agriculture, RT2, June 2023</p> <p>Agriculture, RT3, June 2024</p>
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	"Strengthening stakeholder engagement and adopting an integrated approach can help in managing challenges and mainstreaming NbS."	
Hydropower	"But we also need to integrate the knowledge from different areas because we are all working at the same thing but in different sectors and we need to have a common understanding and perhaps common tools."	Hydropower, RT3, May 2024
Insurance		
Inland Navigation	"One of the ideal outcomes of this project is to institutionalise cooperation points and stakeholders' engagement."	Inland navigation, RT3, June 2024
	"Navigation and ecological tasks in Germany are now equally important, and the big restoration program, Germany's blue belt, can be a potential booster for implementing NbS, even with people on the engineering side."	Inland navigation, RT3, June 2024
Peat Extraction	"Co-developing and implementing strategies with different sectors can transform restoration efforts and enhance the implementation of NbS."	Peat Extraction, RT2, July 2023
	"[...] The Canadian Sphagnum Peat Moss Association, the CSPMA, they have a longer history of partnerships with governments and scientists and NGOs, so they have quite like 20 years or more of scientific experience, which has led to a lot of development of restoration techniques of peat extraction sites, but separate to that, just the structure of their partnerships is quite good. [...] I think there's a lot to be learned from positive examples from the CSPMA [...]."	Peat Extraction, RT3, May 2024
Water Supply & Sanitation	"Meaning that you see that the staff and the water operators in the water utilities is definitely changing. We see more interdisciplinary teams. We see, of course, chemists, biologists, engineers, but also economists, lawyers, people with a more purely environmental background. Not just biologists. So, I think that should help to really change this very engineering approach to water services and water operators from where we are."	Water Supply and Sanitation. RT3, April 2024
<b>Cooperation Across Landscapes (on the ground)</b>		
Agriculture	"The on-farm level is probably the most important together with the micro-catchment level because that's the cheapest and the CAP is flexible enough to help."	Agriculture, RT2, June 2023
	"There's a lot of talk about the need for larger river restorations, but not enough about the smaller	Agriculture, RT3, June 2024

	capillary systems. It feels like we're missing a piece of the puzzle here."	
Hydropower		
Insurance		
Inland Navigation		
Peat Extraction	"The roundtable process should have included the landowners right from the beginning. Without having their representatives around the table, we cannot talk seriously about committing to landscape-level actions"	General comments from peat industry on Peat Extraction Sector RT2, September 2023
Water Supply & Sanitation	"It's cool because we have an environmental trend. But it's we, I was trained as an engineer with 3 boxes in my head. There was drinking water box. There was the wastewater box and there was a river box. And we were not taught to think with all those boxes together. And it's kind of something which is slowly changing, but it requires some very, some adaptations	Water Supply and Sanitation, RT3, April 2024
<b>Cooperation Between Sector and Policy Stakeholders</b>		
Agriculture		
Hydropower	<p>"I learned amazing things about community building that stands to be much more durable and useful for a water body, than a simple one-off construction project."</p> <p>"I think the most important point was to understand how the different actors involved can help each other from a theoretical point of view and how this can be translated into real action".</p>	Feedback form in response to 'what have you learned'
Insurance		
Inland Navigation		
Peat Extraction	<p>"It is not the responsibility of the extraction industry to restore peatlands beyond the permitted extraction sites. However, through cooperation with actors outside the industry, their skills and knowledge can be utilised to enable large-scale restoration."</p> <p>"Bringing together the Climate Ministry, private landowners, and peat extraction companies in forums can improve communication and ensure that everyone is aware of the laws and restoration efforts."</p>	<p>Peat Extraction, RT1, July 2022</p> <p>Peat Extraction, RT3, May 2024</p>
Water Supply & Sanitation	"The things, the things which work are partnership solutions. They are essential. And you have to take into account that each partner has to contribute equitably to the solution. Each partner must do its part but because we are all specialists of one thing. But communications are to be in common because it's most more effective if you communicate in common because everyone is involved."	Water Supply and Sanitation, RT3, April 2024



