



**Peat Extraction Sector Strategy:  
Upscaling peatland restoration through  
nature-based solutions in the landscape**



## Imprint

---

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.

**Credits for pictures:** Alhassan Ibrahim, 2023 (top two), Neova Group, 2022 (bottom)

**Lead contractor:** The James Hutton Institute, World Wildlife Fund

**Authors of the deliverable:**

Alhassan Ibrahim (James Hutton Institute), Kirsty Blackstock (James Hutton Institute), Jack Rieley (IPS), Anna-Helena Purre (IPS), Örjan Berglund (IPS)

**Contributors:**

Anna Bérczi-Siket (WWF), Fanni Nyíró (WWF), Tiina Ronkainen (Tapio), Anna-Kaisa Ronkanen (SYKE)

**To be cited as:**

Ibrahim A., Blackstock K., Rieley Jack., Purre A., Berglund Ö. 2025. Peat Extraction Sector Strategy: Upscaling peatland restoration through nature-based solutions in the landscape. EU H2020 research and innovation project MERLIN Deliverable 4.5. 55 pp. <https://project-merlin.eu/outcomes/sectoral-activity/peat-extraction.html>

**Acknowledgements:** We would like to thank the Peat Extraction Sector community of practice, including the Foundation Responsibly Produced Peat, International Peatland Society, WWF Hungary and WaterLANDS colleagues for their constructive feedback on earlier drafts of this deliverable.

**Due date of deliverable:** 31st January 2025

**Actual submission date:** 31st January 2025

**Disclaimer:** Throughout the participatory process and strategy revision, we received many valuable insights which were invaluable to foster discussion, though they sometimes revealed conflicting views which did not always lead to a consensus or a resolution. Therefore, this strategy uses these insights but does not necessarily reflect the opinion of the full Community of Practice.

## Abbreviations and Acronyms

---

→ CoP	Community of Practice
→ DG	Directorate General
→ EU	European Union
→ GME	Growing Media Europe
→ IPS	International Peatland Society
→ IUCN	International Union for Conservation of Nature
→ LULUCF	Land use, land-use change, and forestry
→ MERLIN	Mainstreaming Ecological Restoration of freshwater-related ecosystems in a Landscape context: INnovation, upscaling and transformation
→ MS	Member States
→ NbS	Nature-based Solutions
→ NGO	Non-Governmental Organisation
→ PCAS	Peatlands Climate Action Scheme
→ PES	Payment for Ecosystem Services
→ RPP	Responsibly Produced Peat
→ UNEP	United Nations Environment Programme

## Key messages

1. This Strategy supports Europe's Peat Extraction Sector in driving landscape peatland restoration by leveraging its after-use expertise. It targets private peat extraction companies, NGOs and research institutions engaged in peatland research and management and national and EU regulators, who provide the policy framework for implementation.
2. The Sector engages in rewetting after peat extraction. When appropriate, rewetting could be enhanced to speed up peat accumulation and ecosystem recovery through supporting revegetation by biological means.
3. Restoration as after-use faces issues regarding regulations, funding, landownership, constitutional rights and complex landscape conditions, limiting efforts to exceed legal requirements for restoration and deterring the Peat Extraction Sector from joining landscape restoration initiatives.
4. Enhancing after-use plans to prioritise rewetting and revegetation – applied only where appropriate – through participation in landscape peatland restoration initiatives can enable the Sector to connect individual site restoration initiative to the broader landscape. This approach maximises ecosystem benefits and addresses carbon emissions, while recognising that revegetation is not a one-size-fits-all solution.
5. This Strategy outlines five key actions to address the identified issues; enable the Sector to prioritise restoration as the main after-use; and collaborate with other stakeholders for landscape peatland restoration. The five actions are:
  - a) Build knowledge to increase understanding of nature-based solutions for peatland restoration and its implications for the Peat Extraction Sector.
  - b) Enhance after-use plans to prioritise rewetting and revegetation of peat extraction sites.
  - c) Initiate landscape authorities and partnerships to embed rewetting and revegetation of peat extraction sites to support landscape restoration and good-practice peatland management.
  - d) Develop policy and regulatory frameworks to enable landscape-scale peatland restoration as a core licensing requirement.
  - e) Develop clear and viable business incentive enabling the Peat Extraction Sector to support restoration beyond the peat extraction site.
6. This Strategy marks the beginning of the process needed for better landscape peatland restoration. While the Peat Extraction Sector is encouraged to engage stakeholders for its implementation, success will depend on collaboration with European Member State agencies to coordinate the process, and a just transformation that balances economic needs with ecological goals, rewards restoration efforts, and ensures participation of all stakeholders.



## MERLIN Executive Summary

This Strategy presents a transformative framework for the Peat Extraction Sector to adopt full restoration measures, including rewetting and revegetation, as the land management practices associated with land use following peat extraction.

This approach can lay the foundation for the Peat Extraction Sector to expand its role beyond extraction sites, leveraging its expertise to drive large-scale peatland restoration, enhance habitat, and support Europe's net-zero emissions goals.

The environmental effects of peat extraction, including greenhouse gas emissions and ecosystem changes, underscore the need for restoration as the primary after-use practice following extraction. While rewetting stabilises hydrology, reduces emissions and supports revegetation, it could be further developed by application of biological approaches to speed-up ecological recovery.

**Combining revegetation with rewetting on former peat extraction sites where appropriate, and connecting these initiatives to the wider peatland landscapes would transform them into nature-based solutions, addressing the impacts of surrounding land uses and fostering large-scale peatland recovery.**

However, issues such as regulatory constraints, limited funding, fragmented land ownership, competing land-use priorities, and complex landscapes must be addressed to enable the Peat Extraction Sector's full participation in large-scale restoration initiative.

This Strategy envisions a future where the Peat Extraction Sector prioritises restoration practices, including rewetting and revegetation where appropriate, as routine after-use. **Hence, the 2050 vision of this Strategy is to achieve freshwater ecosystem restoration in peatland landscapes through partnerships with landowners and landholders, under the leadership of an appropriate authority, with the Peat Extraction Sector serving as a major driver of large-scale restoration.** This vision necessitates collaboration with European Member State agencies, EU policymakers, landowners, and other stakeholders to overcome systemic issues and deliver on restoration goals.

To achieve this, this Strategy outlines five interlinked actions:

→ **Build knowledge** to increase understanding of nature-based solutions for peatland restoration and its implications for the Peat Extraction

Sector. This involves showcasing the role of rewetting and revegetation in reducing emissions and improving ecosystem services.

- **Enhance after-use plans** to priorities rewetting and revegetation of peat extraction sites. This action aims to promote restoration as the preferred after-use following peat extraction and better connect it to the wider landscape.
- **Initiate landscape authorities and partnerships** to embed rewetting and revegetation of peat extraction sites to support landscape restoration and good-practice peatland management. This action aims to foster partnerships among stakeholders to replicate the restoration efforts on peat extraction sites and support landowners and farmers to adopt good practice land use to minimise the environmental impacts on restored sites.
- **Develop policy and regulatory frameworks** to enable landscape-scale peatland restoration as a core licensing requirement. This action will address these gaps by integrating strengthened certification standards with broader regulatory measures, including landscape restoration plans, financial incentives for landowners, and clear licensing conditions.
- **Develop clear and viable business incentive** enabling the Peat Extraction Sector to support restoration beyond the peat extraction site: This action seeks to align economic incentives with restoration goals by utilising public, private, and blended financing mechanisms to achieve ecological recovery, socio-economic benefits, and landscape-scale connectivity.

Recognising the diverse socio-economic and ecological contexts across the EU, this Strategy encourages region-specific approaches tailored to local needs and governance structures. It also emphasises the need for a just transformation, balancing ecological priorities with economic viability, and ensuring equitable participation and benefits for all stakeholders.

By aligning its restoration efforts with the EU Green Deal and Nature Restoration Law, the Peat Extraction Sector can become a leader in sustainable peatland management. The Peat Extraction Sector can also leverage emerging business opportunities and corporate social responsibility to amplify its contributions to climate mitigation, habitat conservation, and cross-sector collaboration for long-term sustainability.

## Key Terminology

---

**After-use:** The planned use or management of land after peat extraction, influenced by factors such as topography, hydrology, soil conditions, landowner preferences, national legislation, and socio-economic circumstances. Common after-use measures include restoration, cultivation, afforestation, and renewable energy projects, each offering varying environmental, social, and economic impacts (Ozola, 2019; Räsänen et al., 2023).

**Nature-based Solutions:** Nature-based solutions (NbS) are, as defined by the UN, “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)

**Peat:** Peat consists mostly of partially decomposed material of the natural vegetation that has grown on peatland for thousands of years (Rieley, 2013). Peat soil is “organic carbon-rich with a thickness exceeding 30 cm” (IUCN UK Peatland Programme, 2018). Wet peat contains about 90% water, while dry peat is 50% carbon by weight (Rieley, 2013). Actively growing peat, characterised by ongoing vegetation accumulation, retains the hydrological and structural integrity critical for restoration, while degraded, drained or extracted peat loses these properties, hindering stabilisation and revegetation (Kozlov et al., 2016).

**Peat extraction:** Various terms are used to describe the process of removing peat from a bog, including cutting, excavation, extraction, harvesting, and mining, each with slight regional variations (Nordbeck & Hogl, 2023). In MERLIN, the preferred term is “peat extraction”, which refers to the process of removing wet peat, drying it on-site, and then collecting, transporting, and storing the dried product (Joosten & Clarke, 2002, p. 48).

**Peatland, mires and drained peatlands:** Peatlands are areas where peat accumulates, encompassing both natural, waterlogged peat-forming ecosystems (mires, including bogs and fens) and drained or degraded systems (Clarke & Rieley, 2019; IUCN UK Peatland Programme, 2018). Mires refer to undisturbed peat-forming wetlands, while drained peatlands are altered ecosystems requiring hydrological rebalancing for restoration (Joosten & Clarke, 2002). Covering about 4 million square kilometres or 3% of the Earth’s land surface, peatlands account for 50–70% of global wetlands and play key roles in carbon storage, climate regulation, and biodiversity (Joosten & Clarke, 2002).

**Peat Extraction Sector:** The Peat Extraction Sector utilises a limited proportion of global peatlands compared to agriculture and forestry. Its economic significance comes from peat’s role in horticultural growing media and energy (DIW, 1999). In the EU, several hundred companies engage in extraction, processing, or both, with some also using imported peat.

**Peatland restoration:** According to the Greifswald Mire Centre and Wetlands International European Association (2021), “Peatland restoration involves measures designed to enable recovery of peatland ecosystems that have been impoverished, damaged or destroyed as a result of human activity, and reverting them to a state similar to or as near to their previous natural state as possible. In the process, re-establishing some of their ecological processes and functions, especially in regard to hydrology.” In this Strategy, two key restoration measures envisaged are rewetting and revegetation.

**Rewetting:** A common after-use option for peat extraction sites involves raising the water table of drained peatlands by blocking drainage systems, constructing dams, or filling ditches (Greifswald Mire Centre & Wetlands International Europe, 2023; Kreyling et al., 2021).

**Revegetation:** Peatland revegetation is the process of re-establishing vegetation in degraded peatlands, particularly following active drainage like peat extraction, to restore ecological integrity, enhance biodiversity, and stabilise carbon storage (Tolorunju, 2024). Revegetation can be facilitated by rewetting, which promotes revegetation by creating suitable hydrological and nutrient conditions (Kozlov et al., 2016; Turmel-Courchesne et al., 2023). Success of revegetation relies on stable water levels, nutrient-poor substrates, and the presence of peat-forming species like Sphagnum mosses (Balode et al., 2024; Karofeld et al., 2024; Kozlov et al., 2016; Tolorunju, 2024). Challenges include bare peat surfaces, nutrient imbalances, and water instability, which can hinder natural regeneration (Artz et al., 2018; Syakina et al., 2024). Peat extraction sites, in particular, require targeted interventions, including rewetting, to overcome issues to revegetation and support long-term recovery (Kozlov et al., 2016). **Therefore, references to revegetation throughout this Strategy pertain to scenarios where it is feasible and cost-effective, considering specific site conditions.**

# Content

---

<b>1</b>	<b>Introduction .....</b>	<b>9</b>
1.1	Purpose of this Strategy.....	9
1.2	Transformation.....	10
1.3	Peat Extraction Sectoral community of practice and audience .....	10
<b>2</b>	<b>Methodology .....</b>	<b>11</b>
<b>3</b>	<b>Why do we need a Strategy?.....</b>	<b>13</b>
3.1	The role of the Peat Extraction Sector in scaling peatland restoration .....	15
3.2	Issues regarding scaling peatland restoration on and beyond peat extraction sites.....	16
3.2.1	Scale of operation and landscape conditions .....	17
3.2.2	Land ownership .....	18
3.2.3	Policy and regulatory gaps .....	19
3.2.4	Limited funding and cost of restoration.....	19
3.2.5	Balancing trade-offs .....	20
3.2.6	Justice and adaptative management .....	20
3.3	What is the focus of this Strategy?.....	20
<b>4</b>	<b>What is the vision of this Strategy? .....</b>	<b>22</b>
<b>5</b>	<b>Strategy Actions .....</b>	<b>27</b>
5.1	Action A: Build knowledge to increase understanding of nature-based solutions for peatland restoration and its implications for the Peat Extraction Sector.....	27
5.1.1	Why is this action needed?.....	27
5.1.2	Who will act?.....	28
5.1.3	Are there important differences between Member States or regions to consider? .....	29
5.1.4	How and when will we know if it has happened? What will have changed? .....	29
5.1.5	Summary of action.....	29
5.2	Action B: Enhance after-use plans to prioritise rewetting and revegetation of peat extraction sites .....	29
5.2.1	Why is this action needed?.....	29
5.2.2	Who will act?.....	30
5.2.3	Are there important differences between Member States or regions to consider? .....	30
5.2.4	How and when will we know if it has happened?.....	30
5.2.5	Summary of action.....	31
5.3	Action C: Initiate landscape authorities and partnerships to embed rewetting and revegetation of peat extraction sites to support landscape restoration and good-practice peatland management .....	31



5.3.1	Why is this action needed?.....	31
5.3.2	Who will act?.....	32
5.3.3	Are there important differences between Member States or regions to consider? .....	33
5.3.4	How and when will we know if it has happened?.....	33
5.3.5	Summary of action.....	33
5.4	Action D: Develop policy and regulatory frameworks to enable landscape-scale peatland restoration and rewetting as a core licensing requirement .....	33
5.4.1	Why is this action needed?.....	33
5.4.2	Who will act?.....	34
5.4.3	Are there important differences between Member States or regions to consider? .....	35
5.4.4	How and when will we know if it has happened? What will have changed? .....	35
5.4.5	Summary of action.....	36
5.5	Action E: Develop clear and viable business incentive enabling the Peat Extraction Sector to support restoration beyond the peat extraction site.....	36
5.5.1	Why is this action needed?.....	36
5.5.2	Who will act?.....	37
5.5.3	Are there important differences between Member States or regions to consider? .....	38
5.5.4	How and when will we know if it has happened? What will have changed? .....	38
5.5.5	Summary of action.....	39
<b>6</b>	<b>Discussion .....</b>	<b>40</b>
6.1	Do the actions require help from other sectors? .....	40
6.2	Initiating and managing transformation for landscape peatland restoration .....	41
6.3	Taking ownership: commitment to achieving the Vision.....	42
<b>7</b>	<b>Conclusion and next steps.....</b>	<b>43</b>
<b>8</b>	<b>Visualisation.....</b>	<b>44</b>
	<b>References.....</b>	<b>45</b>
<b>9</b>	<b>Relevant annexes with further material.....</b>	<b>50</b>
	Annex 1: Peat extraction stakeholders engaged via roundtables and bilateral discussions.....	50
	Annex 2: Engagement activities with the Peat Extraction Sectoral community of practice .....	51
	Annex 3: List of organisations who commented on the strategy drafts .	52
	Annex 4: Relevant weblinks for peatland and peat extraction related issues .....	53

# 1 Introduction

The Horizon 2020 **MERLIN** project (Mainstreaming Ecological Restoration of freshwater-related ecosystems in a Landscape context: INnovation, upscaling and transformation) focus is on mainstreaming freshwater restoration through nature-based solutions (NbS) (See Box 1), aiming to address the needs of nature, society, and the economy. The project aims to contribute to delivering the EU Green Deal goals through a focus on freshwater restoration measures throughout Europe.

This Strategy focuses on Europe's Peat Extraction Sector, one of six economic sectors included in the MERLIN Project. In Europe, peat extraction is regulated by member state licenses that mandate mitigation measures and after-use plans to be implemented after peat extraction to deliver environmentally beneficial outcomes. Although peat extraction operates primarily on degraded peatlands, covering just 0.4% of Europe's peatlands (Fitzgerald, 2008; REVOLVE, 2015), decades of implementing re-wetting and, in some, cases revegetation as after-use measures have given the Sector's valuable experience in restoration.

**While rewetting raises water tables and reduces carbon loss, it can be enhanced by revegetation measures to achieve faster peat accumulation and full ecological recovery.** Yet, restoration to a functional mire, including revegetation, is often less attractive in favour of forestry, agriculture, or leaving the land unmanaged, which can exacerbate peatland degradation and increase carbon emissions. Therefore, effective after-use requires integrating extraction sites into the broader landscape, but challenges such as regulatory constraints, limited funding, fragmented land ownership, and competing land-use priorities continue to hinder the Sector's ability to scale up restoration efforts.

## Box 1. Clarifying peatland restoration vs. nature-based solutions (NbS)

**Restoration** focuses mainly on ecological recovery, aiming to restore degraded ecosystems' natural functions and biodiversity (Waylen et al., 2024). **The proposed peatland restoration in this Strategy follows the IUCN (2020b) Global Standard for Nature-Based Solutions**, ensuring restoration measures deliver both environmental and societal benefits. It emphasises large-scale measures involving rewetting and revegetation where applicable to meet climate and biodiversity targets, aligning with EU policies on carbon sequestration and water regulation. Therefore, Restoration should tackle societal challenges, operate at scale, promote biodiversity, ensure economic viability, foster inclusivity, balance trade-offs, adopt adaptive management, and achieve sustainability for broad adoption.

This Strategy aims to tackle these challenges by promoting restoration, involving rewetting and revegetation, aligning with nature-based solutions (NbS) goals for post-peat extraction sites. The EU Nature Restoration Law offers a prime opportunity for this Strategy to position the Peat Extraction Sector as a key player in contributing to broader peatland restoration through stakeholder engagement. This Strategy outlines five key actions for the sectoral community of practice (Section 1.3), involving the peat extraction industry, EU and Member State policymakers, and peatland stakeholders, for implementation from 2025 to 2050.

## 1.1 Purpose of this Strategy

**This Strategy's purpose is to promote peatland restoration on peat extraction sites after extraction ceases, leveraging enhanced after-use plans that integrate rewetting with revegetation as appropriate. It aims to address the environmental impacts of peat extraction while enabling the Sector to contribute to broader landscape-scale restoration and align with nature-based solutions.**

While peatland restoration interventions depend on the different geographical contexts, they generally involve rewetting through hydrological adjustments, such as constructing water retention dams and blocking drainage, combined with replanting native vegetation to restore biodiversity and carbon sequestration functions (Artz et al., 2018; Landry & Rochefort, 2012; Loisel & Gallego-Sala, 2022; Lunt et al., 2010). Implementing these measures on sites following peat extraction can serve as blueprints for surrounding degraded peatlands to achieve ecological recovery and long-term sustainability across peatlands in Europe.

This Strategy was developed with input from diverse stakeholders (Annexes 1, 2 & 3) holding a variety of views on peat extraction. There were many debates about what to include in this Strategy, including those stakeholders who wished to advocate for the phasing out of peat extraction. However, in keeping with the overall remit of the H2020 MERLIN project, this Strategy focuses on leveraging existing opportunities to

promote freshwater restoration on extraction sites following peat extraction while contributing to broader landscape-scale restoration. **Therefore, a discussion of phasing out peat extraction is outside the scope of this Strategy.**

## 1.2 Transformation

Transformation is essential to establish the legal and planning frameworks that allow the Peat Extraction Sector and other stakeholders to collaborate on landscape-scale peatland restoration. This will help achieve net-zero emissions, improve freshwater quality, enhance biodiversity, and provide societal benefits. MERLIN's approach involves changes in both thinking (ideas, scales, actions) and action (relevant stakeholders and strategic alliances) to deliver restoration measures at the landscape level (Carmen et al., 2024; Ibrahim & Carmen, 2022). For the Peat Extraction Sector Strategy, the vision and action points focus on driving transformation through **establishing new frameworks (e.g. funding models), leveraging existing opportunities (e.g. within Sector expertise) and overcoming existing challenges (e.g. inadequate funding).**

## 1.3 Peat Extraction Sectoral community of practice and audience

As shown in Figure 1, **this Strategy is aimed at Europe's Peat Extraction Sector and stakeholders central to peatland management and restoration**, including private peat extraction companies, umbrella organisations, NGOs and academic institutions engaged in peatland research and management, and regulatory bodies at the national and EU levels, which provide the policy and regulatory framework to support implementation.

Many of these groups are already part of the MERLIN Community of Practice (CoP) (Annex 1), which has actively contributed to developing this Strategy. Examples include NGOs like International Peatland Society (IPS) and Wetlands International, private companies as well as industry bodies like Growing Media Europe and certification systems like Responsibly Produced Peat (RPP). This CoP provides a collaborative platform for scaling up peatland restoration through shared knowledge and expertise (Schulz et al., 2024).

