



MERLIN



Briefing for Peat Extraction Sector

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Mainstreaming aquatic restoration using Nature-based Solutions: supporting transformation

A collaborative approach with key economic sectors is essential to enable the H2020 MERLIN project to promote systemic transformative change. We co-develop transformation strategies with different sectors to **mainstream restoration as a Nature-based Solution (NbS)**. Working with nature at landscape scale can contribute to the EU Green Deal objectives (climate resilience, improved biodiversity, zero pollution, sustainable food systems, health, and wellbeing).

NbS has been defined by the International Union for Conservation of Nature (IUCN) as “actions to **protect, sustainably manage, and restore** natural or modified ecosystems, that address **societal challenges** effectively and adaptively, simultaneously providing **human well-being** and **biodiversity benefits**”.¹

This briefing focuses on the **Peat Extraction Sector**. It summarises MERLIN’s understanding of the sector’s current connection with rivers and wetlands, and how Nature-based Solutions (NbS) are viewed within the sector at the start of the collaboration. The briefing proposes how MERLIN (for more information visit www.project-merlin.eu) can support the Peat Extraction Sector to implement NbS.

How can MERLIN support transformation?

The Peat Extraction Sector can play a role in responding to Europe’s Green Deal objectives via biodiversity restoration, wise land use and resource efficiency. Peatlands, in their natural conditions, function as important carbon sinks, which help to store a substantial amount of carbon. Transformation whereby NbS becomes **the new normal** will only happen through multiple actions involving government, markets, and citizens. MERLIN will support this through understanding how the Peat Extraction Sector is already making positive changes, sharing good practice between European countries, and exploring how NbS could help overcome some of the challenges faced by the sector. The activities of Peat Extraction, including licensing and restoration requirements, vary across different European states. However, this briefing presents a **general reflection** of the European condition, despite the individual state differences. The briefing is based on a range of insights from involving actively engaged individuals from the Peat Extraction Sector (using Round Table Discussion (RTDs), questionnaires, interviews) and a desktop review of formal documents. The MERLIN team is very grateful for the insights shared to date, which have helped to understand the different positions. The synthesis provided in this briefing reflects the views of the authors and does



not imply consensus within the developing **Community of Practice** of MERLIN. The Community of Practice concerns EU and Member State level policy and commercial actors of the Peat Extraction Sector who share a common interest in improving their practices better through regular interaction and sharing information.



Relationship of the Peat Extraction Sector with freshwater restoration and NbS

Brief description of the sector

In Europe, peat extraction is not a major contributor of peatland degradation, as the sector uses a relatively small area of peatlands (0.1%).¹¹ As for the sector's GHG emissions, there is a data gap regarding their actual contribution, as figures are generalised for all peatland purposes. Yet it is known that peat extraction emissions (on- and off-site) are the smallest of all land use type emissions from drained peatlands, lagging behind that of agriculture and forestry. Despite peat extraction's **relatively smaller impact** on peatlands, the sector should contribute to the **rehabilitation** of peatland ecosystems, especially because they have benefited from its prior degradation. The sector could also help to sequester carbon and GHG emissions.

Peatlands have a strong natural ability to **absorb and store carbon**, playing an important role as an NbS for climate change mitigation. While they only cover around 5% of Europe's land surface (Figure 1), they store five times more carbon than forests on the continent. Peatlands consist of a variety of ecosystems which are **important habitats** for a multitude of species.

They are the homes of many adapted, rare and threatened animals and plants, making them unique ecosystems.⁴ In the EU, peat extraction does not take place on protected or pristine peatlands, unless a historic licence still permits it.

Peat is extracted for a variety of purposes, mostly **horticulture and energy generation**. Extraction mostly takes place in Central Europe, Baltic States and Scandinavia.² The process necessitates removal of the current vegetation followed by drainage and levelling of the extraction area, harvesting of moist peat, which is later dried on site and transported to be further processed. MERLIN acknowledges the important role peat serves e.g. in the need for plants, food, and energy. Therefore, its main focus is the rehabilitation of degraded peatlands in line with NbS.