## Policies, Regulations, and Governance

### Coherent Policies and Frameworks

Agriculture	<p>" Thinking about cap OCEP, there is a need for a coherent and continuous policy instrument to enhance or incentivise nature-based solutions. Which is not really there. Also, more tailored structures would be needed under CAP."</p> <p>"There is a call for more binding policies and regulations to ensure compliance and drive NbS adoption."</p> <p>"Some believe that flexibility and incentives are key to engaging stakeholders voluntarily, rather than through mandatory regulations."</p>	<p>Agriculture, RT2, June 2023</p> <p>Agriculture, RT3, June 2024</p> <p>Agriculture, RT3, June 2024</p>
Hydropower		
Insurance		
Inland Navigation		
Peat Extraction	<p>"What would be the desirable outcome of the RT talks? A collection of "good practices"? That is fair enough, but we cannot avoid thinking this process to lead to legally binding "one size fits all", top-down regulation over the national and regional level. That is why we are very concerned about the scope and development of these talks..."</p>	<p>Peat Extraction, RT2, July 2023</p>
Water Supply & Sanitation		

### Simplification and Alignment of Guidelines with NbS Criteria

Agriculture	<p>"Aligning several policies, including those under rural and regional development, is essential to adequately support ecosystem restoration efforts..."</p>	<p>Agriculture, RT3, June 2024</p>
Hydropower		
Insurance		
Inland Navigation	<p>"The sector is keen on transforming and modernizing sectoral policies and procedures [...] Joint statements and their implementation increase the understanding of the two sectors (navigation and restoration)."</p> <p>"There is a need to strengthen the role of adaptive management, especially given the planning and approval obstacles that delay NbS implementation. In Germany, we talk about years before coming from an idea to implementation."</p>	<p>Inland navigation, RT1 Notes, July 2022</p> <p>Inland navigation, RT3, June 2024</p>

Peat Extraction	<p>"There is a need for clear, simplified guidelines that everyone can follow, but they should also allow for some flexibility depending on local conditions."</p> <p>"We have some sort of guidelines on the best way to go about restoration and I think any peat producers that I've come across have always been quite positive about trying to get the best outcome."</p>	<p>Peat Extraction, RT1, May 2022</p> <p>Peat Extraction, RT3, May 2024</p>
Water Supply & Sanitation		
<b>Balanced Governance Approaches</b>		
Agriculture		
Hydropower		
Insurance	<p>"... in Germany we have a tax on each and any premium for building insurance is just a minimal tax, half a percentage that goes into public Protection measures. So it's for example Co financing the Fire Brigades of Germany. So this kind of tool is available, it's simply not defined in terms of nature based solutions compared to others. But the legal tool is available and it would be available in our country, such as the Barnier is in France."</p>	<p>Insurance, RT3, May 2024</p>
Inland Navigation	<p>"Case-by-case solution all depends on pilot sites. Not general NbS is known or available, geographical scope and political will are both significant."</p>	<p>Inland navigation, RT3, June 2024</p>
Peat Extraction	<p>"The Dutch government's target for 2025, where 50% of peat acreage will be RPP certified, represents a step forward. Initiatives like this can help set industry standards and improve the overall acceptance of responsible practices."</p>	<p>Peat Extraction, RT3, May 2024</p>
Water Supply & Sanitation		
<b>Green Deal as a Catalyst for Sustainable Practices</b>		
Agriculture	<p>"One is Ecolise who is pointing on the necessity to, to engage local community led initiatives into this whole context so that Green Deal aims cannot be reached without local stakeholders or role players..."</p>	<p>Agriculture, RT3, June 2024</p>
Hydropower		
Insurance		
Inland Navigation	<p>"...shifting more freight transport to inland waterways, transitioning to zero pollution inland waterway transport, so that also connects to an important Green Deal goal which is called zero emission, and within that greening inland waterways infrastructure and ports."</p>	<p>Inland navigation, RT3, June 2024</p>
Peat Extraction	<p>"The Green Deal has allowed us to showcase how our industry supports biodiversity and food security. We can now better highlight the benefits of our products, like reducing fertiliser use and supporting local food security"</p>	<p>Peat Extraction, RT1, May 2022</p> <p>Peat Extraction, RT1, May 2022</p>

	"The Green Deal has provided a common framework that helps align different policies and strategies across Member States, ensuring a more coordinated approach to sustainability"	
Water Supply & Sanitation		