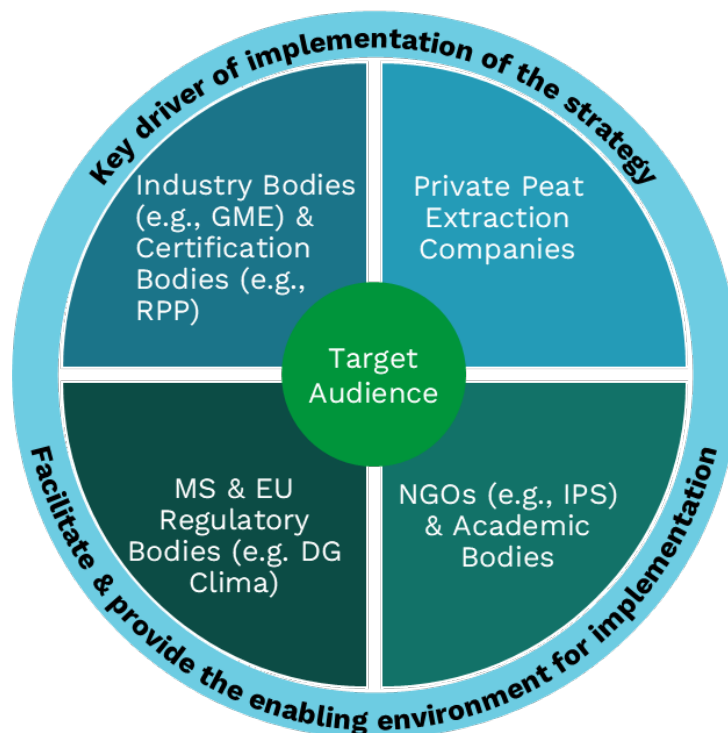


Figure 1. Target Audience of the Peat Extraction Strategy

To fully realise this Strategy's potential, the Community of Practice must include additional stakeholders, such as regulatory bodies (e.g., the European Commission's DG Climate and Member State agencies) and local stakeholders (e.g., landowners). Broadening participation will strengthen cross-sector partnerships and support policies that mainstream peatland restoration (Ibrahim, 2024b).



## 2 Methodology

This Strategy is the outcome of a range of activities undertaken since October 2021. These include literature reviews, three roundtable discussions with the Peat Extraction Sector and its stakeholders (Annex 1), questionnaire surveys, policy analysis and bilateral discussions. These activities are represented in Figure 2.

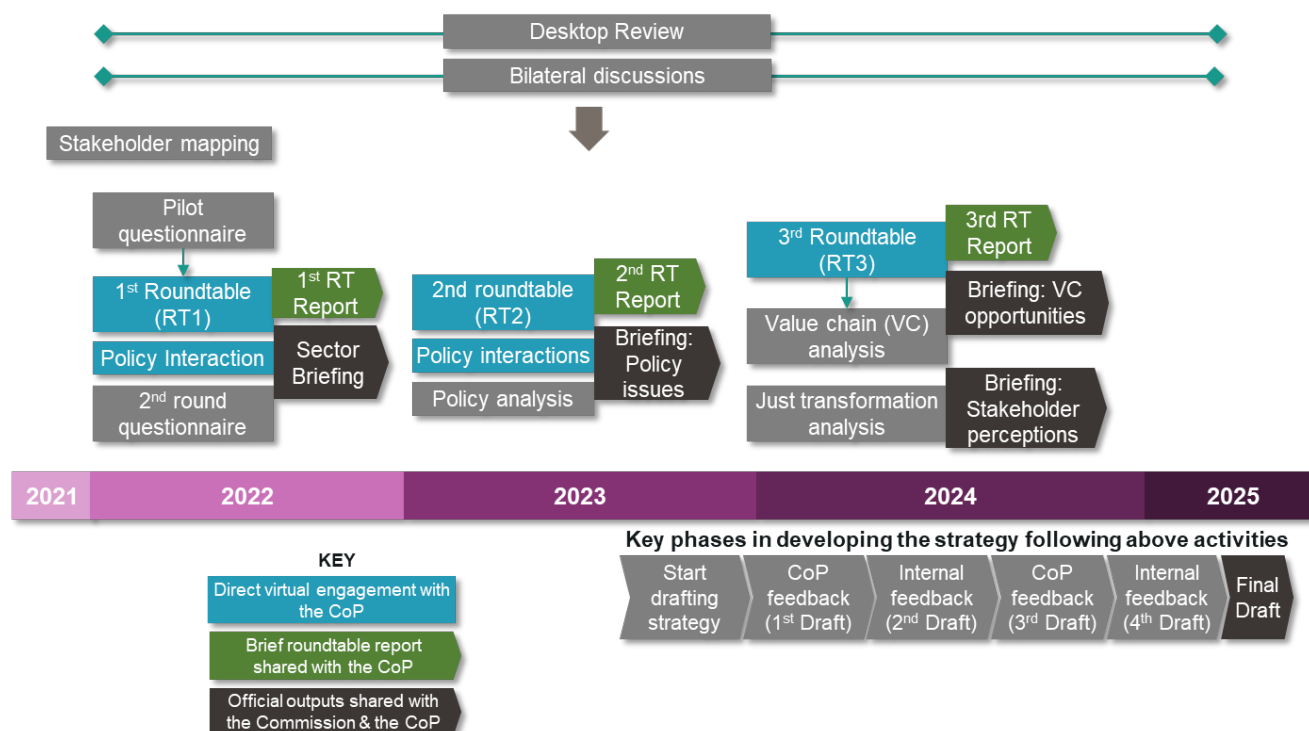


Figure 2. Activities informing development of the Peat Extraction Sector Strategy.

- Bilateral discussions** with IPS and MERLIN case studies: Regular discussions with the International Peatland Society (IPS) and insights from MERLIN peatland case studies provided key evidence on the challenges and opportunities for upscaling peatland restoration in the Peat Extraction Sector.
- Desktop review:** Since 2021, an ongoing review identified key policies, value-chain issues, and opportunities for integrating NbS in the Peat Extraction Sector.
- Stakeholder analysis:** This process identified core stakeholders, including individual companies, umbrella organisations, and NGOs active in the Peat Extraction Sector.
- Sector questionnaire:** Two rounds of sector-specific questionnaire (2022 and 2023) collected views on challenges and opportunities for integrating NbS. The first pilot round had 6 responses, while the second round yielded 15 responses from the Peat Extraction Sector.
- Sector briefing:** A sector briefing (Nyíró et al., 2022) was developed to outline how the Peat Extraction Sector operates, its challenges, and collaboration opportunities for mainstreaming NbS.
- Roundtables:** Three roundtable discussions, held between 2022 and 2024 (Ibrahim, 2024a; Ibrahim et al., 2022a; Ibrahim & Nyíró, 2023), gathered feedback from stakeholders to refine and finalise the Peat Extraction Sector Strategy.
- Policy interactions:** Policy discussions with EU Commission members provided insights into concerns and policy gaps relevant to peatland restoration.
- Policy analysis:** Analysis of six major EU policies (Climate Law, Adaptation Strategy, Nature Restoration Law, Water Framework Directive, CAP, and the Green Deal) identified links to the Peat Extraction Sector, knowledge gaps and opportunities for policy alignment (Blackstock et al., 2023).

- 9 Value chain analysis:** An analysis of the horticultural peat value chain (Ibrahim, 2024b) assessed the Sector's environmental footprint and explored opportunities for integrating NbS.
- 10 Just transformation:** This analysis (Schulz et al., 2024) highlighted sectoral concerns, particularly around large-scale restoration, and identified gaps in representation and dialogue with EU bodies for the Peat Extraction Sector.

### 3 Why do we need a Strategy?

Peat is mechanically extracted from bogs, with 20 million tonnes harvested annually in Europe (excluding Russia), primarily for horticulture (Lindsay, 2016). Post-extraction impacts are managed through after-use plans, which often include rewetting. While some companies such as Bord na Móna (see case study 2 – Section 4) and Neova Group (see bottom image of Figure 3) have made progress by incorporating revegetation into their restoration efforts, most companies typically limit their after-use measures to rewetting (Nyíró et al., 2022), which alone could be very slow to fully restore ecosystems or enable peat regeneration (Greifswald Mire Centre & Wetlands International Europe, 2023; Kreyling et al., 2021). However, there are underlying issues (Section 0) which further hinder implementation of rewetting and revegetation to accelerate restoration of the post-extraction sites, leading to alternative uses such as biomass cultivation, renewable energy production (Figure 4 and Box 2). Historically, some extraction sites were left without active after-use measures, but current regulations in most Member States mandate active restoration or alternative after-use strategies (Karofeld et al., 2017).



Figure 3. How peat extraction sites could look during peat extraction and after restoration occurs

Source: Top four: Alhassan Ibrahim, April 2023; bottom photo: Neova Group (2022)



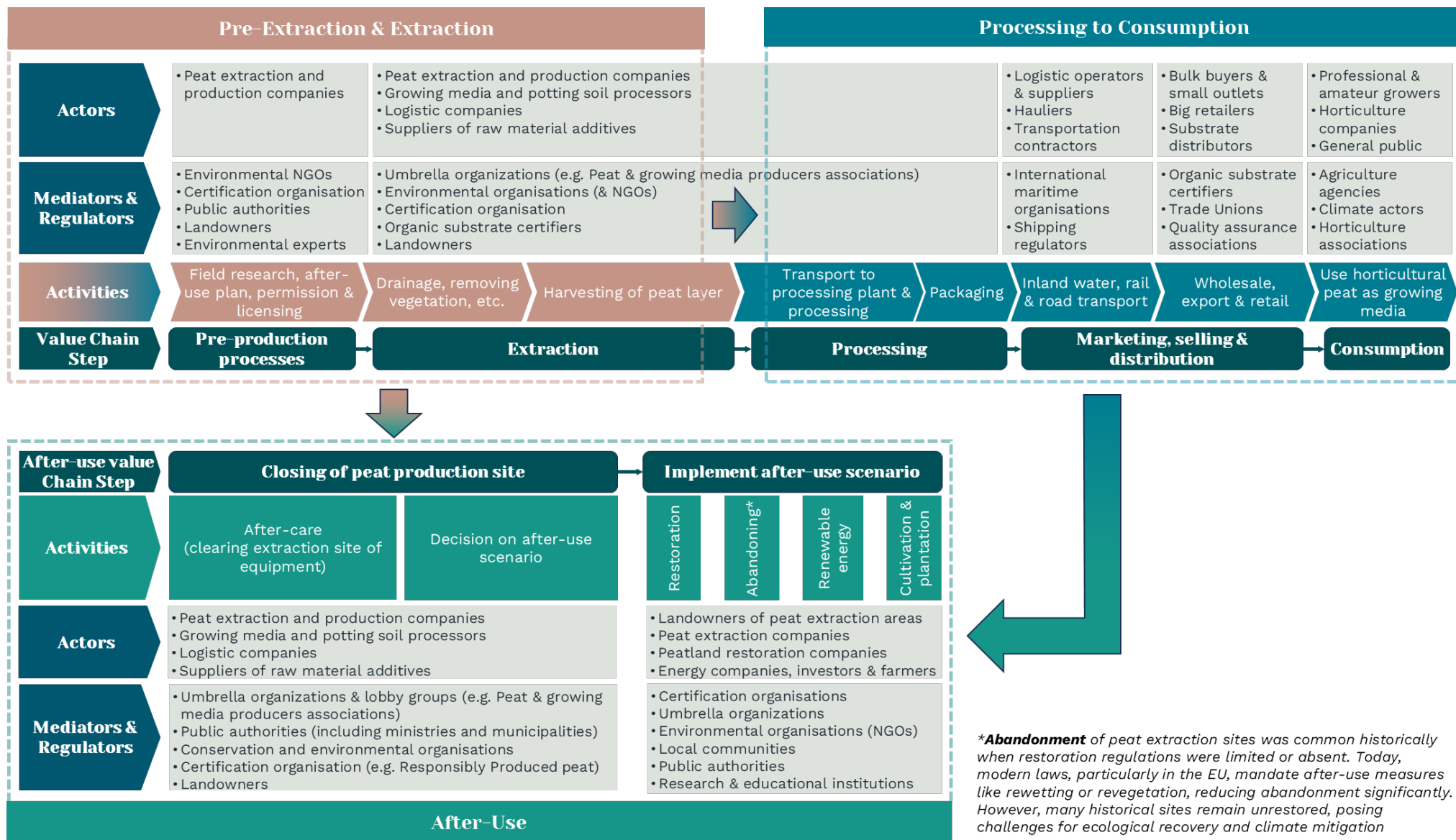


Figure 4. Horticultural peat extraction value-chain showing the procedure for transitioning into various after use options.

Source: Adopted from Ibrahim (2024b)

In some cases, after-use practices like biomass cultivation (e.g., Latvia in Box 2) or abandonment (Figure 4) do not prioritise biodiversity (Karofeld et al., 2017; Räsänen et al., 2023). For example, while rewetting is commonly practiced in Germany and forestry is often chosen in Finland (Chen et al., 2021), these approaches sometimes fail to align with the IUCN Global Standard for nature-based solutions (NbS). Whilst nature friendly woodland can be positive, it can also exacerbate environmental issues, such as forestry-induced soil subsidence (Chen et al., 2021), and its carbon sequestration potential is contested because active afforestation of drained peatlands, without rewetting, accelerates peat decomposition, leading to carbon losses that likely outweigh the gains in forest biomass over the long term (Jurasinski et al., 2024). The uncertain biodiversity outcomes of these after-use options highlight the need for a coordinated strategy (Räsänen et al., 2023).

#### Box 2. Example of after-use options on peat extraction sites: Findings from Latvia LIFE Restore project

After peat extraction ceases in Latvia, after-use scenarios are influenced by politics, land ownership, topography, and hydrology (Krigere, 2019). Latvia's LIFE Restore Project identified eight after-use scenarios: croplands, perennial grasslands, berry plantations, paludiculture, afforestation, water bodies, and peatland rehabilitation. The implementation of each scenario can generate different ecosystem services (Peršēvica & Priede, 2019) depending on species and management regime. Priede and Gancone (2019) identifies about seven such after-use scenarios:

- **Croplands** provide food, fodder, and bioenergy but have low biodiversity and climate regulation potential.
- **Perennial sown grasslands** offer similar bioenergy benefits with minimal biodiversity and climate regulation.
- **Berry plantations** provide berries with low regulating services and support for biodiversity but can help address issues with erosions and stores carbon.
- **Afforested areas** could contribute to carbon sequestration, air purification and other benefits such as recreation, but its biodiversity outcome is low when artificially created.
- **Water bodies** occur through pumping of water to create ponds. Provides fish, reed biomass, and regulate climate and water cycles and contributing to cultural preservation.
- **Paludiculture** concerns use of occasionally wet peatlands for cultivation. Supports productive wetland use with biomass and food production while sequestering carbon.
- **Rewetted areas** occur when mire conditions and peat-forming vegetation are recreated. It enhances biodiversity, regulate water, sequester carbon, and require no maintenance post-restoration.

**This box illustrates the range of potential after-uses but is the view of the Latvian LIFE Restore project, and so how different benefits from the after use can be contested.**

This Peat Extraction Sector Strategy is essential to support the industry in moving beyond rewetting or alternative after-use measures to implement comprehensive restoration measures, involving rewetting and revegetation, on extraction sites. While not all companies currently able to undertake this type of restoration, good practices within the Sector demonstrate a valuable combination of expertise in extraction site management and ecological restoration. This Strategy aims to build on this expertise to drive large-scale peatland restoration beyond extraction sites, promoting biodiversity and ensuring alignment with landscape-level goals.

### 3.1 The role of the Peat Extraction Sector in scaling peatland restoration

The Peat Extraction Sector is legally responsible for addressing the environmental impacts associated with its own operations during and after peat extraction. Although the extraction operations in recent times are confined to already degraded sites, the cumulative impacts of habitat degradation, hydrological alterations, and carbon emissions cannot be overlooked. During the extraction phase, peat extraction sites release carbon dioxide into the atmosphere. Across Europe, emissions from peat extraction sites range between 1.5 and 3.8 tonnes of CO<sub>2</sub>-C per hectare annually (Wilson et al., 2023), while the IPCC Wetland Supplement (2014) Tier 1 default value for boreal and temperate peatlands is 2.8 tonnes of CO<sub>2</sub>-C per hectare annually.

Beyond emissions, peat extraction degrades peatland ecosystems, causing long-term ecosystem disruption (Mitchell et al., 2004; Paoli et al., 2022; Räsänen et al., 2023). Draining peatlands lowers the water table, disrupts hydrological balances, and leads to nutrient leaching, soil erosion, and organic pollution of surrounding

water systems if mitigation measures are not used, further reducing landscape connectivity depending on the scale of peat extraction (Minayeva et al., 2016; Minayeva et al., 2017). These activities degrade habitats, displace native species, and impair natural peat-forming processes essential for ecosystem recovery (Renou-Wilson et al., 2019). Addressing these challenges requires a comprehensive restoration approach focused on rewetting, revegetation, and ecosystem function recovery (Andersen et al., 2017; Järveoja et al., 2016).

To mitigate these impacts, the Peat Extraction Sector can play a pivotal role in scaling up restoration both on and beyond extraction sites, particularly given the importance of peatlands as habitats recognised under the Nature Restoration Law (Annex 4). Restoration through rewetting and revegetation rapidly reduces carbon dioxide emissions and can eventually turn sites into carbon sinks (Balliston et al., 2023). If restoration is not undertaken, emissions continue unabated (Järveoja et al., 2016), and peatlands lose their ability to perform essential ecological functions, including carbon storage, water regulation, and habitat support (Bonn et al., 2016a; Loisel & Gallego-Sala, 2022).

Comprehensive restoration should prioritise and speed up ecological recovery that is tailored to the specific site conditions to restoring peatland-specific habitats and creating functional ecosystems capable of supporting peat regeneration. By committing to restoration efforts, the Sector can establish restoration as the preferred after-use option as part of the quest to achieve net-zero emissions and achieve resilience ecosystems, aligning with the EU climate and biodiversity conservation goals. This collaborative approach reinforces the Sector's critical role in addressing urgent environmental challenges (Box 3).

### Box 3. Making a business case for the Peat Extraction Sector to contribute to large-scale peatland restoration

For the Peat Extraction Sector, investing in peatland restoration could offer a unique opportunity to secure long-term sustainability, enhance its environmental reputation, and potentially unlock new revenue streams. Restoration is not just a legal obligation, it is a chance to lead in the growing market for climate and biodiversity solutions while transforming post peat extraction sites into hubs for ecological recovery and enable the Sector transition into net-zero emissions.

- **Regulatory alignment:** Restoration aligns with EU policies like the Nature Restoration Law, which aims to restore degraded ecosystems (Greifswald Mire Centre & Wetlands International, 2022). Proactively engaging in restoration could reduce regulatory risks, ensure long-term access to peat extraction permits, and position companies as responsible operators.
- **Revenue opportunities:** Restoration could create financial incentives through mechanisms such as carbon markets and biodiversity offsets. For instance, programs like MoorFutures in Germany and the Peatland Code in the UK enable companies to generate income from carbon credits earned through rewetting and restoring peatlands (Moxey & Morling, 2018). Additionally, biodiversity offsets allow companies to provide restoration services to offset the environmental impacts of other industries, unlocking a new revenue stream.
- **Operational advantages:** The Sector's existing expertise, specialised machinery, and infrastructure for managing peatland landscapes can be repurposed to provide large-scale restoration services. These services can cater to governments, NGOs, and private landowners seeking assistance in restoring degraded ecosystems or meeting climate commitments. By diversifying into restoration services, companies open new avenues of business beyond peat extraction.
- **Climate and biodiversity benefits:** Restored peatlands can reduce greenhouse gas emissions, sequester carbon, and improve habitat recovery. Supporting restoration can contribute to the EU Green Deal and biodiversity targets, allowing companies to align their operations with climate and conservation goals, enhancing access to funding and partnerships (Farrell et al., 2024).
- **Environmental credibility:** Companies that proactively invest in restoration enhance their environmental credibility, demonstrating commitment to sustainability and responsible resource management. This strengthens their reputation with regulators, communities, and stakeholders, fostering trust and goodwill. By aligning with global sustainability trends and addressing ecological impacts, they position themselves as reliable partners in climate and biodiversity solutions, ensuring

## 3.2 Issues regarding scaling peatland restoration on and beyond peat extraction sites

As mentioned in Figure 5, the Sector faces several issues in advancing peatland restoration. These issues range from issues of scale and fragmented land ownership to policy gaps, limited funding, and the complexities of balancing environmental and economic trade-offs. These are elaborated further below.