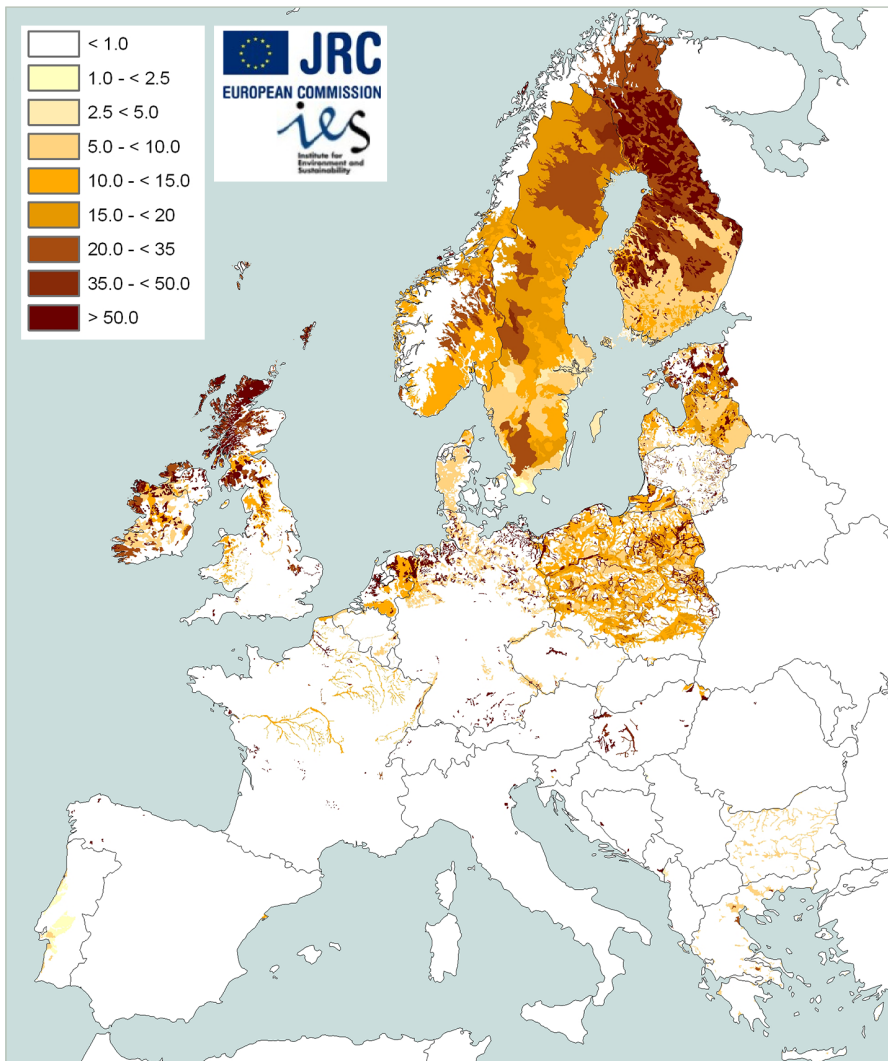


Figure 1. Peatland distribution in Europe – the map shows the relative cover (%) of peat and peat-topped soils in the soil mapping units of the European Soil Database^{3, 4}

Note: this map is for all peatlands in Europe of which peat extraction is a small proportion





NbS and their potential for supporting the sector

MERLIN envisages **large-scale revegetation, rehabilitation** and protection of peatlands as an NbS to enhance restoration of freshwater ecosystems, to reinstate key ecosystem services, and to address societal challenges. There is still a lot of potential for peatland restoration, as the European Commission considers the conservation status of European peatlands still unsatisfactory.⁴ The aim of peatland restoration is to return degraded peatlands to conditions in which ecosystem functions and services, such as carbon sequestration, nutrient dynamics, biodiversity, climate and water regulation, and biomass production, are as close as possible to **natural conditions** at reasonable cost.⁶ There is a preference to focus peat extraction on degraded, drained or disused peatland (especially that converted to Agriculture (pasture)). Therefore, the sector could help with the restoration of these sites and turn an extracted peatland into a carbon sink again.

How the sector currently understands NbS

The term NbS is not commonly used by the sector, and NbS standards such as inclusion, transformation potential or biodiversity net-gain are not specifically discussed. However, the after-use procedures implemented by the sector, for example rewetting by blocking drainage channels, building dams and introducing water and peat-forming plants, are all part of an **NbS approach**. While the methods presently used by the sector for rewetting and restoration are acceptable NbS practices based on individual state regulations, they are **not on the scale** required by MERLIN. Therefore, discussion will be held on how this transformation may be brought about, because the sector has the equipment and expertise to do so, which could enable the sector to move towards **net zero emissions**.

In the sector, rewetting and rehabilitation are being carried out only at the **local level** of peat extraction fields, not on a landscape scale, as individual companies are only responsible for their part of extraction site. Hence, the measures are mostly based on the industry's corporate sustainability practice and regulation requirements, which may differ by each extracting company. Restoration of peatlands is operated on a **single site scale** according to licensing conditions, if there is a legal requirement to rewet. A peat extraction licence may specify a different **after-use**, or none at all. If a peatland can no longer be restored, the preferred option of after-use may be forestry, paludiculture, open water wetlands or generation of solar or wind powered energy. The choice selected for after-use will depend on peatland type and former management, landowners' will as well as on the condition of the 'used' peatland.