## Funding and Economic Viability

### Targeted Financial Support

Agriculture	"...We need other funds to finance green transition...for instance, we need a regional development fund to finance climate actions. And in this framework to finance, for instance, freshwater ecosystem restoration actions locally...unfortunately, municipalities under 5,000, 10,000 inhabitants are unseen in the regional development policy, whereas cities are getting huge money for climate actions. And the Regional Development Fund is saying that CAP is providing for rural development...Cap is not providing a generous amount for rural development and for nonproductive investments. Therefore, we need other parallel financing also because of this big lobby power..."	Agriculture, RT3, June 2024
Hydropower	"I just wanted to underline that this is the central question... but I think the life Grant is, is an instrument that works, and that's why I've raised it. Maybe we can look into it and ask ourselves what are the good elements that can be also used for, for small operators and scale it."	Hydropower, RT3, May 2024
Insurance		
Inland Navigation	"The most striking argument in every case is to display the benefit-cost ratio... a nature-based solution had the best benefit-cost ratio."	Inland navigation, RT3, June 2024
Peat Extraction		
Water Supply & Sanitation		

### Benefits of Innovative Financing Mechanisms

Agriculture	"Retailers are in competition over offering more sustainable and locally sourced products. This trend can be leveraged to promote NbS measures in agriculture."	Agriculture, RT3, June 2024
	"Market demand for sustainable products is growing, but there's a concern that without policy support, these efforts might not be enough to sustain long-term NbS adoption."	Agriculture, RT3, June 2024
	"Private companies are introducing trade in carbon credits, recruiting farmers to measure the carbon	Agriculture, RT3, June 2024

	they put into their soil, and paying them in euros for the extra carbon stored."	
Hydropower		
Insurance		
Inland Navigation		
Peat Extraction	<p>"Carbon credits for emissions saved by future rewetting cutover peatland and for emissions saved from historical rewetting post-1990 are seen as crucial for financing restoration projects. The market for these credits is expanding, offering significant opportunities for funding NbS."</p> <p>"We need to make sure this is not green washing. It actually leads to true restoration and maybe we need a tool or some kind of metric to make sure that the investments actually do lead to true restoration"</p> <p>"If there is a charge put on to the product, because presumably that's what the peat extraction company pays to restore, they're actually paying for that and therefore it's going on to the price of what they sell. They must know roughly how much it's costing them and... that could be charged..."</p>	<p>Peat Extraction, RT2, July 2022</p> <p>Peat Extraction, RT1, May 2022</p> <p>Peat Extraction, RT3, May 2024</p>
Water Supply & Sanitation		
Private Sector Involvement and Public-Private Finance Models		
Agriculture	<p>"I think a reason why public funding covers a lot of the... environmental, public goods is because it's really difficult to coordinate these collective payments among private players... This could be sort of like the symbiotic role of public finance to attract private coordination."</p> <p>"I think it's quite dangerous to tie the payments to results... because then everybody will say that this is a waste of money to pay for such things because results are slow..."</p> <p>"Merlin can widen the views of policymakers and even green activists. If there would be a turn in the policy, financing would follow."</p>	<p>Agriculture, RT2, June 2023</p> <p>Agriculture, RT2, June 2023</p> <p>Agriculture, RT3, June 2024</p>
Hydropower		
Insurance		
Inland Navigation		
Peat Extraction	"Because it's said that public sector doesn't have the money needed for this large upscaling. So, there's gotta be money coming from somewhere else. And if we call it if we say the private sector where all the	Peat Extraction, RT3, May 2024

	peat extraction sector is sitting on something that does make quite a lot of money...”	
Water Supply & Sanitation		

## Appendix 6: Response to reviewers

The table below summarises the changes made in response to the request for revision to D4.2.