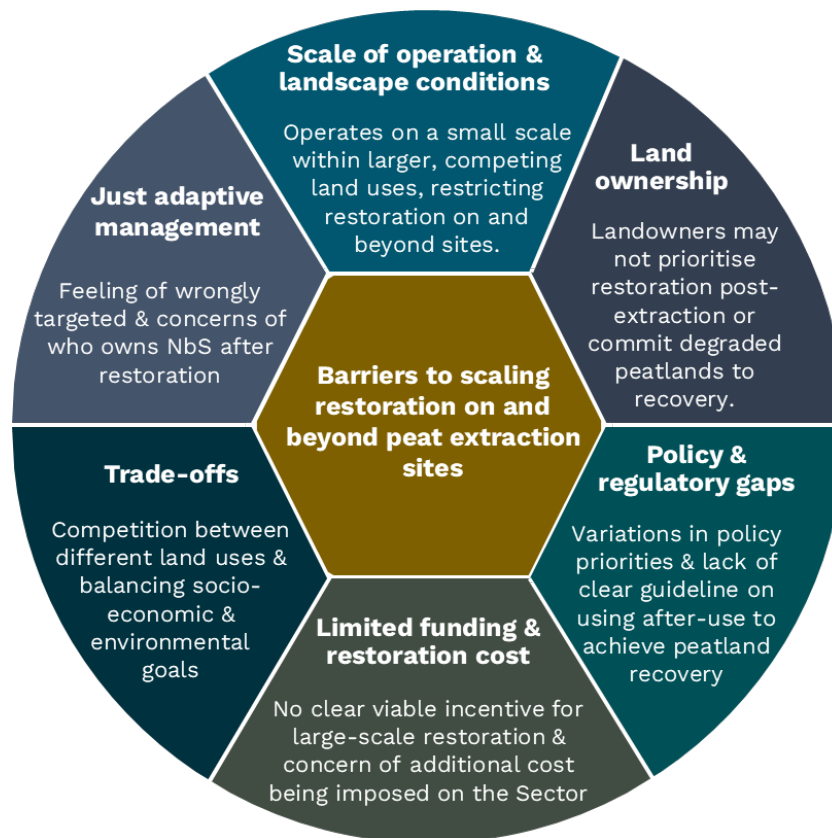


Figure 5. Issues regarding scaling Peatland Restoration on and beyond peat extraction sites

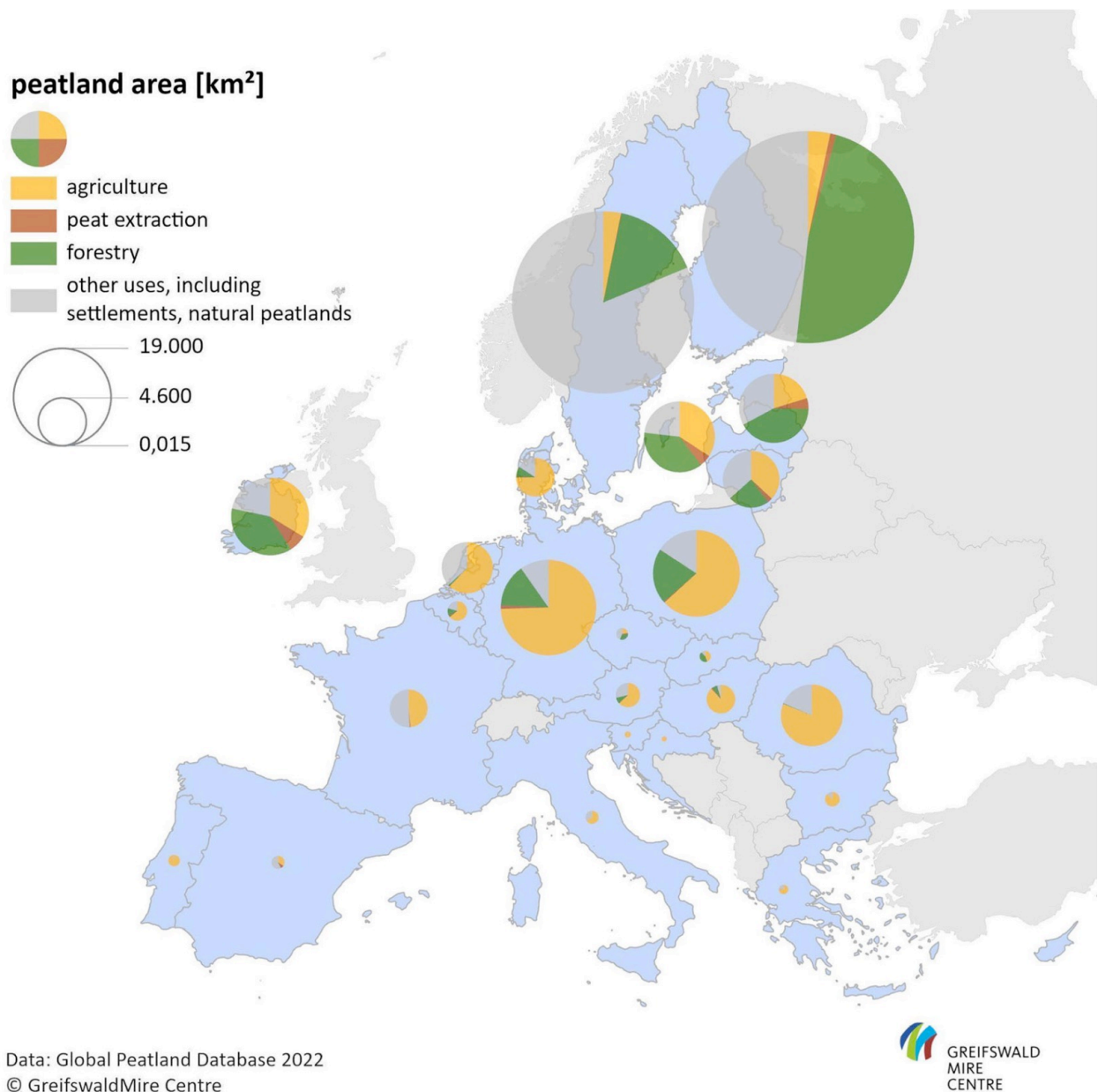
Source: Based on literature review, roundtables & questionnaire

### 3.2.1 Scale of operation and landscape conditions

Large-scale restoration is crucial for enhancing natural habitat and meeting EU emissions targets (Underwood et al., 2022) but peat extraction occupies a relatively small proportion of Europe's peatlands compared to other peatland land uses (Figure 6). Restoration by the Sector is typically confined to the boundaries of extraction sites, as companies are only obligated to perform after-use on the areas specified in their extraction licenses. This restriction limits the scope even if restoration is the preferred after-use and prevents connectivity with the wider landscape, posing challenges for achieving large-scale ecological recovery.

*"It is difficult to – sometimes even difficult to [literally] – take care about [of], let's say, ditches at the border of the extraction sites because of adjacent areas. Other landowner has his rights for watering his own land. Sometimes it's even difficult to work in the field of the permission, and to restore or revert this site ..."* (Peat extraction RT2, 2023)

Despite these challenges, the Sector possesses valuable knowledge and experience in peatland rewetting, which can be scaled up by integrating revegetation where applicable. Whilst not typical, there are peat extraction companies that have implemented full restoration processes and this presents an opportunity for the Sector to share its expertise with other land users, transfer knowledge, and embed restoration practices across the broader landscape.



*Figure 6. Areal share of peatlands under agriculture, peat extraction, forestry, and other uses in countries of the European Union. Colours refer to different land use types, and the size of the circles reflects total peatland area. This shows the small spatial coverage of peat extraction*

*Source: Adopted from Greifswald Mire Centre and Wetlands International (2022).*

### 3.2.2 Land ownership

Land ownership plays a critical role in peatland restoration. Many peat extraction companies lease rather than own the land, leaving after-use decisions to landowners who may prioritise agriculture, forestry, or renewable energy over restoration. In Europe, fragmented landownership is common, with a single area often involving multiple landowners (von Sonntag, 2023). This complexity requires peat extraction companies to first secure landowner commitment to restoration before considering broader restoration within the landscape. Sometimes, when sites are returned to landowners and not used economically or without active restoration measures, the peatland may degrade further, emitting greenhouse gases, losing carbon storage capacity, or developing spontaneous ecosystems that differ significantly from natural peat bogs and provide limited ecological functions (Chapman et al., 2003; Karofeld et al., 2017).

### 3.2.3 Policy and regulatory gaps

A recent analysis of selected EU policies highlights the absence of a cohesive framework for the Peat Extraction Sector or its role in peatland restoration. Policies such as the Nature Restoration Law (Box 4) and the EU Land Use, Land-Use Change, and Forestry (LULUCF) Regulation do not explicitly address this Sector's contributions (Blackstock et al., 2023). The EU Renewable Energy Directive II (RED II) focuses on phasing out the use of peat for energy production due to its carbon emissions, and the Circular Economy Action Plan promotes resource efficiency but neither explicitly incentivises large-scale restoration of extraction sites (Böttcher et al., 2021; Oberč et al., 2022). In contrast, the EU Environmental Impact Assessment (EIA) Directive (2011/92/EU) encourages sustainable peat extraction but lacks mechanisms to enforce long-term restoration commitments (Nordbeck & Høgl, 2023; Similä et al., 2014).

#### **Box 4. A perspective of the EU Nature Restoration Law (NRL) and restoration beyond peat extraction sites**

The EU Nature Restoration Law (NRL) sets ambitious targets for rewetting and restoring degraded peatlands, but lacks direct obligations for farmers or landowners, which could limit participation without adequate incentives (Ibrahim, 2024a). The NRL encourages Member States to make rewetting attractive through incentives, training, and guidance for stakeholders. The Peat Extraction Sector can play a key role in implementing the NRL (see Article 59 for instance) by using these incentives to contribute to restoration beyond peat extraction sites. However, without strong incentives and clear support mechanisms, the Sector's involvement may be limited, potentially hindering the Law's success.

National legislation and licensing conditions vary across Member States, with some promoting rewetting and others prioritising forestry or renewable energy (Räsänen et al., 2023). In particular, not all Member States have dedicated peatland policies, let alone regulations specific to peat extraction. For example, Estonia and Germany have dedicated peatland strategies, while countries like Hungary, Latvia, and Lithuania incorporate peatland restoration into broader biodiversity or climate frameworks (Smith et al., 2024). Moreover, many licensing frameworks lack specific after-use obligations or delay restoration efforts until licenses expire (Ibrahim & Nyíró, 2023). In Latvia, for instance, although after-use is mandated, there are no clear guidelines on the process and prioritisation of restoration (Ozola, 2019). Lack of a clear policy framework for the Sector in some countries means there is inconsistency as companies tend to do what best fits their site conditions and landownership preferences (Ibrahim & Nyíró, 2023).

Finally, some peat extraction companies adopt the Responsibly Produced Peat (RPP) Certification, a voluntary European ecolabel for responsible peat extraction (Peters & von Unger, 2017; The Parties, 2022). While the RPP seeks to promote sustainable practices and after-use plans that prioritise restoration to align the industry with ecological goals, its voluntary nature, limited adoption by the peat extraction industry and lack of binding obligations reduces its effectiveness in driving site restoration and broader peatland recovery (Ibrahim, 2024b). The RPP could enhance its impact by broadening its coverage and ensuring the rapid implementation of after-use plans that prioritise restoration on peat extraction sites and contribute to large-scale peatland restoration efforts (The Parties, 2022).

### 3.2.4 Limited funding and cost of restoration

Restoration on peat extraction sites is costly (Mathias, 2022), and the Peat Extraction Sector faces significant challenges in attracting investment due to the lack of viable business models. Trade-offs often influence the implementation of after-use plans, with more lucrative land uses, such as renewable energy, forestry, and agriculture, frequently prioritised over peatland restoration, especially in the absence of incentives for landowners (Juutinen et al., 2020). Furthermore, obtaining public grants for restoration on these sites is difficult, as after-use requirements are already part of the licensing process and are not eligible for further funding without additional delivery of public goods.

Restoration beyond peat extraction sites often depends on public funding sources, such as EU LIFE projects (Andersen et al., 2017). In Finland, for instance, 4.8 million Euros from the EU Just Transition Fund was allocated for restoring old peat extraction areas, but it provides no direct benefit to peat extraction companies (Ronkanen, 2023). Emerging business models, like carbon credits, present potential opportunities but remain untested and may currently exclude the Peat Extraction Sector (De La Haye et al., 2021). To support landscape-scale restoration, these funding mechanisms need further development, with clear and guaranteed benefits for the Sector when commit to restoring and managing peatlands to maximise environmental and social outcomes. (Box 3, Section 3.1)

### 3.2.5 Balancing trade-offs

Performing after-use and promoting large-scale restoration require balancing trade-offs between different sectors and competing economic, social, and environmental needs (Juutinen et al., 2020; Laasasenaho et al., 2022). Peatlands provide multiple ecosystem services, including food production, biodiversity conservation, and carbon sequestration (Ibrahim et al., 2022b; Saarikoski et al., 2019). A recent survey showed that 100% of Peat Extraction Sector respondents cited balancing these needs as a challenge in implementing NbS, with 91% noting potential conflicts with other sectors (Ibrahim et al., 2022b).

*“In Germany, the problem is that about 70% of the peatlands which are currently called peatlands, is in agricultural use, and most of this is ...more intensively used because there is a shortage of land .... So, I don't see that we can rewet this. We can maybe rewet a small scale of it” (Peat extraction RT2, 2023).*

The challenge lies in managing the conflicting demands of maximizing biodiversity and ecosystem recovery through restoration while addressing other objectives such as renewable energy production and economic returns from alternative land uses (Juutinen et al., 2020). This trade-off is reflected in policies like Finland's Energy and Climate Plan, which prioritises energy security over restoration in some peat extraction areas (Blackstock et al., 2023). To prioritise restoration, it is critical to balance these demands through transparent stakeholder engagement, credible assessments, and fair negotiations to ensure equitable solutions that respect ecological and social limits (IUCN, 2020a, 2020b).

### 3.2.6 Justice and adaptive management

The Peat Extraction Sector advocates for fair incentives to support restoration, as its obligations are limited to minimum legal requirements outlined in after-use plans (Ibrahim & Nyíró, 2023; Nyíró et al., 2022). Such incentives are critical for the Sector to voluntarily contribute to broader peatland restoration and address wider challenges. The Sector perceives they are being held accountable for degradation caused by other industries, like agriculture and forestry.

*“...if you talk about the responsibility of the extraction industry to restore, I have to say from the point of industry it cannot be the responsibility of the peat extracting industry to restore a large share of the agriculture-used peatlands because they are not the ones who benefit from them” (Peat extraction RT1, 2022).*

Respecting land ownership rights is also vital to ensure landowners are not disadvantaged, highlighting the need for strong stakeholder engagement and collaboration (Greifswald Mire Centre & Wetlands International European Association, 2021). However, a key challenge arises when land is returned to owners following the establishment of after-use measures, as it becomes difficult to influence subsequent management practices and ensure they align with long-term restoration objectives (Priede & Gancone, 2019).

Moreover, restoration relies on adaptive management, which involves regular maintenance and evaluation based on the type of restoration implemented post-extraction (Karofeld et al., 2017; Priede & Gancone, 2019). These efforts ensure optimal performance, assess progress toward restoration targets, and provide lessons for improving future restoration programmes (Convention on Wetlands, 2021; Mackin et al., 2017). However, long term monitoring becomes challenging when land ownership changes; and it is unclear how such monitoring is funded beyond research projects e.g. LIFE and HORIZON (Priede & Gancone, 2019).

## 3.3 What is the focus of this Strategy?

This Strategy focuses on addressing the practical issues (Section 0) that hinder full-scale restoration by the Peat Extraction Sector. It emphasises enabling the Sector to rewet and if applicable also apply other mire-specific revegetation measures to maximise ecological recovery instead of applying various economically driven after-uses. Furthermore, it highlights opportunities for the Sector to leverage its restoration expertise to support broader peatland restoration efforts, integrating these initiatives into landscape-scale solutions aligned with nature-based solution principles (Box 5).



### Box 5. The objectives and focus of the Peat Extraction Sector Strategy

This Strategy defines its objectives as the specific outcomes it seeks to achieve, while its focus areas outline the key priorities guiding the actions (Section 5) needed to achieve those objectives and vision (Section 4).

#### Objectives:

- Enhance after-use plans for peat extraction sites by prioritising ecological recovery through practices that integrate revegetation with rewetting, enhancing biodiversity and ecosystem services.
- Leverage the Peat Extraction Sector's expertise to promote advanced restoration practices and widespread understanding of peatland values. This will involve partnerships among landowners and stakeholders, led by a unified authority for cohesive planning and implementation.
- Enable nature-based solutions by expanding restoration efforts to degraded peatlands surrounding extraction sites, creating resilient and connected ecosystems. Restoration will also be positioned as a corporate social responsibility initiative and a viable business opportunity for the Sector.

#### Focus areas:

- Build knowledge about peat extraction sites and nature-based solutions (NbS) to advance restoration beyond rewetting where suitable, and support broader landscape recovery.
- Establish landscape-scale partnerships supported by comprehensive after-use plans.
- Promote policy changes to clarify property and constitutional rights and harmonise Member State regulations.
- Develop viable business cases to make large-scale restoration economically sustainable.

These focus areas and objectives are operationalised through five interconnected action points to be implemented from 2025 to 2050 and beyond, ensuring alignment with nature-based solution principles (See Section 1 and Key Terminology).

## 4 What is the vision of this Strategy?

The vision of this Strategy is to **achieve freshwater ecosystem restoration in peatland landscapes through partnerships with landowners and landholders, under the leadership of an appropriate authority, with the Peat Extraction Sector serving as a major driver of large-scale restoration.**

As shown in Figure 7, a typical peat landscape area with peat extraction sites could be characterised by other land uses, including agriculture and forestry along with drained and degraded areas which are currently not in active land use (Temmink et al., 2023a). **To drive large-scale nature-based solutions**, four key restoration initiatives need to be considered:

- **Current peat extraction sites:** These are active peat extraction sites or areas with the potential to receive new licences for peat extraction in the future under Member State regulations. If the existing issues (Section 3.2) are not addressed, these sites may adopt inconsistent after-use approaches. Some may focus solely on rewetting, while others could pursue alternative uses depending on licensing terms, land ownership structures, and policy frameworks (Ibrahim, 2024b). **This Strategy aims to ensure that all extraction sites, together with the mandated after-use plans, are enhanced to prioritise restoration through active landowner engagement once peat extraction on those sites ends.** In some cases, however, peat extraction may continue until 2050 or beyond due to the long duration of existing licences, which can span multiple decades to allow for full utilisation of the resource and compliance with restoration requirements (Ibrahim et al., 2022a). For sites with licenses permitting extraction beyond 2050, companies should initiate rewetting and, if applicable, revegetation of areas no longer in use, incorporating buffer zones to mitigate impacts and contribute to broader restoration objectives.
- **Rewetted former peat extraction sites on its journey to full restoration:** These are sites where rewetting has been implemented after peat extraction ceased, aiming to restore peatland-specific functions. This Strategy promotes regular hydrological monitoring to maintain optimal water levels (Karofeld et al., 2017) and natural recolonization from nearby peatlands (Andersen et al., 2017) and where appropriate establishing vegetative buffer zones to mitigate external land-use impacts. Site-specific strategies ensure sustainability by leveraging local conditions and minimizing human interventions.
- **Degraded peatlands not in active land use:** Across Europe, many peatlands surrounding peat extraction sites remain drained and degraded, including historical extraction sites that did not have any requirements to rewet or restore peatland function (Karofeld et al., 2017; Räsänen et al., 2023). Where there is no active land use for economic livelihoods, there is no active management to reverse prior drainage. **This Strategy promotes restoration across these landscapes by applying best restoration practices, expertise and lessons gained from restoring the peat extraction sites.** These include environmental impact assessment, hydrological management, revegetation techniques, and carbon sequestration and monitoring and stakeholder engagement (Priede & Gancone, 2019). Leadership by landscape authorities and collaboration with stakeholders will be essential to connect restored sites with wider peatland restoration initiatives, creating resilient, functioning ecosystems.
- **Drainage-based economic land use (e.g., forestry and agriculture):** Intensive agriculture and forestry on drained peatlands contribute to degradation, increasing greenhouse gas emissions and organic pollution (Temmink et al., 2023b). Sustainable restoration initiatives on peat extraction sites and surrounding degraded peatlands will require adopting good land-use practices such as paludiculture (Temmink et al., 2023a; Temmink et al., 2023b), agroforestry, controlled water management, and organic farming with reduced chemical use (EEA, 2020). **Buffers between restored peat extraction sites and surrounding degraded peatlands will also be essential to mitigate the impacts of adjacent land uses on restored peatlands.** Collaboration with agriculture, forestry, and landowners is crucial to achieving sustainable, integrated landscapes that balance ecological restoration with economic and societal needs (Daun et al., 2023; Müller & Glatzel, 2021).

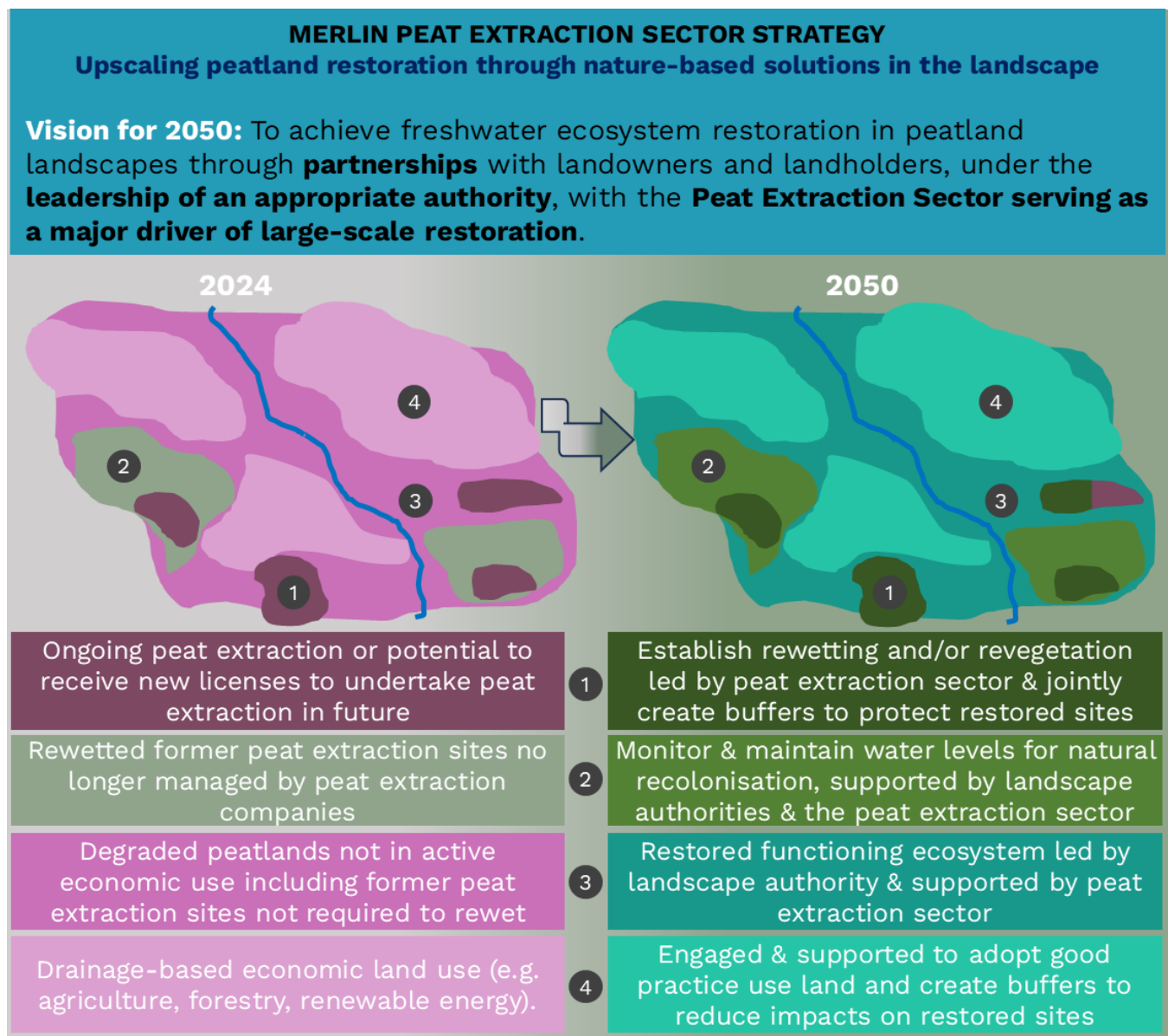


Figure 7. Peat Extraction Sector 2050 Vision to drive nature-based solutions in the landscape

Some examples (Boxes 6 & 7) of how the vision can be realised are presented overleaf, demonstrating how the Peat Extraction Sector can deliver the vision outlined in Figure 7 by showcasing effective restoration practices, such as rewetting and revegetation, supported by stakeholder collaboration, verified monitoring, and innovative funding mechanisms. Section 5 outlines the actions required to achieve this vision.

### Box 6. MERLIN's Komppasuo Peatland Rewetting (Finland): upscaling restoration measures with nature-based solutions

This example demonstrates how restoring peat extraction sites can be models for broader peatland restoration, integrating innovative approaches, stakeholder collaboration, and scalable solutions beyond rewetting alone. **Komppasuo, a former peat extraction site in North Ostrobothnia, Finland, is a key MERLIN project site for peatland restoration.** Peat extraction occurred between 1987 and 2021, removing 1.5 to 3 metres of peat mainly for energy production. The restoration aims to enhance biodiversity, reduce carbon and nutrient loads to downstream ecosystems, and manage runoff, while exploring versatile after-use options and balancing greenhouse gas emissions.

#### The problem and opportunities:

Energy Peat extraction from the Komppasuo caused changes to the elevation of the area. The main challenge in restoring the sites is managing biodiversity loss, water pollution, and greenhouse gas emissions in a heavily altered environment. Restoration will be slow, taking hundreds of years to fully return to carbon-rich mire ecosystems. However, it also offers unique opportunities to:

- Utilise NbS for flood and drought protection.
- Create new business opportunities, such as eco-tourism or reforestation.
- Test and implement innovative land-use options that enhance ecosystem services.



#### Driving nature-based solutions (NbS) in the landscape

Landscape NbS are demonstrated at Komppasuo through peat extraction area restoration by:

- Constructing five dams to retain water, re-direct water from surrounding areas following negotiation with landowners, forming three wetlands and replanting peatland vegetation to accelerate the restoration of the site.
- Applying evidence-based results to guide decision-making for future land use and restoration, which could influence the management of the 14,000 hectares of peat extraction areas in the North-Ostrobothnia region where Oulujoki-Iijoki river basin is located.
- Scaling efforts regionally by mapping potential sites and using national watershed models to monitor cumulative impacts on river basins.

#### Partnerships

Collaboration is central to this initiative, involving a variety of stakeholders, including:

- Vapo Terra Oy (the landowner) and Neova Oy are actively engaged in restoration efforts.
- Local associations (e.g., reindeer grazing, fishing, local citizens) and environmental NGOs.
- Public authorities, such as the Centre for Economic Development, Transport, and Environment of the North-Ostrobothnia region and the Ministry of Agriculture and Forestry.
- Local contractors who have previously worked on peat extraction sites.

This collaboration ensures that restoration efforts provide economic livelihood, are inclusive and meet the needs of both the environment and the local community.

#### Role of the Peat Extraction Sector

The Peat Extraction Sector, particularly Neova Oy, plays a key role in restoring Komppasuo. As the former landowner and operator, Neova is responsible for implementing the restoration plan, including water management and vegetation replanting. This highlights the Sector's ability to support national and regional environmental goals by rehabilitating degraded peatlands and promoting biodiversity recovery.



#### Box 6. MERLIN's Komppasuo Peatland Rewetting (Finland): upscaling restoration measures with nature-based solutions (continued)

##### Policy/regulatory needs

Finland's regulations leave after-use decisions to landowners, but stronger policies are needed to promote broader restoration that balances emissions and support habitat recovery. While the Just Transition Fund and EU Structural Funds offer support, a more robust funding framework could encourage greater landowner participation in restoration after peat extraction.

##### Funding and financing

The restoration of Komppasuo and other sites is financed through a combination of:

- The Just Transition Fund, allocating €4.8 million to restore about 2500 hectares of peatlands.
- The carbon market and compensation funds, directing 70% of funds for restoration activities.
- EU and national funding programmes like 'Catch the Carbon' providing critical financial support to mitigate the environmental impacts of peat extraction.

##### Lessons learned and opportunities for scaling up

The Komppasuo Peatland Rewetting case study offers a scalable model for restoring peat extraction areas in Northern Finland:

- **Verified monitoring data:** Policy makers need verified monitoring data for water, climate and biodiversity impacts of different after uses at former peat extraction areas.
- **High replication potential:** Over 60 peat extraction sites have closed since 2019. Therefore, a total of 250 peat extraction sites have been identified in the North Ostrobothnia region, making large-scale restoration highly feasible (Korhonen et al., 2021).
- **Proven restoration methods:** Techniques like water retention dams (peatland rewetting) and, planting peatland flora are effective and can serve as blueprints for other sites.
- **Stakeholder collaboration:** Engaging landowners and local communities is needed for success, balancing environmental restoration with traditional land uses.
- **Support and funding:** National programmes like 'Catch the Carbon' provide crucial financial backing for expanding restoration efforts across the region.

##### Challenges ahead

- **Regulatory gaps in restoration permits:** Most peat extraction permits in Finland require minimal restoration without detailed plans. Komppasuo's voluntary approach underscores the need for stronger regulations mandating comprehensive restoration plans to mainstream NbS
- **Competing after-use land options:** Solar panels and wind energy installations offer landowners attractive, low-burden options, further supported by subsidies. These profit-driven alternatives compete with restoration efforts, complicating large-scale restoration.

**Source:** Tiina Ronkainen, Anna-Kaisa Ronkanen (MERLIN's Komppasuo Peatland Rewetting leads) and Alhassan Ibrahim

### Box 7. Bord na Móna Peatlands Climate Action Scheme: catalysing Peat Extraction Sector's role in peatland restoration

This example highlights the pivotal role the Peat Extraction Sector can play in driving large-scale peatland restoration, showcasing how initiatives like **Bord na Móna's** Peatlands Climate Action Scheme (PCAS) leverage expertise and resources from former industrial operations to contribute to national and EU environmental goals through innovative rehabilitation efforts. Bord na Móna has ceased peat extraction and initiated the rehabilitation and restoration of its former sites and other raised bogs outside its ownership. Its Peatlands Climate Action Scheme (PCAS) aims to rehabilitate over 33,000 hectares in 82 separate peatland sites, contributing to Ireland's climate action plan by reducing greenhouse gas emissions, enhancing biodiversity, and supporting the low-carbon transition. As part of the MERLIN CoP, this initiative serves as a case study for connecting large-scale restoration with the Peat Extraction Sector.

#### The primary aims of the Peatland Climate Action scheme include:

- **Carbon Emission Reduction:** Rewetting and restoring peatlands to transform them from carbon sources to carbon sinks, contributing to the storage of circa 70 million tonnes of CO<sub>2</sub>.
- **Biodiversity Enhancement:** Restoration efforts aim to improve habitats for native species, such as through the rewetting of degraded bogs, supporting Ireland's biodiversity goals.
- **Job Creation:** The initiative also aligns with Ireland's Just Transition Strategy, creating over 300 jobs in restoration and sustainable land management.

#### Role of the Peat Extraction Sector

The Peat Extraction Sector is key to this initiative, with Bord na Móna leading restoration efforts on lands previously used for industrial peat extraction, marking its shift from extraction to rehabilitation and restoration.

#### Partnerships

- **Government Bodies:** The scheme is supported by Ireland's Department of the Environment, Climate and Communications and regulated by the National Parks and Wildlife Service (NPWS), ensuring environmental standards are met.
- **Local Communities:** Community engagement is critical, with local stakeholders actively involved in decision-making and restoration efforts.
- **NGOs and Academic Institutions:** Environmental NGOs and researchers provide expertise in ecological restoration and monitoring.

#### Funding and financing

The scheme is funded through the European Union's Recovery and Resilience Facility as part of Ireland's National Recovery and Resilience Plan, a key instrument at the heart of Next Generation EU, with an allocation of €108 million. This funding supports activities that go beyond Bord na Móna's legal obligations, such as more intensive water management and biodiversity improvements. This example illustrates that government funding can enable the Peat Extraction Sector to exceed minimum requirements, showcasing scalable models where public investment complements private sector efforts in restoration.

#### Lessons for driving nature-based solutions (NbS) in the landscape

PCAS exemplifies how the Peat Extraction Sector can pivot towards large-scale rehabilitation and restoration beyond their peat extraction sites, making it a key model for integrating NbS into industry practice while contributing to national and EU environmental goals. This example also shows the importance of public funding in undertaking large-scale restoration.

**Source:** Based on (Bord na Móna, 2021) and King (2022). See also PCAS webpage.

## 5 Strategy Actions

To achieve the vision of this Strategy (Section 4), five interconnected action points (Table 1 and Visualisation) are identified: building knowledge, enhancing after-use plans, initiating landscape authorities and partnerships, developing policy and regulatory framework; and developing clear and viable business incentives. These interconnected actions will be implemented by the CoP (see Section 1.3), including the peat extraction industry, EU and MS policymakers, and other stakeholders. The actions are iterative and interconnected.

*Table 1. Summary of action points to restoring peat extraction sites to drive nature-based solutions in the landscape*

Actions	What	Who	By when
Action A	<b>Build knowledge</b> to increase understanding of nature-based solutions for peatland restoration and its implications for the Peat Extraction Sector	<ul style="list-style-type: none"> <li>• Landscape restoration working groups or authorities</li> <li>• Research Institutions and Universities</li> <li>• Peat extraction Companies and Umbrella Associations</li> <li>• NGOs and Environmental Groups</li> </ul>	2030
Action B	<b>Enhance after-use plans to prioritise rewetting and revegetation</b> of peat extraction sites	<ul style="list-style-type: none"> <li>• Peat extraction Companies and Umbrella Associations</li> <li>• Landscape Authority</li> <li>• Research Institutions and Universities</li> <li>• NGOs and Environmental Groups (e.g., IPS, Wetlands International, IUCN Peatland Programme)</li> </ul>	2035
Action C	<b>Initiate landscape authorities and partnerships</b> to embed rewetting and revegetation of peat extraction sites to support landscape-wide restoration and good-practice peatland management	<ul style="list-style-type: none"> <li>• MS Environmental Agencies</li> <li>• Municipalities and landscape restoration working groups</li> <li>• Peat extraction companies and umbrella associations</li> <li>• Landowners and landowners' associations</li> </ul>	2035 – 2050
Action D	<b>Develop policy and regulatory frameworks</b> to enable landscape-scale peatland restoration as a core licensing requirement	<ul style="list-style-type: none"> <li>• DG Clima</li> <li>• MS environmental conservation and climate agencies</li> <li>• Peat extraction certification &amp; Umbrella organisations</li> <li>• Peat extraction companies</li> </ul>	2030 – 2035
Action E	<b>Develop clear and viable business incentive</b> enabling the Peat Extraction Sector to support restoration beyond the peat extraction site	<ul style="list-style-type: none"> <li>• Peat extraction Companies</li> <li>• DG Clima; EU Investment Bank</li> <li>• MS environment, conservation and climate agencies</li> <li>• Environmental NGOs (e.g. Wetlands International)</li> <li>• Private Investors</li> </ul>	2035

### 5.1 Action A: Build knowledge to increase understanding of nature-based solutions for peatland restoration and its implications for the Peat Extraction Sector

#### 5.1.1 Why is this action needed?

There is a mixed level of expertise regarding the environmental and social impacts of after-use options following peat extraction. While some companies have successfully implemented rewetting, showcasing their capability in stabilising hydrology and reducing carbon emission, challenges like addressing landscape connectivity and topographical constraints remain. Additionally, fragmented and inaccessible evidence (Räsänen et al., 2023) highlights the need to engage wider stakeholders and enhance knowledge-sharing to support effective and collaborative restoration practices.

To gain broad support for restoration based on NbS principles, there is a need to improve understanding of the societal challenges related to carbon emissions and habitat loss. This action aims to enhance stakeholder expertise within the Peat Extraction Sector and peatland managers, including landowners, through targeted research, data collection, and knowledge synthesis to prioritise restoration and integrate it into broader landscape restoration initiatives. Specifically, it will:

- **Assess current conditions:** Inventory, including detailed land use survey and mapping, of peat extraction and restoration companies, areas currently under extraction, licensed but unextracted sites, gaps in existing licensing and restored sites. Evaluate surrounding peatlands to identify degraded areas and intensive land use areas such as agriculture or forestry. This will help show the relationship between peat extraction sites and other land uses on peatland and their nature.
- **Quantify environmental impacts:** Assess the impacts of peat extraction, including greenhouse gas emissions, habitat loss, water organic pollution, and land degradation, and analyse their contribution to regional and national environmental challenges.
- **Evaluate and improve after-use plans:** Compare after-use options such as rewetting and revegetation, agriculture, forestry, and renewable energy to assess their environmental and socio-economic benefits. Identify gaps and integrate NbS principles to enhance biodiversity, carbon sequestration, and landscape connectivity.
- **Contextualise and plan NbS for restoration:** Investigate how NbS can be applied across landscapes, aligning restoration measures with local goals. Conduct feasibility assessments through cost-benefit analyses, prioritise high-impact areas, and implement monitoring and adaptive management to ensure effective outcomes. **This includes assessing sites where revegetation can be integrated into rewetting.**

### 5.1.2 Who will act?

Key actors (Table 2) include landscape authorities to align restoration with environmental goals, peat extraction companies to share practical insights, and research institutions for scientific evidence. NGOs will raise awareness and create demonstrations, while policymakers, landowners, and local communities must be involved to ensure sustainable, large-scale restoration.

*Table 2. Stakeholder roles for Action A: Building knowledge*

Stakeholders	Roles
Peat extraction Companies and Umbrella and Expert Associations, including IPS	<ul style="list-style-type: none"> <li>• Provide data on peat extraction operations, restoration efforts, emissions, and after-use scenarios to support inventories and assessments.</li> <li>• Pilot and demonstrate restoration techniques, such as combining rewetting and revegetation, as scalable models for post-extraction sites.</li> <li>• Collaborate with researchers to assess the socio-economic and environmental impacts of after-use plans and share restoration data with broader stakeholders.</li> <li>• Facilitate cross-sector knowledge exchange with agriculture and forestry to integrate insights into landscape-scale restoration planning.</li> <li>• Advocate for improved after-use plans and support sector-wide adoption of NbS principles.</li> </ul>
Landscape Authority	<ul style="list-style-type: none"> <li>• Coordinate inventories of extraction sites, licensed areas, restored sites, and surrounding degraded peatlands.</li> <li>• Identify degraded areas and intensive land uses impacting restoration outcomes.</li> <li>• Develop and share guidelines for integrating restoration into landscape-scale goals.</li> <li>• Facilitate partnerships among stakeholders to align restoration with regional targets.</li> <li>• Oversee monitoring programmes to track restoration progress.</li> </ul>
Research Institutions and Universities	<ul style="list-style-type: none"> <li>• Assess and monitor the long-term ecological and socio-economic outcomes of various after-use scenarios.</li> <li>• Develop tools for cost-benefit analyses, prioritisation frameworks, and adaptive management for NbS.</li> <li>• Provide evidence-based frameworks for rewetting, revegetation, and integrating restoration into broader landscape plans.</li> <li>• Offer technical support and capacity-building for stakeholders.</li> <li>• Monitor long-term restoration outcomes to inform scaling efforts.</li> </ul>



NGOs and Environmental Groups (e.g., IPS, Wetlands International, IUCN Peatland Programme)	<ul style="list-style-type: none"> <li>Engage landowners, companies, and communities in restoration projects, fostering partnerships and building local ownership.</li> <li>Highlight the importance of peatland restoration through NbS, emphasizing its role in climate resilience, biodiversity enhancement, and sustainable livelihoods.</li> <li>Showcase practical applications of NbS in peatland restoration, involving local communities and stakeholders.</li> <li>Create and disseminate guidelines, case studies, and knowledge-sharing platforms to inspire and enable the adoption of best practices.</li> </ul>
--	--

### 5.1.3 Are there important differences between Member States or regions to consider?

The benefits of NbS for peatland restoration vary based on land conditions such as topography, land use, and ownership. EU Member States differ in the presence of peatlands and active peat extraction sites, making this action relevant only to those Member States with peat extraction and peatlands (see Figure 6 in Section 3.2.1).

### 5.1.4 How and when will we know if it has happened? What will have changed?

There should be considerable progress in achieving this action by 2030 and extend into the long-term (2050 and beyond), with the main outcome (Box 8) being enhanced knowledge and understanding of peatland restoration through an NbS approach.

#### Box 8. Outcomes for monitoring achievement of Action A: Building Knowledge

- Increased understanding and acceptance of NbS for peatland restoration among landowners, Peat Extraction Sectors, and local communities.
- Development of tools to compare the social, economic, and environmental benefits of restoration on peat extraction sites with alternative after-use options.
- Accessible knowledge base on Peat Extraction Sector restoration outcomes and the benefits of upscaling NbS.
- Creation of a compendium of case studies linking large-scale NbS on peat extraction sites to adjacent land uses, their lessons and how they could be adopted for this Strategy.
- After-use assessment process to identify NbS options that enhance biodiversity, reduce emissions, and deliver socio-economic benefits.

### 5.1.5 Summary of action

This action aims to employ existing knowledge on NbS, particularly the Peat Extraction Sector's rewetting and revegetation experience. Education should target new actors unfamiliar with NbS and peatland, while addressing negative assumptions about potential impact of NbS on livelihoods, unemployment, and growing media shortages. NbS must balance these trade-offs to gain wider acceptance.

## 5.2 Action B: Enhance after-use plans to prioritise rewetting and revegetation of peat extraction sites

### 5.2.1 Why is this action needed?

Developing enhanced after-use plans that prioritise rewetting and revegetation is essential for achieving ecological recovery, restoring biodiversity, and addressing climate goals. Current after-use plans often focus on alternative uses, which fail to fully restore native ecosystems or promote peat formation. Engaging landowners (Section 5.3) and aligning restoration with nature-based solutions (NbS) can transform degraded sites into thriving ecosystems for broader landscape-scale restoration. This action will revise and establish after-use plans that go beyond minimum requirements to prioritise comprehensive restoration efforts, achieving measurable ecological and societal benefits. Specifically, it will:

- **Revise current and any future after-use plans:** Enhance existing plans to integrate rewetting and if applicable revegetation, ensuring they support long-term ecological recovery and connectivity with surrounding landscape using buffers.

- **Prioritise restoration over alternative uses:** Shift from intensive after-use options with high environmental footprint to restoration-driven approaches aligned with NbS principles to maximise ecosystem services and reduce environmental impacts.
- **Demonstrate restoration success:** Utilise post-extraction sites that had enhanced after-use plans as models to showcase effective rewetting and revegetation techniques, building public trust and stakeholder confidence in peatland restoration.