Section	Reviewer Comment	Response and Edits made
Introduction	Consideration of engagement of communities in the definition and co-production of NBS. This could also usefully address the co-creation of impact indicators (p5), see van der Jagt.	<p>Thank you for this comment. Section 3.2.1 (p. 20) outlines how the sectoral CoPs were designed to foster ownership and engagement with NbS, and Table 3 details the activities used to support this process. While we recognise the value of frameworks such as van der Jagt’s for advancing co-creation practices, our approach was grounded in thematic analysis of qualitative data rather than application of pre-defined indicators.</p> <p>In this context, the CoPs did not co-define the analytical framework for D4.2. Sectoral leads and key partners contributed to shaping the methodology and provided feedback on drafts throughout development, this did not amount to full co-creation. We were not able to involve the wider sectoral participants in our analytical approach. This is something to strive for in a future project.</p>
All sections	[ <i>Consideration of engagement of communities in the definition and co-production of NBS. This could also usefully address the co-creation of impact indicators (p5), see van der Jagt</i> ] - CoP engagement process is well set out e.g. Fig 7 - I was left wanting to know more about these dedicated individuals as the ‘soul’ of Merlin. Who were they? Can they be given more credit for their efforts? 2023; 2024 (CoP step 1 page 6, perhaps step 5/6).	Thank you for the comment. The quote ‘soul of MERLIN’ refers to the idea of working with economic sectors - as distinct from place-based or site-led approaches. It was intended to reflect the innovative aspect of starting from the perspective of sectoral systems rather than individuals. However, we recognize the vital role that dedicated individuals played within the CoPs, and their contributions are acknowledged throughout the document where appropriate, e.g. p22 in section 3.2.1 added a sentence.
All Sections/ Recommendations	The sector leadership approach is novel and may be impactful - any deeper reflections on usefulness of this approach and wider uptake in NbS R&I? e.g. See ref to Pietila 2023 in D4.3.	<p>We agree that the sector leadership approach is a distinctive and potentially impactful element of MERLIN. In response to this comment, we have included more reflections on sectoral leadership and its implications in several places:</p> <p>Section 3.2.1 (p. 22) now includes reflections on the role and variability of sectoral partners</p> <p>Section 3.2.2 (p. 22) highlights the implications of leadership gaps and differences in continuity</p>

		<p>Section 3.4 reflects further on how the presence or absence of a sectoral partner influenced the development and dynamics of the CoPs.</p> <p>While Table 5 (p. 35) highlights sectoral differences in capacity and good practices, Table 6 (p. 37) builds on this by linking the sectoral leadership approach to the success factors and challenges encountered in stakeholder engagement.</p> <p>Additionally, Recommendation 5 (p. 54) has been revised to explicitly address the need to develop governance frameworks that not only formalise stakeholder accountability but also link sectoral engagement to broader regional and policy processes. Recommendation 6 (p. 54) now goes further in highlighting sectoral differences in leadership and readiness, highlighting tailored strategies that support stronger integration with governance structures. These revisions respond directly to the insights raised in the interim RSPs (Pietilä 2023, as cited in D4.3) and reflect our recognition that sector leadership and alignment with governance systems are critical to mainstreaming NbS in a transformative and scalable way.</p>
<p>All Sections</p>	<p>Whilst it is very helpful to see exposition of RQs and methods, some RQs are unclear, especially RQ3 which is framed in various different ways through the document, e.g.: "How could considering justice principles (representation, procedure, outcomes) help achieve mainstreaming NbS with economic sectors? (RQ3)" (p11; p13);</p> <p>"How could considering justice principles in mainstreaming NBS help achieve just transformation?" (fig3. Page 14).</p> <p>These are very different questions and this lack of precision has negative consequences later in the analysis.</p>	<p>Research Question 3 has been revised for consistency across the document. It now reads: "How could considering justice principles in mainstreaming NbS help achieve just transformation?" This updated wording is now used uniformly throughout the deliverable to ensure clarity and alignment with the framing of the analysis.</p>
<p>All Sections</p>	<p>Some RT's appear to have been virtual, if so how many? This seems important to know because the success of the round tables may have been influenced by this.</p>	<p>We can confirm that all roundtables were conducted virtually. This is now clarified in the introduction (e.g. Section 1.1, p. 1; Section 1.2, p. 3; and Section 1.2.1, p. 5) and has also been clarified further in Section 2.2.1 (Fig 3 p.12) under data sources. We have primarily used the term 'virtual' throughout the document for consistency, while acknowledging that some participant quotes refer to the roundtables as 'online'. We agree that this context is important, particularly in understanding engagement dynamics and the limitations of digital formats in fostering</p>