### 5.2.2 Who will act?

For this action, the Peat Extraction Sector, including companies and certification bodies like RPP, could play a leading role, but success depends on landowners providing access to sites and aligning restoration goals with land-use priorities (Table 3). Member State agencies, including licensing and landscape authorities, will support by ensuring regulatory compliance and coordinating initiative to align with broader landscape restoration (see Action C in Section 5.3).

*Table 3. Stakeholder roles for Action B: Enhancing after-use plans*

Stakeholders	Roles
Peat extraction companies	<ul style="list-style-type: none"> <li>• Create and implement plans that prioritise rewetting and revegetation to maximise ecological recovery.</li> <li>• Demonstrate effective restoration techniques at extraction sites to serve as models for after-use practices.</li> <li>• Collaborate with landowners to align restoration goals and secure their participation in rewetting and revegetation initiatives on peat extraction sites and demonstrates connectivity with adjoining landscape.</li> </ul>
Landowners and landowner associations	<ul style="list-style-type: none"> <li>• Facilitate access to land and cooperate with peat extraction companies and environmental authorities to implement restoration plans including specifying conditions for using such lands for restoration</li> <li>• Follow guidelines for restoration and management of post-extraction sites to ensure sustainable outcomes in collaboration with peat extraction companies.</li> </ul>
Landscape authorities, environmental and licensing agencies	<ul style="list-style-type: none"> <li>• Provide financial (see Action E in Section 5.5) and technical support to encourage landowners and peat extraction companies to exceed minimum restoration requirements, including creation of buffers around restored peat extraction sites.</li> <li>• Facilitate partnerships among landowners, companies, and policymakers to enhance after-use plans to streamline restoration.</li> </ul>
Non-Governmental Organisations (NGOs) and community groups	<ul style="list-style-type: none"> <li>• Advocate for the benefits of peatland restoration and its role in addressing climate and biodiversity challenges.</li> <li>• Showcase successful restoration practices to build stakeholder confidence.</li> <li>• Involve communities in restoration efforts, ensuring alignment with local needs and values while fostering long-term stewardship.</li> </ul>

### 5.2.3 Are there important differences between Member States or regions to consider?

Enhancing after-use plans to support restoration of peat extraction sites must consider Member State differences in policies, landownership, and ecological conditions. For example, state-owned peatlands in the Baltics favour rewetting, while privately owned sites in Ireland and Finland often prioritise forestry or agriculture as private landowners need to make economic returns (Räsänen et al., 2023). Northern countries emphasise biodiversity restoration, while southern regions require tailored water management approaches (Similä et al., 2014). These differences highlight the need for region-specific plans aligned with local contexts.

### 5.2.4 How and when will we know if it has happened?

This action aims to deliver measurable outcomes by 2035, with progress monitored through 2050 (Box 9). Its success relies on the effective implementation of Action A (Building Knowledge –Section 5.1) and Action D (Developing Policy and Regulatory Frameworks – Section 5.4), which must progress concurrently.

**Box 9. Outcomes for monitoring achievement of Action B: Enhancing after-use plans**

- All current and future peat extraction sites should have mandated after-use plans that prioritise restoration efforts in collaboration with landowners, including both rewetting and revegetation, as part of standard licensing requirements.
- Measurable increases in the number and area of peat extraction sites undergoing rewetting and revegetation, with clear targets and timelines.
- Observable improvements in biodiversity, such as the return of native plant and animal species, and progress toward the re-establishment of peat-forming vegetation on restored sites.
- Evidence of connectivity between restored peat extraction sites and surrounding degraded peatlands, contributing to landscape-scale restoration.
- Guidelines and Best Practices: Development and dissemination of best practice guidelines for enhancing after-use plans to support the replication of restoration approaches in other regions.
- Successful demonstration projects showcasing the effectiveness of rewetting and revegetation as viable after-use options, raising public awareness and stakeholder confidence in restoration.

**5.2.5 Summary of action**

This action focuses on utilizing the Peat Extraction Sector's restoration experience to enhance ecological recovery at peat extraction sites. It emphasises moving beyond minimal compliance or single-purpose after-use options such as agriculture, forestry, renewable energy, or basic rewetting, by integrating both rewetting and revegetation into comprehensive after-use plans. By leveraging scientific research (Action A – Section 5.1) and collaboration with landowners (Action C – Section 5.3), this action aims to restore peatland ecosystems and maximise the ecosystem services they provide.

**5.3 Action C: Initiate landscape authorities and partnerships to embed rewetting and revegetation of peat extraction sites to support landscape restoration and good-practice peatland management****5.3.1 Why is this action needed?**

As shown in Figure 7, peatlands surrounding peat extraction sites are often degraded or used intensively for agriculture or forestry, contributing to greenhouse gas emissions, water pollution, and biodiversity loss (Temmink et al., 2023a). **Achieving landscape-scale NbS requires rewetting and revegetation at peat extraction sites and sustainable management of surrounding peatlands.** This approach ensures ecological connectivity and amplifies the societal benefits of restoration (Jessup et al., 2020; Temmink et al., 2023b).

**Establishing a dedicated landscape authority and fostering partnerships among stakeholders are essential to tackle the complexities of large-scale restoration.** Such authority can oversee hydrological management, address trade-offs like waterlogging risks (**See also questionnaire report**), and align restoration with biodiversity and climate objectives (Temmink et al., 2023a). The authority will also lead collaborative partnerships involving peat extraction companies, landowners, and communities to facilitate resource sharing, informed decision-making, and the integration of sustainable practices such as paludiculture and buffer zone creation. Such an authority is needed to balance ecological recovery with socio-economic needs (Temmink et al., 2023a; Temmink et al., 2023b). The primary focus of this action is to:

- Establish landscape authorities to coordinate planning, implementation, and monitoring of rewetting and revegetation initiatives, ensuring alignment with regional restoration goals.
- Embed after-use plans into broader landscape strategies to enhance ecological connectivity, improve biodiversity, and strengthen ecosystem resilience.
- Facilitate collaboration among stakeholders – peat extraction companies, landowners, and agriculture and forestry sectors – to integrate restoration with sustainable land-use practices.
- Address hydrological concerns through practical solutions, managing the impacts of rewetting (e.g., waterlogging and flooding) on surrounding lands.
- Apply proven restoration techniques, including rewetting, revegetation, and buffer zone establishment, to mitigate the impacts of intensive land uses on adjoining peatlands.
- Promote sustainable land-use practices such as paludiculture, improved drainage management, constructed wetlands, and riparian vegetation to reduce the effects of intensive land use on restored peatlands (EEA, 2020).

### 5.3.2 Who will act?

Responsibility lies with Member State environmental agencies, municipalities, landscape working groups, landowners, and peat extraction companies. Collaboration among these actors will ensure that restoration on peat extraction sites integrates with broader landscape restoration goals (Table 4).

*Table 4. Stakeholder roles for Action C: Initiating landscape authorities and partnerships*

Stakeholders	Roles
Member State environmental agencies	<ul style="list-style-type: none"> <li>Form landscape working groups to coordinate restoration and integrate nature-based solutions (NbS) into broader landscape strategies.</li> <li>Develop and disseminate best practice guidelines for peatland restoration, rewetting, and sustainable land management, emphasizing ecological and socio-economic benefits.</li> <li>Facilitate transparent trade-off discussions among stakeholders to align restoration efforts with national biodiversity and climate goals.</li> <li>Monitor and verify restoration projects to ensure compliance with design specifications and regulatory standards.</li> </ul>
Municipalities and landscape authorities	<ul style="list-style-type: none"> <li>Prepare and implement landscape-scale restoration plans based on lessons from the Peat Extraction Sector and tailored to local ecological needs based on MS national restoration plans under NRL.</li> <li>Engage communities and stakeholders through outreach initiatives to foster understanding and support for large-scale restoration.</li> <li>Collaborate with peat extraction companies to embed site-level restoration into broader landscape restoration strategies, prioritizing rewetting and revegetation.</li> <li>Address hydrological concerns, such as waterlogging and flooding, by aligning restoration with sustainable land-use practices and stakeholder interests.</li> <li>Rehabilitate degraded peatlands beyond extraction sites and promote best practice management where restoration is not feasible.</li> <li>Coordinate with farmers and landowners to implement good land-use practices that minimise the impact of intensive peatland use on restored areas.</li> <li>Facilitate funding and resource mobilisation through partnerships with public, private, and non-governmental actors (see Action E).</li> </ul>
Peat extraction companies and umbrella and expert associations (including IPS)	<ul style="list-style-type: none"> <li>Align restoration activities with landscape-scale plans, addressing hydrological risks (e.g., waterlogging) and ensuring site-level efforts connect with wider ecosystems using buffers.</li> <li>Collaborate with landowners and landscape authorities to create buffer zones around restored sites and enhance connectivity with degraded peatlands.</li> <li>Actively participate in partnerships, sharing restoration experiences and concerns to inform broader strategies.</li> <li>Voluntarily offer practical restoration services for degraded sites beyond extraction areas, supported by appropriate compensation or incentives.</li> <li>Offer to rehabilitate degraded peatlands as part of corporate social responsibility or offset emissions, contributing to net-zero targets by 2050.</li> <li>Contribute to local peatland mapping efforts to identify and prioritise restoration sites.</li> </ul>
Landowners, landowners' associations and stakeholders from agriculture and forestry sectors	<ul style="list-style-type: none"> <li>Actively participate in local restoration initiatives and communicate concerns effectively within partnerships.</li> <li>Support restoration by permitting rewetting and appropriate revegetation on their lands while balancing economic and social needs.</li> <li>Adopt sustainable land-use practices such as paludiculture, improved drainage management, constructed wetlands, and riparian vegetation to minimise environmental impacts of intensive peatland use.</li> <li>Collaborate with other stakeholders to align sectoral practices with restoration goals and reduce conflicts with restoration activities.</li> </ul>



### 5.3.3 Are there important differences between Member States or regions to consider?

Member States differ in their approaches to landscape partnerships for peatland restoration due to variations in governance, environmental and climatic conditions, land ownership, and policy frameworks (Nordbeck & Høgl, 2023). In Germany and Sweden, decentralised systems enable regional authorities and NGOs to lead restoration, fostering local engagement. Finland emphasises collaboration between government agencies, the private sector, and forestry industries under its National Peatland Strategy (Hirvonen et al., 2021). Restoration in Estonia and Latvia is state-led, supported by EU funding, while Ireland and the UK rely on voluntary agreements and incentives for privately owned peatlands (Smith et al., 2024). These differences highlight the need for tailored strategies that align with national governance and stakeholder dynamics.

### 5.3.4 How and when will we know if it has happened?

This action aims to achieve measurable outcomes by 2040, continuing through 2050, to strengthen partnerships among peatland stakeholders (Box 10). Its success depends on the effective implementation of Action A (Building Knowledge – Section 5.1), Action D (Developing Policy and Regulatory Frameworks – Section 5.4), and Action E (Developing Clear and Viable Business Incentives – Section 5.5).

#### Box 10. Outcomes for monitoring achievement of Action C: Initiating landscape authorities and partnerships

- Landscape authorities (if not already existing) and partnerships established in Member States where peat extraction occurs, coordinating restoration activities across landscapes.
- Joint restoration measures initiated with support from peat extraction companies, landowners, and local stakeholders.
- Increased adoption of sustainable land-use practices, such as paludiculture, in areas surrounding restored peat extraction sites.
- Enhanced stakeholder knowledge and community participation in decisions on landscape-scale restoration.
- Improved connectivity and resilience of restored peatlands, contributing to regional biodiversity and climate goals.
- Practical solutions addressing hydrological trade-offs, reducing risks of waterlogging and flooding for neighbouring lands.

### 5.3.5 Summary of action

This action aims to create new communities of practice or local working groups coordinated by a landscape authority, amplifying rewetting and successful revegetation practices within the Peat Extraction Sector for broader societal and landscape benefits. However, the Sector's involvement must be incentivised to support restoration beyond their extraction sites as elaborated in Action E (Section 5.5).

## 5.4 Action D: Develop policy and regulatory frameworks to enable landscape-scale peatland restoration and rewetting as a core licensing requirement

### 5.4.1 Why is this action needed?

Achieving the goals of Actions A, B, and C – namely building knowledge, enhancing after-use plans, and initiating landscape authorities and partnerships – requires a robust policy and regulatory framework. Current gaps (Section 3.2.3) in EU and Member State (MS) policies, such as the lack of mandated restoration plans for extraction sites and limited incentives for landowners, hinder large-scale restoration. Policies such as the EU Nature Restoration Law (NRL) provide a potential foundation for advancing rewetting and restoration, but they lack direct mandates for peat extraction companies or mechanisms to integrate their efforts into broader landscape-scale goals. Voluntary certifications, like Responsibly Produced Peat (RPP), while valuable, are not implemented by the whole Sector, and licensing frameworks often fall short of prioritising restoration beyond minimal compliance.

This action aims to address these gaps by integrating strengthened certification standards with broader regulatory measures, including landscape restoration plans, financial incentives for landowners, and clear licensing conditions. Such approach will align the Peat Extraction Sector with national and EU environmental objectives, ensuring restoration efforts are integrated into larger landscape and socio-economic contexts.

- **Licensing authorities** to require all peat extraction sites to implement comprehensive after-use plans, including revising existing plans to incorporate rewetting, applicable revegetation measures, connectivity, and ecosystem service enhancement, with clear enforcement mechanisms, timelines, and mandatory certification to ensure uniform standards across the Sector.
- **Revise RPP and similar certifications to make landscape restoration core to certification**, requiring measures like buffer zones, connectivity with surrounding peatlands, and rewetting and applicable revegetation into after-use practices.
- **Create landscape restoration plans** (See Section 5.3) that integrate peat extraction sites with surrounding degraded peatlands, aligning with the EU Nature Restoration Law's (NRL) legally binding targets to support climate mitigation, biodiversity enhancement, and sustainable water management.
- Develop targeted financial incentives, such as **payments for ecosystem services (PES)**, subsidies, and **access to carbon markets**, to encourage landowners to prioritise restoration over other land uses (e.g., agriculture, forestry, or renewable energy) (See Action E – Section 5.5).
- Align peat extraction and restoration requirements with the **EU Nature Restoration Law, LULUCF Regulation, and Carbon Removal Framework**, ensuring consistent application across Member States.
- Provide clear guidelines to Member States for integrating peatland restoration into **national restoration plans** under the Nature Restoration Law, national biodiversity strategies, and climate adaptation policies; and link to River Basin Management Plans where peatland restoration can aid achieving good ecological status.
- **Facilitate prompt after-use implementation** focusing on rewetting and revegetation, by identifying and addressing issues within extraction permits that hinder immediate action in exhausted subfields (See Section 0).
- Include **detailed monitoring, regular reporting, and independent verification of restoration results (on peat extraction sites and beyond) as part of certification requirements**. This will help prevent greenwashing – presenting misleading or exaggerated claims about the success of after-use and restoration practices.

#### 5.4.2 Who will act?

Effective implementation requires collaboration among EU and Member State agencies, certification bodies (e.g., RPP), and peat extraction companies. For instance, DG Clima could provide EU-level policy leadership, while Member States could establish landscape authorities and engage landowners. Water management agencies play a critical role in hydrological restoration, essential for rewetting peat extraction sites and ensuring the restoration aligns with surrounding water needs. The EU Water Framework Directive provides regulatory and financial backing for these projects, which also deliver nature-based solutions that enhance biodiversity and mitigate climate impacts (Nilsson et al., 2018; Penning et al., 2023). Certification bodies, particularly the RPP, need to enhance restoration standards while peat extraction companies could contribute expertise and align practices with landscape-scale restoration (Table 5).

*Table 5. Stakeholder roles for Action D: Developing Policy and Regulatory Frameworks*

Stakeholders	Roles
DG Clima	<ul style="list-style-type: none"> <li>• Provide EU-wide leadership by developing a cohesive policy framework that integrates the Peat Extraction Sector into broader restoration goals, emphasising NbS and landscape-level strategies.</li> <li>• Collaborate across relevant DGs (e.g., DG AGRI, DG ENV) to designate policy champions who could ensure cross-sector coherence in peatland restoration.</li> <li>• Establish EU-level guidelines requiring after-use plans to prioritise rewetting, revegetation, and connectivity with broader landscape restoration.</li> <li>• Advocate for financial incentives and support mechanisms, such as carbon credits and PES, to promote large-scale restoration.</li> </ul>
MS environmental conservation and climate agencies	<ul style="list-style-type: none"> <li>• Develop and implement national legislation mandating after-use plans aligned with landscape restoration goals, prioritising rewetting and revegetation as core requirements.</li> <li>• Update licensing regulations to require comprehensive, enforceable restoration plans for all peat extraction sites.</li> <li>• Address existing issues that hinder immediate implementation of after-use plans focusing on restoration in completed subfields within extraction permits.</li> <li>• Monitor and verify compliance with restoration commitments, ensuring ecological and socio-economic targets are met.</li> </ul>

Peat, peatland, and peat extraction certification (e.g. RPP) and umbrella organisations	<ul style="list-style-type: none"> <li>• Strengthen certification standards (e.g., RPP), mandating restoration and ensuring rewetting and revegetation can be combined as the main after-use measures.</li> <li>• Ensure certification adoption is widespread among peat extraction companies, with independent monitoring and reporting mechanisms to ensure accountability and avoid greenwashing.</li> <li>• Advocate for the integration of certification standards into national and EU policies to reinforce their role in driving sustainable restoration practices.</li> <li>• Develop and disseminate best practice guidelines for restoration-focused after-use plans, providing technical support to stakeholders across the value chain.</li> <li>• Promote capacity-building initiatives to enable peat extraction companies to meet strengthened restoration requirements.</li> </ul>
Peat extraction companies	<ul style="list-style-type: none"> <li>• Commit to implementing after-use plans that align with landscape restoration goals, prioritising rewetting, revegetation, and broader connectivity with degraded peatlands.</li> <li>• Achieve certification under strengthened RPP standards, integrating restoration expertise into licensing and policy frameworks.</li> <li>• Actively collaborate with landscape authorities, landowners, and other stakeholders to align restoration projects with broader landscape strategies.</li> <li>• Provide data and knowledge-sharing on restoration techniques, such as rewetting and revegetation, to support broader peatland recovery.</li> <li>• Contribute to the development of regional restoration maps, identifying priority areas for restoration and supporting connectivity with neighbouring ecosystems.</li> </ul>

### 5.4.3 Are there important differences between Member States or regions to consider?

Differences in governance, land ownership, and peatland policies across Member States impact the implementation of Action D. While this challenge is limited to a subset of countries within the EU, state-led approaches in Estonia and Latvia may facilitate landscape-scale restoration, whereas Ireland and Finland require tailored incentives for private landowners. Varying licensing requirements and restoration priorities, such as agriculture or forestry, highlight the need for harmonised EU guidance through DG Clima, alongside flexibility for local adaptation. Strengthening frameworks like RPP and embedding restoration beyond rewetting as a licensing standard can establish a uniform baseline while addressing regional disparities in governance and capacity.

### 5.4.4 How and when will we know if it has happened? What will have changed?

This action aims to be completed by 2035, resulting in a clear policy framework for peat extraction and large-scale restoration at EU and MS levels (Box 11).

#### Box 11. Outcomes for monitoring achievement of Action D: Developing policy and regulatory frameworks

- Harmonised and robust policy frameworks are developed across Member States, integrating financial incentives, regulatory measures, and technical guidelines that promote landscape-scale peatland restoration and embed restoration, including rewetting as a core licensing requirement.
- Licensing processes in all Member States mandate peat extraction companies to implement comprehensive after-use plans prioritising rewetting and revegetation, ensuring alignment with landscape restoration and nature-based solutions (NbS) principles.
- The Responsibly Produced Peat (RPP) certification is revised to include large-scale restoration standards and rewetting and is made a mandatory requirement for peat extraction companies to operate.
- National and EU-level peatland restoration policies are harmonised to integrate restoration efforts into broader landscape management, biodiversity conservation, and climate strategies, ensuring consistent and cohesive implementation.
- Administrative and regulatory challenges that hinder the Peat Extraction Sector's participation in large-scale restoration initiatives are identified and addressed, enabling effective collaboration and restoration efforts.

### 5.4.5 Summary of action

This action aims to strengthen and harmonise existing measures while introducing new mechanisms to overcome challenges to peatland restoration. It embeds nature-based solutions (NbS) and restoration requirements into licensing processes, strengthens certifications like Responsibly Produced Peat (RPP) to include restoration beyond rewetting, and aligns these measures with broader landscape and climate strategies. It also leverages the EU Nature Restoration Law (NRL) and addresses gaps in policies and regulations to remove challenges to large-scale restoration, ensuring peat extraction contributes to biodiversity, climate, and societal goals.

## 5.5 Action E: Develop clear and viable business incentive enabling the Peat Extraction Sector to support restoration beyond the peat extraction site

### 5.5.1 Why is this action needed?

Tailored financial incentives are crucial for large-scale peatland restoration on and beyond extraction sites, degraded surrounding peatlands, and areas under intensive land use. Restoration efforts face challenges such as fragmented land ownership, insufficient funding, and competing land uses. This action seeks to align economic incentives with restoration goals by utilising public, private, and blended financing mechanisms to achieve ecological recovery, socio-economic benefits, and landscape-scale connectivity. Funding possibilities for restoration include:

#### → Peat extraction Sites:

- Leverage private funding from peat extraction companies as part of their legal obligation to implement after-use plans, focusing on enhanced after-use plans requiring comprehensive restoration, including rewetting and revegetation. This aligns with licensing requirements in many regions, where after-use is mandatory following extraction.
- Encourage peat extraction companies and landowners to voluntarily go beyond basic legal restoration requirements by focusing on full restoration of their extraction sites. This can include mechanisms such as Corporate Social Responsibility (CSR) initiatives and biodiversity offset programs to incentivise actions that enhance biodiversity and carbon storage, exceeding the minimal standards of rewetting.
- Require peat extraction companies to expand their role in restoration by not only rehabilitating their extraction sites but also contributing to the restoration of degraded surrounding peatlands. This approach leverages their specialised equipment, expertise, and infrastructure to support large-scale ecological recovery, transforming extraction sites into hubs for restoration that compensate for lost ecological functions.

#### → Rewetted former peat extraction sites not fully functioning

- Provide targeted incentives, including financial grants, carbon credit schemes, and technical support, to enable hydrological monitoring and maintenance of optimal level for natural recolonisation. These measures will help enhance ecological recovery, improve carbon sequestration, and ensure economic viability for landowners, contributing to broader restoration goals.

#### → Degraded peatlands, including former peat extraction sites not restored

- Fund large-scale restoration through EU LIFE projects to create ecological corridors (Mathias, 2022) and enhance connectivity with restored peat extraction sites.
- Monetise carbon sequestration via voluntary carbon markets to fund activities such as revegetation and hydrological management. Examples like MoorFutures (Germany) (Sechi et al., 2021; Tanneberger et al., 2024) and the Peatland Code (UK) demonstrate the potential of voluntary carbon credits to finance peatland restoration (Mathias, 2022).
- Encourage private sector contribution using corporate social responsibility initiatives and biodiversity offsets to fund restoration efforts. These approaches allow businesses to support ecosystem services, aligning with their sustainability and climate commitments (Koh et al., 2019; Reed et al., 2022).
- Combine public subsidies with private investments to support rewetting and revegetation efforts as part of a collaborative financing model (Tanneberger et al., 2021).



### → Drainage-based land use (forestry and agriculture):

- Provide subsidies for sustainable land management practices, including paludiculture and agroforestry, supported by the EU Common Agricultural Policy (CAP). These practices ensure economic returns while maintaining the ecological functions of peatlands.
- Incentivise landowners through payments for ecosystem services (PES) and carbon farming, combining carbon credits with other ecosystem services (e.g., flood mitigation, nutrient retention, water storage) to promote sustainable peatland management (Juutinen et al., 2020; Mathias, 2022).
- Support good land use practices through markets for paludiculture products, such as construction materials, bioenergy, and fodder, to make wetland farming economically viable. Incentives should ensure these products are competitive with traditional agriculture and forestry outputs.
- Incorporate restoration requirements into broader agricultural strategies, including CAP, to address land-use and climate impacts. Stress the shared responsibility of agriculture and Peat Extraction Sectors in achieving sustainable peatland restoration.

### 5.5.2 Who will act?

As highlighted in Table 6, key actors include the EU Institutions, MS Governments, Peat extraction companies, umbrella organisations, and Environmental NGOs. Together, they can develop the financial framework, secure funding, and enable private sector contributions for landscape-wide peatland restoration.

*Table 6. Stakeholder roles for Action E: Developing clear and viable business incentive*

Stakeholders	Roles
Peat extraction companies, peat, and umbrella organisations	<ul style="list-style-type: none"> <li>• Fulfil legal obligations by implementing after-use plans that prioritise comprehensive restoration (rewetting and revegetation) on both former and current extraction sites, while identifying economically viable NbS to create business opportunities.</li> <li>• Partner with stakeholders to transform extraction sites into economically beneficial projects, such as eco-tourism or sustainable agriculture, contributing to local economies and biodiversity conservation.</li> <li>• Take proactive responsibility for supporting large-scale restoration beyond extraction sites, leveraging Corporate Social Responsibility (CSR) initiatives, biodiversity offsets, and access to carbon markets to align with corporate sustainability goals.</li> <li>• Collaborate with public agencies, private investors, and policymakers to secure funding options, embed restoration experience in national peatland policies, and position restoration as part of long-term business strategies.</li> </ul>
EU DG Clima in collaboration with EU Investment Bank (EI)	<ul style="list-style-type: none"> <li>• Develop financial and regulatory incentives, including subsidies and access to carbon markets, to encourage the Peat Extraction Sector to invest in restoration beyond extraction sites.</li> <li>• Establish financial risk management tools to support restoration investments and attract private sector participation.</li> <li>• Create legal frameworks with clear targets and guidelines for sustainable restoration, aligned with the Nature Restoration Law and EU Taxonomy.</li> <li>• Build capacity to certify carbon removals and savings from peatland restoration, ensuring their integration into carbon markets and financial mechanisms.</li> </ul>
MS environment, conservation and climate agencies	<ul style="list-style-type: none"> <li>• Assess land ownership and usage around peat extraction sites to identify appropriate nature-based solutions (NbS) while considering the influence of agricultural subsidies on land management.</li> <li>• Collaborate with planning authorities to ensure peat extraction sites are managed effectively under planning permits, integrating restoration requirements where feasible.</li> <li>• Support the alignment of EU directives (e.g., CAP reform and Nature Restoration Law) with national policies by facilitating tax incentives and creating restoration funds.</li> </ul>

	<ul style="list-style-type: none"> <li>• Work with agricultural and finance agencies to design funding mechanisms that address the gap between sector contributions and actual restoration costs.</li> </ul>
NGOs (e.g. IPS and Wetlands International)	<ul style="list-style-type: none"> <li>• Collaborate with governments, private sector actors, and landowners to design and advocate for restoration projects that align with stringent ecological policies and best practices.</li> <li>• Facilitate stakeholder engagement and knowledge-sharing to address issues like fragmented land ownership and competing land uses.</li> <li>• Act as intermediaries to coordinate large-scale restoration efforts, ensuring transparency by monitoring and reporting environmental outcomes.</li> <li>• Provide technical expertise to businesses and land managers, promoting the adoption of best ecological practices for restoration.</li> </ul>
Private investors	<ul style="list-style-type: none"> <li>• Fund restoration projects through voluntary carbon markets and other ecosystem service schemes, such as biodiversity offsets, corporate social responsibility programmes, and carbon credit initiatives (e.g., MoorFutures, Peatland Code).</li> <li>• Support the development of markets for paludiculture products (e.g., bioenergy, construction materials, fodder) to make wetland farming a viable and competitive alternative to traditional agriculture and forestry.</li> <li>• Collaborate with government agencies and NGOs to finance restoration initiatives that align with sustainability goals and enhance company reputations.</li> </ul>

### 5.5.3 Are there important differences between Member States or regions to consider?

Differences in peatland ownership and governance influence restoration strategies across Member States. In Finland, where most peatlands are privately owned, restoration relies on voluntary incentives like payments for ecosystem services and carbon credits (Similä et al., 2014; Wichmann, 2018). Similar challenges occur in Ireland and the UK, where financial mechanisms encourage private landowner participation (Bonn et al., 2016b; Mc Guinness & Bullock, 2024).

Privately owned peat extraction sites, regulated through planning permits, require stronger frameworks and incentives to ensure restoration exceeds basic requirements, especially in regions like Finland where peat extraction remains economically significant (Niemi et al., 2024; Tanneberger et al., 2021). In contrast, Germany enables EU-funded restoration efforts on past extraction sites through programmes like LIFE and CAP eco-schemes (Nordbeck & Hogg, 2023; Peters & von Unger, 2017). Tailored strategies combining regulations and incentives are essential to address regional differences and ownership models effectively (Bonn et al., 2016a; Joosten et al., 2012).

### 5.5.4 How and when will we know if it has happened? What will have changed?

This action will occur from 2035 with the main outcome of making large-scale peatland restoration economically viable for the Peat Extraction Sector.

#### Box 12. Outcomes for monitoring achievement of Action E: Developing clear and viable business incentive

- Measurable economic benefits of large-scale restoration are demonstrated through ecosystem services like carbon sequestration, biodiversity, and water regulation, showing the cost-effectiveness of nature-based solutions for peat extraction sites.
- A clear regulatory framework with tailored financial incentives encourages the Peat Extraction Sector to go beyond minimum after-use requirements.
- Private funding mechanisms, such as voluntary carbon markets, biodiversity offsets, and CSR initiatives, are established to cover restoration costs beyond extraction sites.
- Carbon sequestration, biodiversity gains, and other ecosystem services are integrated into funding models, with clear payment standards set for the Sector.
- Public funding, combined with private investments, supports restoration of degraded peatlands around extraction areas, improving landscape connectivity.
- Carbon credits and biodiversity offsets are recognised and incentivised through established standards to integrate private funding into restoration efforts.
- Subsidies and payments for ecosystem services (PES) promote sustainable land management practices, such as paludiculture and agroforestry.

### 5.5.5 Summary of action

This action focuses on developing new funding instruments to address the gaps in existing mechanisms, which are often insufficient or unavailable for the Peat Extraction Sector. While public funding typically supports public goods, there is a need to define ‘additionality’ – what goes beyond regulatory requirements – and ensure fairness in funding for restoration efforts. Existing public funding for peatland restoration on agricultural or forestry land could be extended to include the Peat Extraction Sector for restoring peatlands outside extraction sites. Additionally, private carbon markets offer potential opportunities for financing, but challenges remain around measurement, reporting, and verification (MRV) processes, as well as uncertainty regarding net carbon sequestration outcomes.

## 6 Discussion

The Peat Extraction Sector Strategy sets out a vision to address issues to using after-use plans to mainstream restoration of peat extraction sites within the broader landscape, aligning with NbS principles (See Section 1). It connects current issues (Section 0) – fragmented governance, funding limitations, and competing land uses – to five interconnected actions (Section 5). Successful implementation of this Strategy will largely depend on fostering cross-sector collaboration, initiating, managing and institutionalising the transformation process in a just, inclusive approach, and addressing ownership responsibilities to ensure effective and sustainable restoration efforts.

### 6.1 Do the actions require help from other sectors?

While the Peat Extraction Sector is encouraged to drive this Strategy, achieving its full potential requires strong partnerships with other sectors. Collaboration is crucial given the environmental and economic interconnections across landscapes, ensuring restoration initiatives align with broader climate goals and biodiversity objectives. Below are potential cross-sectoral connections and contributions needed in advancing restoration beyond peat extraction sites:

- **Agriculture:** Agriculture operates on significantly larger areas of peatlands than peat extraction, making its collaboration vital for effective restoration. Drained peatlands under intensive farming are major sources of greenhouse gas emissions, directly impacting the ecological recovery of nearby peat extraction sites. Transitioning to sustainable practices, such as paludiculture (wetland-compatible farming) and carbon farming, can complement restoration efforts on extraction sites by reducing emissions and supporting broader landscape connectivity (Temmink et al., 2023a). Challenges like income loss and reduced productivity can be addressed through incentives such as Payments for Ecosystem Services (PES), carbon credits, and EU mechanisms, including the Common Agricultural Policy (CAP) (Moxey et al., 2021).
- **Water supply:** Utilities responsible for drinking water provision and wastewater management benefit from restored peatlands through improved hydrological stability and reduced flood risks. While effective rewetting reduces flood risks and contributes to water quality improvements, some utilities may avoid using water from these areas due to challenges such as high organic carbon levels, which increase water treatment costs despite not being harmful. Hydrological restoration, when aligned with water management policies, can still play a critical role in rewetting extraction sites and mitigating broader landscape flood risks (Bhomia & Murdiyarso, 2021; Flavio et al., 2017). Adaptive governance and cross-sector collaboration remain essential for balancing water demands while advancing peatland restoration efforts.
- **Forestry:** Unsustainable forestry practices on drained peatlands exacerbate degradation, often affecting areas near peat extraction sites. Transitioning drained forests into restored ecosystems can support the ecological recovery of peat extraction sites by mitigating greenhouse gas emissions and enhancing biodiversity (Räsänen et al., 2023). Financial incentives, such as biodiversity offsets and carbon credits, provide opportunities to align forestry goals with the restoration of extraction sites and the broader peatland landscape.
- **Conservation:** Restored peat extraction sites provide critical habitats for rare and endangered species, contributing directly to biodiversity goals. For example, **in Latvia, the Seda Natura 2000** area was established on a rewetted peat extraction site, showcasing how restoration can support biodiversity conservation while meeting EU targets. Collaboration with conservation organisations ensures that restoration efforts align with targets under the EU Nature Restoration Law and enhance biodiversity outcomes across connected landscapes (Nordbeck & Høgl, 2023).

Conflicts between peatland restoration initiatives, particularly rewetting of peat extraction sites, and agricultural drainage highlight the need for effective policies and compensation mechanisms. Tools like the EU Just Transition Fund can help balance competing land uses and support stakeholders, including peat extraction companies and landowners, during transitions (Wichmann & Nordt, 2024). **Economic concerns, such as income loss and disruption, are particularly relevant for landowners near extraction sites transitioning to restoration-focused practices.** These can be addressed through incentives such as Payments for Ecosystem Services (PES), carbon credits, and CAP eco-schemes, ensuring restoration at peat extraction sites remains economically viable (Pe'er et al., 2020). Examples like MoorFutures in Germany demonstrate how carbon markets can finance the restoration of peat extraction areas while delivering socio-economic benefits (Sechi et al., 2021; Tanneberger et al., 2024; Tanneberger et al., 2020).

Coordinating frameworks like the CAP and the EU Water Framework Directive is essential for aligning goals and streamlining restoration actions for peat extraction sites and their surrounding landscapes (Meyer-Jürshof et al., 2024). **Landscape partnerships (Action C – Section 5.3) could offer opportunities to connect restored**



**extraction sites with surrounding peatlands, enhancing ecological connectivity, biodiversity, and carbon sequestration** (Tanneberger et al., 2021; Tanneberger et al., 2017). Successful cross-sector initiatives, such as those outlined in (Action C – Section 5.3), provide models for integrating peat extraction restoration into broader landscape-scale strategies.

## 6.2 Initiating and managing transformation for landscape peatland restoration

This Strategy aims to overcome issues to prioritising restoration as an after-use practice, engaging the Peat Extraction Sector in a transformative approach that extends restoration efforts beyond extraction sites. Achieving this transformation requires structural changes and a fundamental shift in mindset and action. This Strategy's implementation, through implementation of interconnected actions (Section 5), provides a pathway to address the issues outlined in Section 0 and enable sustainable restoration practices. Achieving transformation through the implementation of this Strategy involves key phases, from identifying drivers and initiating actions to navigating challenges and institutionalising sustainable, landscape-scale restoration (Carmen et al., 2024; Ibrahim & Carmen, 2022). These phases must be managed through a just and inclusive approach.

→ **Identifying drivers and starting actions:** The first phase focuses on recognising the drivers for transformation and initiating targeted actions. Restoration, which combines rewetting and revegetation, is a key driver for enhancing biodiversity, carbon storage, and ecosystem recovery. **Building Knowledge (Action A – Section 5.1)** would help address gaps in understanding the environmental and socio-economic benefits of restoration while developing a strong evidence base for **enhancing after-use plans (Action B – Section 5.2)** to safeguard restoration on extraction sites and promotes broader landscape nature-based solutions (NbS). Examples like the Komppasuo Peatland Rewetting (Finland – see Case 1 in Section 4) and Bord na Móna Peatlands Climate Action Scheme (Ireland – see Case 2 in Section 4) collaboration could drive restoration of peatlands with key involvement of Peat Extraction Sector, and how restoration could be aligned with both ecological goals and stakeholder priorities.

Engagement and collaboration are critical at this stage, particularly through **Partnerships and Coordination (Action C)**, which emphasises bringing landowners, policymakers, and local stakeholders together to shape the actor's role in restoration. This early alignment helps address scepticism and builds trust, laying the groundwork for sustained participation.

→ **Navigating the implementation process:** The transformation journey requires addressing resistance, particularly from stakeholders whose economic activities, such as agriculture, forestry, or peat extraction itself, recognising that such activities on peatlands have unavoidable environmental impacts, notably greenhouse gas emissions and biodiversity loss (Joosten et al., 2012; Liu et al., 2023; Tanneberger et al., 2022). Resistance often stems from concerns about income loss, regulatory burdens, and uncertainties around restoration benefits. Acknowledging these concerns is essential to ensuring meaningful engagement and collaboration. **Developing equitable funding mechanisms and incentives** as highlighted in **Action E (Section 5.5)**, are critical for overcoming these issues. Mechanisms such as Payments for Ecosystem Services (PES), carbon credits, and public financing (e.g., Just Transition Funds) can support landowners and businesses in transitioning to restoration-focused activities without compromising livelihoods. Case studies like MoorFutures programme in Germany (Sechi et al., 2021; Tanneberger et al., 2024; Tanneberger et al., 2020) demonstrate how financial mechanisms can reduce resistance while delivering measurable ecological benefits. At the same time, **Developing Policy and Regulatory Frameworks (Action D)** would provide clarity and consistency in licensing and regulatory processes, addressing concerns around fragmented policies and constitutional rights. Strong policy support can reduce uncertainties and foster a shared vision for large-scale restoration.

→ **Institutionalising sustainable restoration:** The final phase focuses on embedding restoration as a standard and long-term practice for the Sector. By 2050, rewetting and revegetation will become routine after-use measures, supported by clear licensing frameworks, robust monitoring systems, and integrated governance. This institutionalisation phase builds on **enhancing after-use plans (Action B – Section 5.2)**, ensuring that restoration efforts extend beyond individual sites to achieve landscape-scale ecological recovery. Collaborative governance, supported by landscape authorities and stakeholder partnerships, is vital for connecting site-specific restoration to broader ecosystem resilience. This approach ensures the Sector's alignment with EU climate and biodiversity goals, positioning it as a key driver of sustainable peatland restoration.

### 6.3 Taking ownership: commitment to achieving the Vision

For this Strategy to succeed, the actions need to be implemented. During the process of Strategy development, the Peat Extraction Sector, involving peat extraction companies and umbrella and expert organisations such as the International Peatland Society, Growing Media Europe, and RPP have moved from consultees to advisors and now they can drive this Strategy into action. These entities can provide strategic oversight, ensuring implementation aligns with sectoral interests and negotiating support from Member State authorities and EU policymakers to link bottom-up efforts with top-down policies.

Leadership for specific actions should be distributed among key stakeholders to maximise impact. For example, Member State peat restoration agencies and landscape authorities can coordinate restoration efforts beyond extraction sites, while peat extraction companies focus on integrating restoration into after-use plans. This decentralised approach leverages existing structures, fosters collaboration, and ensures flexibility, allowing diverse actors to contribute effectively to this Strategy's implementation.

Researchers and NGOs active in the Sectoral CoP can support the actions and provide resources for the monitoring, reporting and verification processes that will allow ongoing adaptive management, and to consider trade-offs and justice implications. There were strong views expressed on the framing and content of this Strategy, with some non-industry participants uncomfortable with the focus on integrating the Peat Extraction Sector into landscape restoration projects. For this Strategy to achieve the vision, we believe the industry must be at the centre of its implementation and to do this, the Sector needs to see a sustainable future. However, other actors, including constructive critics, are needed to ensure that restoration is achieved, and costs and benefits are shared in an equitable and transparent manner.

## 7 Conclusion and next steps

This Strategy outlines a transformative pathway for the Peat Extraction Sector to collaborate with key stakeholders at EU and Member State levels to drive large-scale peatland restoration, with extraction sites serving as nuclei for broader landscape restoration efforts. While most extraction sites in Europe are relatively small (excluding large-scale operations like those in Ireland), their restoration can catalyse connectivity and ecological recovery beyond the extraction boundaries. By 2050, the Sector's expertise in site-level restoration can scale up to deliver landscape-wide connectivity, enhance biodiversity, and support global climate goals. This requires addressing challenges such as fragmented land ownership, funding barriers, and competing land-use priorities, with strong collaboration from agriculture, forestry, water management, and renewable energy sectors.