		trust and interaction, which are also discussed later in the deliverable.
All Sections/ Introduction	Also, it is unclear what role the MERLIN demonstration projects have played in the whole process. How instrumental were these in convincing participants from different sectors to support the development of the draft strategies?	<p>This deliverable (D4.2) focuses specifically on sectoral engagement through the Communities of Practice (CoPs) and does not evaluate the role of MERLIN's demonstration projects - that analysis will be the focus of Deliverable D4.9. To clarify this, we've added a paragraph to Section 1.1 (paragraph 2), along with footnote 4, which explains the scope of this deliverable and provides references to D4.2 Table 3, D4.7, and D4.9.</p> <p>However, we do acknowledge the value of the demonstration projects in supporting sectoral engagement. Section 5.3.1 ("Credibility and Use of Evidence") now discusses how examples such as the Komppasuo peatland rewetting, Deba barrier removal, and Forth river restoration were used to help build trust and bridge evidence gaps. In Section 5.4.2.2, we describe how these case studies served as practical tools for linking theory to real-world application. They were instrumental in helping stakeholders from different sectors visualise the relevance of NbS, encouraging cross-sector learning and helping shift perceptions—from seeing NbS as a burden to recognising their potential as strategic assets. Table 3 p20 in section 3.2 also shows which RTs used MERLIN demonstration CS examples.</p>
Section 2: Methods – RQ2	Methods aligned with RQ2 also need to be clarified.	We have clarified the methods aligned with Research Question 2 by updating Figure 3 to more accurately reflect the methodological components. Additionally, we've added a sentence to Section 2.2.2.1 explaining why further stakeholder interviews were not conducted - primarily due to resource constraints and the desire to avoid overburdening participants already engaged in other project activities. These updates aim to provide greater transparency around the rationale and limitations of our data collection approach.
Section 3	CoP engagement process is well set out eg Fig 7 - I was left wanting to know more about these dedicated individuals as the 'soul' of Merlin. Who were they? Can they be given more credit for their efforts? 2023; 2024 (CoP step 1 page 6, perhaps step 5/6).	<p>We recognise the importance of the individuals who played key roles in facilitating and sustaining the CoPs, and we have highlighted their contributions throughout the document. In response to your suggestion, we've added acknowledgements of dedicated individuals in several key places:</p> <p>Section 3.2.1 (p. 22) now includes an explicit reference to their role in shaping the CoP process</p> <p>Section 3.2.2 (p. 22) expands on how their continuity and commitment contributed to the evolution of engagement</p> <p>Section 3.4 (p. 26), which summarises key reflections, also includes a note recognising their efforts.</p>

		These additions aim to give more credit to the individuals at the heart of MERLIN’s sectoral engagement work.
Section 4	The deliverable does not make reference to the project’s work on cost-benefit analysis. It is important to address the value proposition put to the sectors or co-developed with them. This can make reference to the work of WP3.	We acknowledge the importance of articulating the value proposition of NbS to different sectors. While insights from WP3 were not yet available at the time of drafting this deliverable, we have made indirect reference to this work where relevant, particularly in Table 4 (p. 31), which summarises key barriers and enablers, including economic viability and funding considerations. Further analysis of views on costs and benefits and funding will be addressed in forthcoming deliverables, including D4.9.
Section 4	What does 'NBS transformation' mean? p39 or p31 'transformation of NBS'. Does it mean 'through'? Is the research about how NBS can deliver just transformation or is the focus on transforming people's approaches towards delivering NBS?	To improve clarity, we have rephrased the term ‘NbS transformation’ to refer more specifically to either ‘mainstreaming NbS’ or ‘transformations through NbS’, depending on the context. This change better reflects the focus of the deliverable, namely, how stakeholder engagement can support just transformations by embedding NbS within sectoral practices and governance structures. The revised phrasing avoids ambiguity and aligns more clearly with the objectives of the deliverable.
Section 5	<p>I had several doubts over 'indicators' (section 5). An indicator would normally come with processed data - see p46 - I could not find this (unless it means the codification presented in Annex 5, in which case this should be clarified).</p> <p>E.g. is ‘representation’ assessed in terms of public, private, NGO participation etc?</p> <p>Do the indicators map across to the analytical themes/sub themes within the framework?</p> <p>If applying indicators did these inform research methodologies or vice versa?</p>	<p>Double-check and revise to clarify indicator application.</p> <p>This comment has been addressed through both the revised introduction to Section 5 and an expanded clarification in the methodology section focusing on research question 3. Specifically:</p> <p>We clarified that indicators were deductively developed based on justice literature, rather than serving as metrics for quantitative analysis.</p> <p>Indicators were not used to shape data collection tools but were applied analytically and thematically to interpret findings from interviews, roundtables, and feedback sessions (as presented in Sections 3 and 4).</p> <p>Each indicator was explicitly mapped to a specific justice dimension (representation, involvement, distribution), and their alignment is now clearly visualised and described in Figure 8.</p> <p>We revised the section structure so that headings correspond directly to the indicators, avoiding ambiguity and making the analysis easier to follow.</p> <p>For example, under “Representation,” it is now made explicit that assessment included stakeholder diversity (public, private, NGO), sectoral and territorial spread, and inclusion or absence of minority voices.</p>



<p>Sections 4-6</p>	<p>From the introduction/descriptions I was hoping to see an analysis of transformative capacity of the sector groups or transformation achieved (using the theoretical framework).</p> <p>In simple terms, it would be good to reflect on how the MERLIN sectors approach may build capacity.</p> <p>Instead, the table of barriers and enablers presents well-rehearsed issues, not really giving deeper insights into the role/scope/potential of CoPs themselves, or comparative analysis across/between CoPs.</p> <p>Can MERLIN not establish some good practices or good examples for others to follow?</p>	<p>We have expanded our reflections on the transformative capacity of the MERLIN sectoral CoPs and their potential to support just transformations.</p> <p>Section 5.4 has been revised to explore how different sectors engaged with the process, how trust and relationships developed over time, and how the CoPs fostered mutual learning and inclusive dialogue. The updated section also highlights a number of emerging good practices, including the use of demonstration projects, flexible facilitation styles, and phased participation, which may offer useful models for future NbS mainstreaming efforts.</p> <p>To support comparative reflection, we have added Table 5 (pp. 35-36), which presents sectoral differences in capacity, leadership, and transformative potential. Additionally, Recommendation 6 in Section 7.2 explicitly addresses the need to recognise and build on sectoral differences in readiness and approach, promoting tailored strategies and peer learning across contexts.</p> <p>These revisions aim to go beyond listing barriers and enablers by capturing deeper insights into how CoPs functioned, what conditions enabled transformative engagement, and how future projects might build on this experience.</p>
<p>Section 6</p>	<p>It was not evident/justified that "The engagement process also revealed a critical gap in leadership... failed to fully empower stakeholders to assume leadership". It seemed to work better in some sectors than in others, most likely because the MERLIN activities were embedded in wider sector-led network activities. This success and fail factors should be better clarified, because they will impact the successful adoption and implementation of sector-specific strategies which should be developed with the sectors.</p>	<p>We have revised the discussion to clarify that stakeholder leadership and engagement varied across sectors. In particular, we now highlight that stronger leadership and ownership were observed in cases where MERLIN activities were embedded in broader, sector-led networks, such as in WSS and peat extraction sectors. By contrast, sectors without these pre-existing structures showed more fragmented engagement and less clarity around leadership roles.</p> <p>To provide a clearer comparison, we have added Table 6 in Section 4 (pp. 37-38), which outlines the key success factors and ongoing challenges across sectors. This table helps distinguish the conditions under which stakeholder leadership was more effectively developed and supports a more nuanced understanding of how these dynamics may influence the future implementation of sector-specific NbS strategies.</p>
<p>Ethics/ POPD Requirement No. 1</p>	<p>Please check ethics and informed consent regarding named participants in Figure 4 (p. 14).</p> <p>Note: The deliverable is not compliant with POPD Requirement No. 1, as stakeholder participants are identified by name and photograph.</p>	<p>We have removed all names and photographs of stakeholder participants from the deliverable, including the original Figure 4. This ensures full compliance with POPD Requirement No. 1 and aligns with the ethical commitment to protecting participant anonymity and informed consent.</p>

Deliverable overall	The document is extremely long compared with the deliverable description.	We are considering how to create a shorter, 'easy read' version in the coming months to complement this detailed deliverable.
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