Key findings emphasise the need for strong partnerships, supportive regulatory frameworks, and sustainable financing mechanisms to ensure coordinated, landscape-scale restoration. This Strategy identifies five core actions:

- **Build knowledge** to increase understanding of nature-based solutions for peatland restoration and its implications for the Peat Extraction Sector.
- **Enhance after-use plans** to prioritise rewetting and revegetation of peat extraction sites.
- **Initiate landscape authorities and partnerships** to embed rewetting and revegetation of peat extraction sites to support landscape restoration and good-practice peatland management.
- **Develop policy and regulatory frameworks** to enable landscape-scale peatland restoration as a core licensing requirement.
- **Developing clear and viable business incentive** enabling the Peat Extraction Sector to support restoration beyond the peat extraction site:

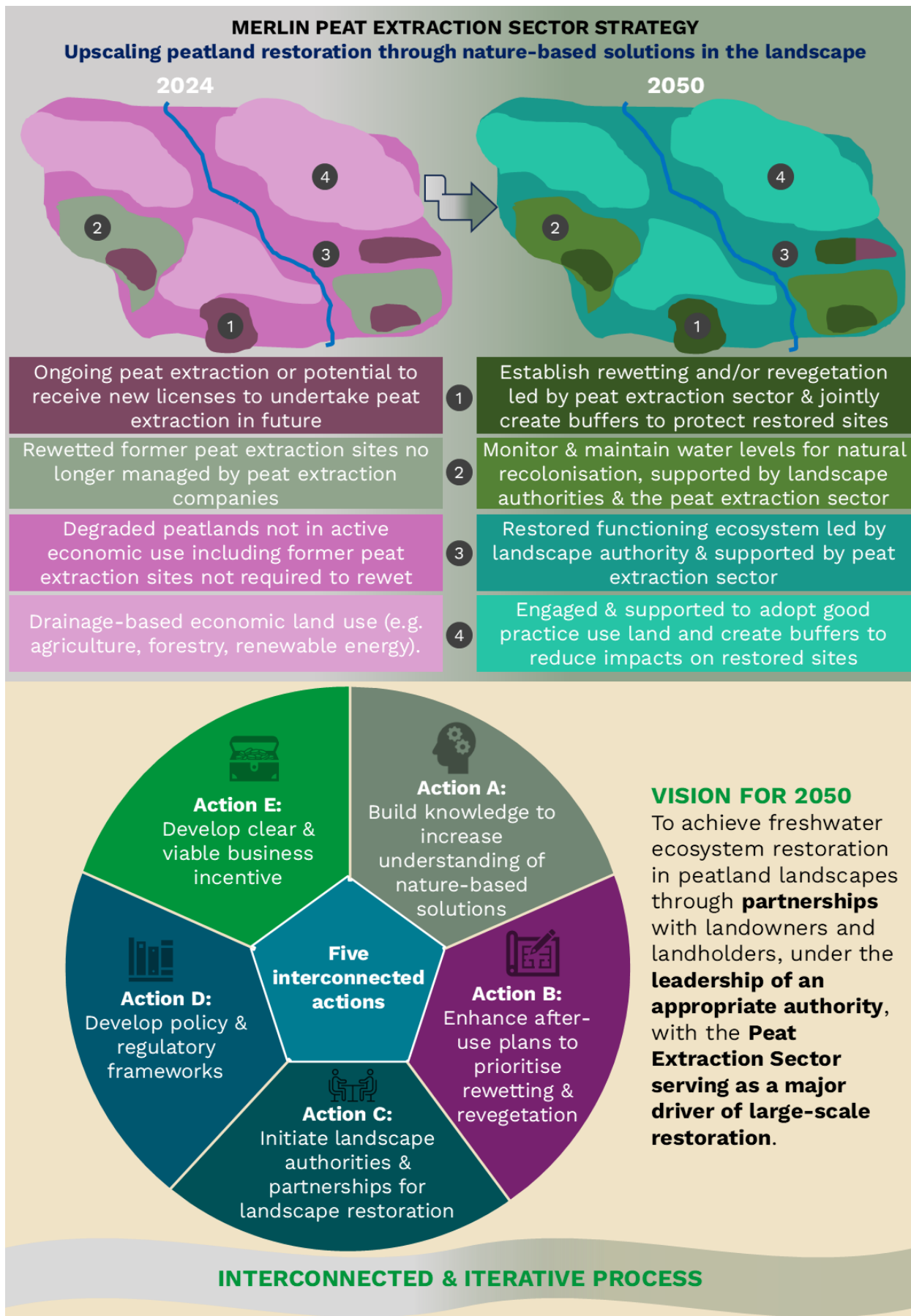
Recognising the interconnectedness of restoration challenges, this Strategy aligns with MERLIN's cross-sectoral roadmap to foster collaboration between agriculture, forestry, water supply, sanitation, and renewable energy sectors. By identifying shared restoration priorities and leveraging cross-sectoral synergies, the roadmap reinforces the contributions of multiple sectors to sustainable peatland management and large-scale restoration.

Next steps:

- **Short-term (2025-2026)**
  - Develop an implementation plan, clarifying roles and responsibilities for stakeholders.
  - Engage stakeholders through roundtables and strengthen the Community of Practice (CoP) to involve policymakers, financiers, and restoration champions.
  - Use MERLIN dissemination efforts to raise awareness and link this Strategy to ongoing restoration projects (See Annex 4).
  - Foster collaboration across MERLIN sectoral strategies, such as agriculture, water supply, and sanitation, to identify cross-sectoral linkages within MERLIN cross-sectoral roundtables and routemap and align restoration priorities and reinforce their contributions to sustainable peatland management. This integration will ensure that restoration goals are embedded within broader sectoral strategies to maximise ecological and socio-economic benefits.
- **Long-term (Beyond 2026)**
  - Mobilise partnerships and secure long-term financial and regulatory support to ensure sustained restoration and Sectoral transition.

This phased approach will support MERLIN's restoration efforts, enabling the Peat Extraction Sector to contribute meaningfully to Europe's Green Deal objectives while advancing a just and sustainable transformation.

## 8 Visualisation



## References

- Andersen, R., Farrell, C., Graf, M., Muller, F., Calvar, E., Frankard, P., Anderson, P. (2017). An overview of the progress and challenges of peatland restoration in Western Europe. *Restoration Ecology*, 25(2), 271-282.
- Artz, R. R., Faccioli, M., Roberts, M., & Anderson, R. (2018). *Peatland restoration – a comparative analysis of the costs and merits of different restoration methods*. Scotland's centre of expertise connecting climate change research and policy. Retrieved from <https://www.climateexchange.org.uk/wp-content/uploads/2023/09/peatland-restoration-methods-a-comparative-analysis.pdf>.
- Balliston, N., Artz, R., Couwernberg, J., Gauthier, T.-L., Huth, V., Jurasinski, G., Renou-Wilson, F. (2023). Climate impact of peat extraction for horticultural use and fuel. In M. Strack (Ed.), *Peatlands and climate change* (pp. 264 – 305). Jyväskylä, Finland. International Peat Society.
- Balode, L., Bumbiere, K., Sosars, V., Valters, K., & Blumberga, D. (2024). Pros and Cons of Strategies to Reduce Greenhouse Gas Emissions from Peatlands: Review of Possibilities. *Applied Sciences*, 14(6). doi:10.3390/app14062260.
- Bhomia, R., & Murdiyarso, D. (2021). *Effective monitoring and management of peatland restoration*.
- Blackstock, K., Baffert, C., Bérczi-Siket, A., Carmen, E., England, M., Gray, R., Waylen, K. (2023). *Briefing on policy opportunities for mainstreaming Fresh Water Nature Based Solutions*. EU H2020 research and innovation project MERLIN Deliverable 4.3. Retrieved from <https://project-merlin.eu/outcomes/deliverables.html>.
- Bonn, A., Allott, T., Evans, M., Joosten, H., & Stoneman, R. (2016a). Peatland restoration and ecosystem services: an introduction. In A. Bonn, T. Allott, M. Evans, H. Joosten, & R. Stoneman (Eds.), *Peatland Restoration and Ecosystem Services: Science, Policy and Practice* (pp. 1-16). Cambridge, UK. Cambridge University Press.
- Bonn, A., Allott, T., Evans, M. G., Joosten, H., & Stoneman, R. (2016b). Peatland biodiversity and ecosystem services: nature-based solutions for societal goals. In (pp. 402-417).
- Bord na Móna. (2021). *The Peatlands Climate Action Scheme (PCAS): New developments in peatland rehabilitation*. Retrieved from <https://cieem.net/wp-content/uploads/2021/05/The-Peatlands-Climate-Action-Scheme-%E2%80%93-New-developments-in-peatland-rehabilitation.pdf>.
- Böttcher, H., Reise, J., & Hennenberg, K. (2021). *Exploratory Analysis of an EU Sink and Restoration Target*. Oeko-Institut e.V. Freiburg.
- Carmen, E., Ibrahim, A., Blackstock, K., & Waylen, K. (2024). A transformations framework for mainstreaming a nature-based solutions approach. *Nature-Based Solutions*, 100199. doi:<https://doi.org/10.1016/j.nbsj.2024.100199>.
- Chapman, S., Buttler, A., Francez, A.-J., Laggoun-Défarge, F., Vasander, H., Schloter, M., . . . Epron, D. (2003). Exploitation of northern peatlands and biodiversity maintenance: a conflict between economy and ecology. *Frontiers in Ecology and the Environment*, 1(10), 525-532.
- Chen, C., Norris, J., Loft, L., & Matzdorf, B. (2021). *Policy Brief: Future Policy Scenarios on Drained Peatlands*. Leibniz Centre for Agricultural Landscape Research (ZALF). Retrieved from <https://www.eragas.eu/en/show-10/peatwise-policy-brief-2.htm>.
- Clarke, D., & Rieley, J. (2019). *Strategy for responsible peatland management*. International Peatland Society Finland.
- Convention on Wetlands. (2021). Global guidelines for peatland rewetting and restoration. In. Gland, Switzerland: Secretariat of the Convention on Wetlands.
- Daun, C., Huth, V., Gaudig, G., Günther, A., Krebs, M., & Jurasinski, G. (2023). Full-cycle greenhouse gas balance of a Sphagnum paludiculture site on former bog grassland in Germany. *Science of The Total Environment*, 877, 162943.
- De La Haye, A., Devereux, C., & van Herk, S. (2021). *Peatlands Across Europe: Innovation & Inspiration*. Bax & Company. Barcelona. Retrieved from <https://life-peat-restore.eu/en/wp-content/uploads/sites/7/2021/06/web-version-peatlands-across-europe.pdf>.
- DIW. (1999). Die wirtschaftliche Bedeutung von Kultursubstraten auf Torfbasis für die pflanzliche Produktion – insbesondere im Erwerbsgartenbau. Gutachten im Auftrag des Bundesverbandes Torf- und Humuswirtschaft In Deutsches Institut für Wirtschaftsforschung (Ed.), (Vol. e.V. ). Berlin, .
- EEA. (2020). *Water and agriculture: towards sustainable solutions*. (EEA Report No 17/2020). European Environment Agency. Retrieved from <https://www.eea.europa.eu/publications/water-and-agriculture-towards-sustainable-solutions>.
- Farrell, C. A., Connolly, J., & Morley, T. R. (2024). Charting a course for peatland restoration in Ireland: a case study to support restoration frameworks in other regions. *Restoration Ecology*, 32(7), e14216.
- Fitzgerald, P. (2008). The role of the European Peat And Growing Media Association (EPAGMA) in representing the peat and growing media industry's viewpoint within the EU's political, legislative and administrative institution. In *After Wise Use – The Future of Peatlands, Proceedings of the 13th International Peat Congress: Peat In Horticulture* (pp. 147-149).
- Flavio, H. M., Ferreira, P., Formigo, N., & Svendsen, J. C. (2017). Reconciling agriculture and stream restoration in Europe: A review relating to the EU Water Framework Directive. *Sci Total Environ*, 596-597, 378-395. doi:10.1016/j.scitotenv.2017.04.057.
- Greifswald Mire Centre, & Wetlands International. (2022). *Higher ambition for Peatlands in the EU Nature Restoration Law Proposal: Policy Briefing*. WaterLANDS. Retrieved from file:///C:/Users/ai43921/AppData/Local/Temp/MicrosoftEdgeDownloads/0c3006b5-7a74-4c40-92b2-09e81e6392a9/WI-Policy-Briefing-Peatlands-v11-FINAL-WEB.pdf.



- Greifswald Mire Centre, & Wetlands International Europe. (2023). *Questions & Answers: Bringing Clarity on Peatland Rewetting and Restoration*. Retrieved from [https://globalpeatlands.org/sites/default/files/2023-07/QA-peatland-rewetting\\_fin.pdf](https://globalpeatlands.org/sites/default/files/2023-07/QA-peatland-rewetting_fin.pdf).
- Greifswald Mire Centre, & Wetlands International European Association. (2021). *Protecting and Restoring Peatlands – Targets and Recommendations for Peatlands in the EU Biodiversity Strategy*. Retrieved from [https://www.greifswaldmoor.de/files/dokumente/Infopapiere\\_Briefings/2021\\_EU\\_Restoration\\_Targ\\_Peatlands\\_Policy%20brief.pdf](https://www.greifswaldmoor.de/files/dokumente/Infopapiere_Briefings/2021_EU_Restoration_Targ_Peatlands_Policy%20brief.pdf).
- Hirvonen, T. K. P., Rämetsä, J., & Karjalainen, S. (2021). *Turvetyöryhmän loppuraportti (Final report of the peat working group)*. Ministry of Employment and the Economy, Finland. F. Ministry of Employment and the Economy, Helsinki, Finland. Retrieved from <https://tem.fi/turvetyoryhma>.
- Ibrahim, A. (2024a). *Short Report of 3rd Peat Extraction Sector Roundtable*. Retrieved from [https://project-merlin.eu/files/merlin/downloads/sectoral\\_briefings/RT3\\_Peat%20extraction\\_report.pdf](https://project-merlin.eu/files/merlin/downloads/sectoral_briefings/RT3_Peat%20extraction_report.pdf).
- Ibrahim, A. (Ed.) (2024b). *Peat Extraction*.
- Ibrahim, A., Blackstock, K., Carmen, E., & Bérczi-Sike, A. (2022a). *Short Notes of 1st Peat Extraction Sector Roundtable*. Retrieved from [https://project-merlin.eu/files/merlin/downloads/sectoral\\_briefings/RT1\\_PeatExtraction.pdf](https://project-merlin.eu/files/merlin/downloads/sectoral_briefings/RT1_PeatExtraction.pdf).
- Ibrahim, A., & Carmen, E. (2022). *Transformation Framework Working Document: Mainstreaming Ecological Restoration of freshwater-related ecosystems in a Landscape context INnovation, upscaling and transformation (MERLIN)*.
- Ibrahim, A., Lorenzo-Arribas, A., Martinez, G., & Blackstock, K. (2022b). *Mainstreaming Ecological Restoration of freshwater-related ecosystems in a Landscape context: INnovation, upscaling and transformation (MERLIN): Work Package 4 economic sector questionnaire report*. Retrieved from [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).
- Ibrahim, A., & Nyirő, F. (2023). *Short Report of 2nd Peat Extraction Sector Roundtable*. Retrieved from [https://project-merlin.eu/files/merlin/downloads/sectoral\\_briefings/RT2\\_Peat\\_Extraction.pdf](https://project-merlin.eu/files/merlin/downloads/sectoral_briefings/RT2_Peat_Extraction.pdf).
- IUCN. (2020a). *Guidance for using the IUCN Global Standard for Nature-based Solutions: first edition*. IUCN, Gland, Switzerland. doi:10.2305/IUCN.CH.2020.09.en.
- IUCN. (2020b). *IUCN Global Standard for Nature-based Solutions. A user-friendly framework for the verification, design and scaling up of NbS. First edition*. IUCN, International Union for the Conservation of Nature, Gland, Switzerland. doi:10.2305/IUCN.CH.2020.08.en.
- IUCN UK Peatland Programme. (2018). *UK Peatland Strategy 2018-2040*. In.
- Järveoja, J., Peichl, M., Maddison, M., Soosaar, K., Vellak, K., Karofeld, E., Mander, Ü. (2016). Impact of water table level on annual carbon and greenhouse gas balances of a restored peat extraction area. *Biogeosciences*, 13(9), 2637-2651. doi:10.5194/bg-13-2637-2016.
- Jessup, T., Segah, H., Silvius, M., Applegate, G., & Jagau, Y. (2020). An Integrated Landscape Approach for Socially Inclusive Peatland Restoration. *Journal of Wetlands Environmental Management*, 8, 77. doi:10.20527/jwem.v8i1.229.
- Joosten, H., & Clarke, D. (2002). Wise use of mires and peatlands. *International Mire Conservation Group and International Peatland Society*, 304.
- Joosten, H., Tapio-Bistrom, M. L., & Tol, S. (2012). Peatlands – guidance for climate changes mitigation through conservation, rehabilitation and sustainable use. *Mitigation Of Climate in Agriculture Series 5*.
- Jurasinski, G., Barthelmes, A., Byrne, K. A., Chojnicki, B. H., Christiansen, J. R., Decler, K., Couwenberg, J. (2024). Active afforestation of drained peatlands is not a viable option under the EU Nature Restoration Law. *Ambio*, 53(7), 970-983. doi:10.1007/s13280-024-02016-5.
- Juutinen, A., Tolvanen, A., Saarimaa, M., Ojanen, P., Sarkkola, S., Ahtikoski, A., Tuominen, S. (2020). Cost-effective land-use options of drained peatlands– integrated biophysical-economic modeling approach. *Ecological Economics*, 175, 106704. doi:<https://doi.org/10.1016/j.ecolecon.2020.106704>.
- Karofeld, E., Jarašius, L., Priede, A., & Sendžikaitė, J. (2017). On the after-use and restoration of abandoned extracted peatlands in the Baltic countries. *Restoration Ecology*, 25(2), 293-300.
- Karofeld, E., Vellak, K., & Tullus, A. (2024). Recovery of Sphagnum mosses in donor sites after cutting: effects of species and some environmental factors. *Mires & Peat*, 31. Retrieved from <https://media.voog.com/0000/0050/7864/files/Karofeld%20et.al.%20donor.pdf>
- King, D. (2022). Bord na Móna's Experience in Peatland Rehabilitation: Getting actors in Peat extraction value chain to support nature-based solutions. In *A presentation at 2nd H2020 MERLIN Peat Extraction Roundtable*.
- Koh, N. S., Hahn, T., & Boonstra, W. J. (2019). How much of a market is involved in a biodiversity offset? A typology of biodiversity offset policies. *Journal of environmental management*, 232, 679-691.
- Korhonen, T., Hirvonen, P., Rämetsä, J., & Karjalainen, S. (2021). *Turvetyöryhmän loppuraportti. A Working Group report on Pea*. Finland. Publications of the Ministry of Economic Affairs and Employment. Retrieved from <https://julkaisut.valtioneuvosto.fi/handle/10024/163045>.
- Kozlov, S. A., Lundin, L., & Avetov, N. A. (2016). Revegetation dynamics after 15 years of rewetting in two extracted peatlands in Sweden. *Mires and Peat*, 18. doi:10.19189/MaP.2015.OMB.204.
- Kreyling, J., Tanneberger, F., Jansen, F., van der Linden, S., Aggenbach, C., Bluml, V., Jurasinski, G. (2021). Rewetting does not return drained fen peatlands to their old selves. *Nat Commun*, 12(1), 5693. doi:10.1038/s41467-021-25619-y.
- Krigere, I. (2019). *Peat resources in Latvia and EU: their role in national economy*. Paper presented at the 2019 International Peat Symposium and 1st China International Peat Expo. [http://www.latvijaskudra.lv/upload/prezentacijas/i.krigere\\_chainaxx.pdf](http://www.latvijaskudra.lv/upload/prezentacijas/i.krigere_chainaxx.pdf)

- Laasasenaho, K., Palomäki, A., & Lauhanen, R. (2022). A just transition from the perspective of Finnish peat entrepreneurs. *Mires and Peat*, 28(27). doi:10.19189/MaP.2022.OMB.557.
- Landry, J., & Rochefort, L. (2012). The drainage of peatlands: impacts and rewetting techniques. *Peatland Ecology Research Group*.
- Lindsay, R. (2016). Peatlands and Windfarms: Conflicting Carbon Targets and Environmental Impacts. In C. M. Finlayson, G. R. Milton, R. C. Prentice, & N. C. Davidson (Eds.), *The Wetland Book: II: Distribution, Description and Conservation* (pp. 1-13). Dordrecht. Springer Netherlands.
- Liu, W., Fritz, C., van Belle, J., & Nonhebel, S. (2023). Production in peatlands: Comparing ecosystem services of different land use options following conventional farming. *Science of The Total Environment*, 875, 162534. doi:<https://doi.org/10.1016/j.scitotenv.2023.162534>.
- Loisel, J., & Gallego-Sala, A. (2022). Ecological resilience of restored peatlands to climate change. *Communications Earth & Environment*, 3(1). doi:10.1038/s43247-022-00547-x.
- Lunt, P., Allott, T., Anderson, P., Buckler, M., Coupar, A., Jones, P., Evans, M. (2010). Peatland restoration. *Scientific Review commissioned by IUCN UK Peatland Programme Commission of Inquiry into Peatland Restoration, Edinburgh, UK*. [online] URL: [http://www.iucn-uk-peatlandprogramme.org/sites/www.iucn-uk-peatlandprogramme.org/files/Review%20Peatland%20Restoration,%20June,202011](http://www.iucn-ukpeatlandprogramme.org/sites/www.iucn-uk-peatlandprogramme.org/files/Review%20Peatland%20Restoration,%20June,202011).
- Mackin, F., Barr, A., Rath, P., Eakin, M., Ryan, J., Jeffrey, R., & Fernandez Valverde, F. (2017). *Best practice in raised bog restoration in Ireland*. H. a. t. G. Wildlife Service Department of Culture, Ireland.
- Mathias, Y. (2022). *Financing mechanisms in Europe for restoring peatlands: An overview of the different financing opportunities existing for peatland restoration*. Interreg North-West Europe Carbon Connect. Retrieved from [https://vb.nweurope.eu/media/19450/financing-mechanisms-for-rewetting-peatlands\\_vf.pdf](https://vb.nweurope.eu/media/19450/financing-mechanisms-for-rewetting-peatlands_vf.pdf).
- Mc Guinness, S., & Bullock, C. (2024). *Funding Ireland's Biodiversity: A Financial Needs Assessment for Biodiversity in Ireland - McGuinness and Bullock (2024)*.
- Meyer-Jürshof, M., Theilen, G. S., & Lakner, S. (2024). Digging into Complexity: The Wicked Problem of Peatland Protection. *Advanced Sustainable Systems*. doi:10.1002/adsu.202400380.
- Minayeva, T., Bragg, O., & Sirin, A. (2016). Peatland biodiversity and its restoration. In A. Bonn, T. Allott, M. Evans, H. Joosten, & R. Stoneman (Eds.), *Peatland Restoration and Ecosystem Services: Science, Policy and Practice* (pp. 44-62). Cambridge University Press.
- Minayeva, T. Y., Bragg, O., & Sirin, A. (2017). Towards ecosystem-based restoration of peatland biodiversity. *Mires and Peat*, 19(1), 1-36. doi:<https://doi.org/10.19189/MaP.2013.OMB.150>.
- Mitchell, E., Chapman, S., Buttler, A., Combe, J., Francez, A.-J., Gilbert, D., Vasander, H. (2004). *Reconciling commercial exploitation of peat with biodiversity in peatland ecosystems (EU Project RECIPE)*. Paper presented at the 7th INTECOL International, Wetlands Conference.
- Moxey, A., & Morling, P. (2018). *Funding for peatland restoration and management*. IUCN UK Peatland Programme. Retrieved from <https://www.iucn-uk-peatlandprogramme.org/sites/default/files/2019-11/Col%20Funding.pdf>.
- Moxey, A., Smyth, M.-A., Taylor, E., & Williams, A. P. (2021). Barriers and opportunities facing the UK Peatland Code: A case-study of blended green finance. *Land Use Policy*, 108, 105594. doi:<https://doi.org/10.1016/j.landusepol.2021.105594>.
- Müller, R., & Glatzel, S. (2021). Sphagnum farming substrate is a competitive alternative to traditional horticultural substrates for achieving desired hydro-physical properties. *Mires & Peat*(27).
- Neova Group. (2022). *Neova Group Sustainability Report 2022: Creating Green Growth through net positive products and services*. Retrieved from <https://www.kekkila-bvb.com/sustainability/sustainability-reports/>.
- Niemi, J., Mattila, T., & Seppälä, J. (2024). Rewetting on agricultural peatlands can offer cost effective greenhouse gas reduction at the national level. *Land Use Policy*, 146, 107329. doi:<https://doi.org/10.1016/j.landusepol.2024.107329>.
- Nilsson, C., Riis, T., Sarneel, J. M., & Svavarsdóttir, K. (2018). Ecological Restoration as a Means of Managing Inland Flood Hazards. *BioScience*, 68(2), 89-99. doi:10.1093/biosci/bix148.
- Nordbeck, R., & Hogl, K. (2023). National peatland strategies in Europe: current status, key themes, and challenges. *Regional Environmental Change*, 24(1). doi:10.1007/s10113-023-02166-4.
- Nyíró, F., Alhassan Ibrahim, E. C., Bérczi-Siket, A., & Blackstock, K. (2022). *Briefing for Peat Extraction Sector*. Retrieved from [https://project-merlin.eu/files/merlin/downloads/mainstreaming/MERLIN\\_Sectoral\\_Briefing\\_Peat\\_Extraction.pdf](https://project-merlin.eu/files/merlin/downloads/mainstreaming/MERLIN_Sectoral_Briefing_Peat_Extraction.pdf).
- Oberč, B. P., de Jong, R., Demozzi, T., & Battioni Romanelli, B. (2022). Towards acircular economy that begins and ends in nature. *IUCN, European Regional Office*.
- Ozola, D. (2019). After-Use of Areas Affected by Peat Extraction: Recommendations and Experience of Life Restore. In A. Priede & A. Gancone (Eds.), *Sustainable and responsible after-use of peat extraction areas*. Baltijas krastī, Riga.
- Paoli, R., Feofilovs, M., Kamenders, A., & Romagnoli, F. (2022). Peat production for horticultural use in the Latvian context: sustainability assessment through LCA modeling. *Journal of Cleaner Production*, 378, 134559. doi:<https://doi.org/10.1016/j.jclepro.2022.134559>.
- Pe'er, G., Bonn, A., Bruelheide, H., Dieker, P., Eisenhauer, N., Feindt, P. H., Lakner, S. (2020). Action needed for the EU Common Agricultural Policy to address sustainability challenges. *People Nat (Hoboken)*, 2(2), 305-316. doi:10.1002/pan3.10080.
- Penning, E., Peñailillo Burgos, R., Mens, M., Dahm, R., & de Bruijn, K. (2023). Nature-based solutions for floods AND droughts AND biodiversity: Do we have sufficient proof of their functioning? *Cambridge Prisms: Water*, 1. doi:10.1017/wat.2023.12.

- Peršēvica, A., & Priede, A. (2019). Comparison of ecosystem services in various after-use scenarios. In A. Priede & A. Gancone (Eds.), *Sustainable and responsible after-use of peat extraction areas* (pp. 204–208). Baltijas krasti, Riga.
- Peters, J., & von Unger, M. (2017). *Peatlands in the EU regulatory environment*. Bundesamt für Naturschutz Bonn, Germany.
- Priede, A., & Gancone, A. (Eds.). (2019). *Sustainable and responsible after-use of peat extraction areas*. Baltijas krasti, Riga.
- Räsänen, A., Albrecht, E., Annala, M., Aro, L., Laine, A. M., Maanavilja, L., Tarvainen, O. (2023). After-use of peat extraction sites—A systematic review of biodiversity, climate, hydrological and social impacts. *Science of The Total Environment*, 163583.
- Reed, M. S., Curtis, T., Gosal, A., Kendall, H., Andersen, S. P., Ziv, G., Tanneberger, F. (2022). Integrating ecosystem markets to co-ordinate landscape-scale public benefits from nature. *PLOS ONE*, 17(1), e0258334. doi:10.1371/journal.pone.0258334.
- Renou-Wilson, F., Moser, G., Fallon, D., Farrell, C. A., Müller, C., & Wilson, D. (2019). Rewetting degraded peatlands for climate and biodiversity benefits: Results from two raised bogs. *Ecological Engineering*, 127, 547–560. doi:10.1016/j.ecoleng.2018.02.014.
- REVOLVE. (2015). Transparent Energy Peat Production. Retrieved from <https://revolve.media/features/transparent-energy-peat-production>
- Rieley, J. (2013). *Responsible Peatland Management: Can we learn from the past and present to make a better future?* Paper presented at the International Workshop on Peatland Management: Future Aspect of Management in Tropical and Cool Temperate Peatlands : Harmonious and Sustainable Relationship with Nature, Sapporo. <https://eprints.lib.hokudai.ac.jp/dspace/handle/2115/53555>
- Ronkanen, A.-K. (2023). *Upscaling of peat extraction nature-based solutions – A MERLIN case study, Komppasuo, Finland*. Paper presented at the MERLIN Peat Extraction Sector Second Round Table, Virtual. Roundtable Presentation retrieved from [https://www.hutton.ac.uk/sites/default/files/files/2023-05-02\\_MERLIN%20Peat%20extraction%20RT2\\_presentation-slidedeck1.pdf](https://www.hutton.ac.uk/sites/default/files/files/2023-05-02_MERLIN%20Peat%20extraction%20RT2_presentation-slidedeck1.pdf)
- Saarikoski, H., Mustajoki, J., Hjerpe, T., & Aapala, K. (2019). Participatory multi-criteria decision analysis in valuing peatland ecosystem services—Trade-offs related to peat extraction vs. pristine peatlands in Southern Finland. *Ecological Economics*, 162, 17–28. doi:10.1016/j.ecolecon.2019.04.010.
- Schulz, L., Gray, R., Blackstock, K., Ibrahim, A., Carmen, E., Bérczi-Siket, A., Loisel, V. (2024). Just transformations: sectoral stakeholder engagement, processes and perceptions of mainstreaming Nature-based Solutions. In *EU H2020 research and innovation project MERLIN deliverable 4.2*.
- Sechi, V., Belle, J. v., Fritz, C., Tilak, A., & Geurts, J. (2021). Towards a carbon credit & blue credit scheme for peatlands.
- Similä, M., Aapala, K., & Penttinen, J. (2014). Ecological restoration in drained peatlands—best practices from Finland. Metsähallitus. *Finnish Environment Institute, Vantaa*.
- Smith, N., Grebent, C., Óhegyi, E., Varga, I., & Nyárai, O. (2024). *Peatland-related Policies in Six Central and Eastern European Countries*. CEEweb for Biodiversity. Retrieved from [https://www.ceeweb.org/documents/publications/euki\\_peatlands\\_ceeweb.pdf](https://www.ceeweb.org/documents/publications/euki_peatlands_ceeweb.pdf).
- Syakina, B., Mohd Nor, R., & Armanto, M. E. (2024). RT5ELinkages of peatland degradation and rural poverty in development scenarios of peatland restoration. *Malaysian Journal of Society and Space*, 20(1). doi:10.17576/geo-2024-2001-06.
- Tanneberger, F., Appulo, L., Ewert, S., Lakner, S., Ó Brolcháin, N., Peters, J., & Wichtmann, W. (2021). The power of nature-based solutions: how peatlands can help us to achieve key EU sustainability objectives. *Advanced Sustainable Systems*, 5(1), 2000146.
- Tanneberger, F., Berghöfer, A., Brust, K., Hammerich, J., Holsten, B., Joosten, H., Couwenberg, J. (2024). Quantifying ecosystem services of rewetted peatlands – the MoorFutures methodologies. *Ecological Indicators*, 163, 112048. doi:<https://doi.org/10.1016/j.ecolind.2024.112048>.
- Tanneberger, F., Birr, F., Couwenberg, J., Kaiser, M., Luthardt, V., Nerger, M., . . . Närmann, F. (2022). Saving soil carbon, greenhouse gas emissions, biodiversity and the economy: paludiculture as sustainable land use option in German fen peatlands. *Regional Environmental Change*, 22(2). doi:10.1007/s10113-022-01900-8.
- Tanneberger, F., Moen, A., Joosten, H., & Nilsen, N. (2017). The peatland map of Europe.
- Tanneberger, F., Schröder, C., Hohlbein, M., Lenschow, U., Permien, T., Wichmann, S., & Wichtmann, W. (2020). Climate Change Mitigation through Land Use on Rewetted Peatlands – Cross-Sectoral Spatial Planning for Paludiculture in Northeast Germany. *Wetlands*, 40(6), 2309–2320. doi:10.1007/s13157-020-01310-8.
- Temmink, R. J. M., Robroek, B. J. M., van Dijk, G., Koks, A. H. W., Kaarmelahti, S. A., Barthelmes, A., Smolders, A. J. P. (2023a). Wetscapes: Restoring and maintaining peatland landscapes for sustainable futures. *Ambio*, 52(9), 1519–1528. doi:10.1007/s13280-023-01875-8.
- Temmink, R. J. M., Vroom, R. J. E., van Dijk, G., Käärmelahti, S. A., Koks, A. H. W., Joosten, H., Fritz, C. (2023b). Restoring organic matter, carbon and nutrient accumulation in degraded peatlands: 10 years Sphagnum paludiculture. *Biogeochemistry*, 167(4), 347–361. doi:10.1007/s10533-023-01065-4.
- The Parties. (2022). *Covenant on the Environmental Impact of Potting Soil and Substrates*. Retrieved from <https://lumencms.blob.core.windows.net/media/175/22%2011%2018%20Covenant%20on%20the%20Environmental%20Impact%20of%20Potting%20Soil%20and%20Substrates.pdf>
- Tolorunju, M. (2024). *Biomass and Carbon Estimation of Cut-over Peatland in Southern, Finland Willow Plantation*. Itä-Suomen yliopisto.
- Turmel-Courchesne, L., Davies, M. A., Guene-Nanchen, M., Strack, M., & Rochefort, L. (2023). Rewetting increases vegetation cover and net growing season carbon uptake under fen conditions after peat-extraction in Manitoba, Canada. *Sci Rep*, 13(1), 20588. doi:10.1038/s41598-023-47879-y.

- Underwood, S., Kaczor, K., Roberts, V., Tooze, G., Rayment, M., Smith, M., James, N. (2022). *Mainstreaming Large Scale Nature Restoration: NatureScot Research Report No.1271*. NatureScot.
- UNEP. (2022). *Resolution Adopted by the United Nations Environment Assembly on 2 March 2022. Nature-Based Solutions for Supporting Sustainable Development*. United Nations Environment Assembly of the United Nations Environment Programme Fifth session. Retrieved from [https://www.unep.org/environmentassembly/unea-5.2/outcomes-resumed-session-unea-5-unea-5.2-0?%2Funea-5\\_2%2Fproceedings-report-ministerial-declaration-resolutions-and-decisions-unea-5\\_2](https://www.unep.org/environmentassembly/unea-5.2/outcomes-resumed-session-unea-5-unea-5.2-0?%2Funea-5_2%2Fproceedings-report-ministerial-declaration-resolutions-and-decisions-unea-5_2).
- von Sonntag, H. (2023). Peatland restoration: Eurosite and AECO join forces. Retrieved from <https://www.eurosite.org/peatland-restoration-eurosite-and-aeco-join-forces/#:~:text=Rewetted%20peatlands%20today%20offer%20limited,and%20spread%20across%20multiple%20jurisdictions>.
- Waylen, K., Wilkinson, M. E., Blackstock, K. L., & Bourke, M. (2024). Nature-Based Solutions and Restoration are intertwined but not identical: highlighting implications for societies and ecosystems. *Nature-Based Solutions*, 100116.
- Wichmann, S. (2018). *Economic incentives for climate smart agriculture on peatlands in the EU*.
- Wichmann, S., & Nordt, A. (2024). Unlocking the potential of peatlands and paludiculture to achieve Germany's climate targets: obstacles and major fields of action. *Frontiers in Climate*, 6. doi:10.3389/fclim.2024.1380625.
- Wilson, D., Hofer, B., Järveoja, J., Jordan, S., Niinistö, S., Purre, A.-H., Sirin, A. (2023). Climate impact of peat extraction for horticultural use and fuel. In M. Strack (Ed.), *Peatlands and climate change* (pp. 264 - 305). Jyväskylä, Finland. International Peat Society.



## 9 Relevant annexes with further material

---

### Annex 1: Peat extraction stakeholders engaged via roundtables and bilateral discussions

- Bord na Mona
- Canadian Sphagnum Peat Moss Association
- DG Clima
- Estonian Peat Producers Association (ETL)
- Greifswald Mire Centre
- Griendtsveen
- Growing Media Europe
- Hofer & Pautz GbR
- International Peatland Society
- James Hutton Institute
- Klasmann-Deilmann
- Latvian Peat Producers Association
- Moorkultur-Ramsloh
- NatureScot
- Neova Group
- Responsibly Produced Peat
- SYKE
- The Bioenergy Association of Finland
- University College Dublin (UCD)
- UK Centre for Ecology and Hydrology (UKCEH)
- Westland Horticulture
- WWF - various offices
- Wetlands International
- MERLIN – Various partners



## Annex 2: Engagement activities with the Peat Extraction Sectoral community of practice

Roundtable 1	Roundtable 2	Roundtable 3
<p><b>Goals:</b> Building Community of Practice to deliver the overall objective of MERLIN</p> <p>Bringing together Peat Extraction 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><b>Questions:</b></p> <ul style="list-style-type: none"> <li>→ How do your 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, environmental, economic and social goals?</li> <li>→ What needs to change to allow you to do more to meet the Green Deal?</li> </ul> <p><b>Presentation:</b> Best practice in restoration of peat extraction sites: Views from Canada</p>	<p><b>Goals:</b> Strengthening our Community of Practice</p> <p>Sharing ideas and having deeper understanding about the cooperation for Peat Extraction Sector's net zero transition</p> <p><b>Questions:</b></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><b>Presentations:</b></p> <ul style="list-style-type: none"> <li>→ Upscaling of peat extraction nature-based solutions – A MERLIN Case study, Kompasuo, Finland</li> <li>→ After-use solutions at peat extraction sites - experiences of the peat extraction industry in Finland</li> <li>→ Getting actors in peat extraction value-chain to support nature-based solutions: experience in peatland's rehabilitation</li> <li>→ Status of rewetting large-scale peat extraction areas in Germany</li> </ul>	<p><b>Goals:</b> Discuss the Sector Strategy for upscaling rewetting and revegetation and the role of value chain actors</p> <p><b>Questions:</b></p> <ul style="list-style-type: none"> <li>→ After reading the Strategy, what else are you 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> <li>→ Is there any other way the value chain be enhanced?</li> </ul> <p><b>Presentation:</b></p> <ul style="list-style-type: none"> <li>→ Role of RRP certification in promoting large-scale restoration: value chain opportunities</li> </ul>

### Annex 3: List of organisations who commented on the strategy drafts

- Bord na Mona
- Growing Media Europe
- International Peatland Society (IPS) – includes combined feedback from Members.
- James Hutton Institute
- Responsibly Produced Peat
- SYKE
- The Succow Foundation
- The Bioenergy Association of Finland
- University College Dublin (UCD)
- University of Galway
- WWF – various offices
- MERLIN – Various partners

## Annex 4: Relevant weblinks for peatland and peat extraction related issues

Name of project/activity	Weblink
<b>Specific MERLIN-related links and outputs</b>	
Roundtable Reports	<a href="#">RT1; RT2; RT3</a>
Sector briefing	<a href="#">Briefing for the Peat Extraction Sector</a>
Policy Analysis	<a href="#">Deliverable 4.3: Policy Opportunities</a>
Value Chain	<a href="#">Value Chain Analysis in Key Economic Sectors</a>
Just Transformation analysis	<a href="#">Deliverable 4.2: Just Transformations</a>
MERLIN Peat extraction case studies	<a href="#">Komposuo Peatland Rewetting Finland;</a> <a href="#">Forth basin restoration UK</a>
MERLIN Infographic	<a href="#">Infographics</a> description need for a change in management of freshwater ecosystem
<b>Relevant non-MERLIN-related LINKS</b>	
EU Nature-Restoration Law	<a href="#">Nature Restoration Law</a> : Supporting the restoration of ecosystems for people, the climate and the planet
Peatland Atlas	Peatland Atlas 2023 - Facts and figures on wet climate guardians. More information about the Atlas <a href="#">found here</a> <a href="https://www.succow-stiftung.de/en/peatland-atlas">https://www.succow-stiftung.de/en/peatland-atlas</a>
CentrePeat	The project provides spatially explicit information about where and when restoration should be considered, and how much benefit could be achieved. More information <a href="#">here</a> .
Peatland Condition Mapping	<a href="#">Land Use Transformations</a> provides baseline information regarding peatland conditions in Scotland
Global Peatland Database	Delineates the extend of peatlands for various layers. Read more about it <a href="#">here</a> .
Local stakeholder involvement	Demonstrates how community can be involved to raise awareness about tourism and cultural values of peatland restoration. <a href="#">Here</a> is more information.
Bord na Móna's Peatlands Climate Action Scheme (PCAS)	<a href="#">PCAS</a> offers lessons regarding Ireland's experience of restoring past commercial peat extraction sites to enhance climate benefits.
Shared Funding	<a href="#">Shared Island Fund</a> example of sharing information and enabling cross-border cooperation covering Northern Ireland and Scotland
The Canadian Sphagnum Peat Moss Association partnership	<a href="#">The Canadian Sphagnum Peat Moss Association</a> (CPMA) is example of partnerships with governments, scientists, and NGOs to develop peatland restoration techniques.
Hort2thefuture and SPIN-FERT	Focuses on developing peat alternatives and examining consumer behaviour and the growing media and peat industry. Read about it <a href="#">here</a> .
Developing peat alternative under Horticert	International Certification of Sustainable Peat Substitutes and Substrates. <a href="#">Here</a> is more information.
EU Life Peat Restore	Established to rewetted around 5300 hectares of degraded peatlands. Offers a range of insights including peat extraction sites. <a href="#">Read more</a> .
IUCN UK Peatland Programme	Promotes peatland restoration in the UK through partnership, research and policy evidence. <a href="#">Here</a> is more information.
Ramsar Convention on Wetlands	Offers framework for conserving and using wetlands wisely. Read about various resources <a href="#">here</a> .
Global Peatlands Initiative (UNEP)	<a href="#">This Initiative</a> is an effort to save peatland as the world's largest terrestrial organic carbon stock prevents further emission.
Landscape Finance Lab Investing in Peatlands	Highlights the benefits of investing in peatland restoration for climate, biodiversity, communities, and investor. More information <a href="#">here</a> .
Land use, land use change and forestry	<a href="#">LULUCF Regulation</a> aims increase removal or carbon and reduce emissions. Covers peatlands as well.

Carbon Removals and Carbon Farming	<b>CRCF</b> aims to facilitate investment, innovative and certification of carbon removal.
Farm Payments for Ecology and Agricultural Transitions	<b>FarmPEAT</b> supports farmers managing lands near Ireland's raised bogs to enhance their conservation value through innovative, results-based schemes
WaterLANDS (Water-based solutions for carbon storage, people and wilderness)	Restores damaged European wetlands and lays the groundwork for broader protection. <a href="#">Here</a> is more information.
WET HORIZON	Aims to enhance wetland restoration through a holistic approach, improving data, modelling restoration impacts, and providing guidelines for large-scale action. More information <a href="#">here</a> .
ALFAwetlands	Examine the potential and effectiveness of wetland restoration in supporting transition to a climate-neutral and resilient society and economy. More information <a href="#">here</a> .