Good examples of NbS for the Peat Extraction Sector

Even though more and more peatland restoration projects are conducted in Europe, only a few of them are known to have been led on sites previously extracted by the sector. In this briefing, we chose to include three good restoration examples on peat extraction sites, that are in line with NbS practices.

Country, date	Lead stakeholders / project	Key measures	Retrieved from (link)
Ireland, since 2021	Bord na Móna: a semi-state owned, former peat extractor, now a climate solutions company, aiming to contribute to the climate- neutrality of Ireland	<ul style="list-style-type: none"> → Formally ending all peat harvesting on their lands in 2021 → Over 19700 ha of bog has been rehabilitated to date by the company → Over 79300 ha are planned to be rehabilitated, currently 3127 ha of bog is under rehabilitation 	https://www.bordnamona.ie/bord-na-mona-announce-for-mal-end-to-all-peat-harvesting-on-its-lands/





Lithuania, 2013-2017	Lithuanian Ornithological Society Tyruliai-Life: a LIFE project, aiming to restore the Tyruliai bog (which was one of the largest peat mining fields in the country) as part of an initiative to the rewetting of Lithuanian peatlands	<ul style="list-style-type: none"> → Ensuring a favourable conservation status of bittern, spotted crane and migratory common crane → Restoration of the hydrological regime in the area of 600 ha → Raising public awareness of restoration possibilities of the destroyed bog 	http://www.tyruliai-life.lt/upload/user_uploads/Ataskaitos/After_Life_Conservation_Plan_FINAL2.pdf
France, 2014-2021	Conservatoire d'espaces naturels de Franche-Comté LIFE Jura peatlands: a LIFE project, aiming to improve the conservation status of habitats in the peat bogs of the Jura Mountains affected by peat extraction	<ul style="list-style-type: none"> → Restoration of 32.6 ha of extraction area 12 Natura 2000 sites → Restoration of 15.1 km of streams on 6 Natura 2000 sites → Purchasing 48.34 ha of strategic areas from private landowners to make it possible to implement appropriate conservation methods across the whole target area 	https://webgate.ec.europa.eu/life/publicWebsite/project/details/3947

Table 1: Examples of NbS for the Peat Extraction Sector



Challenges and Opportunities of the Peat Extraction Sector

Challenges

The sector believes that it would be hard to completely replace peat for horticulture and food production at this stage. There is an increasing demand for high-quality growing media, for which peat is still the best **mainstream raw material**.⁷ Even though promising alternatives are known, such as coir, bark, compost, biochar^{8,9}, they are still far from being widely practised. For instance, biochar is still quite small, and mostly needs to be mixed with peat for quality reasons and limited availability. Meanwhile, the sector is more and more urged to make their activities in line with EU climate and environmental goals. Peat extraction in general has an increasingly negative reputation in Europe because it is linked with **carbon emissions** and **biodiversity loss**. As mentioned above, it concerns a relatively small proportion of peatlands. Yet, the sector uses degraded peatlands where biodiversity otherwise could be restored.

Restoration itself is challenging, primarily because degraded mire ecosystems have a very **slow reaction** to such measures. If these are successful, it can take several decades for ecosystems to improve their conservation status.⁴ Moreover, peat extraction licences are vague on details of restoration: apart from it being a requirement, there are no specifications in many cases. **Rewetting** is still a common practice, which is problematic, because not all extracted peatlands are suitable for rewetting depending on underlying soil, cutover topography, and water availability. This practice alone does not create functioning peatlands either without proper rehabilitation, and revegetation measures.

Restoration would be more efficient if it was not only focused on a **single site scale** where peat extraction happened, but on a large landscape scale. This is contested by the fact that extraction companies are not responsible for going beyond their own sites. There are also some companies who are legally extracting on **protected lands**, as they received their licence before regulations have taken place, and these licences could be viable even after decades. Overcoming regulatory **bureaucracy** and the **fragmented policy** framework across Europe is challenging as well. Different countries have their own conditions for peat extraction and peatland restoration, while some EU policies contradict each other on these matters.

Opportunities

Biodiversity may be enhanced or recovered after peat extraction ends if appropriate rehabilitation and revegetation measures are implemented. The other main driver behind peatland restoration is that restored peatlands can store more carbon and play a role in **emissions absorption** than degraded ones. In some European areas, applying NbS to peatland restoration also has the potential to **mitigate flooding**, as it would retain floodwaters, reduce flood peaks and consequently, safeguard urban areas and communities. Furthermore, as can



be seen from the Irish Bord na Móna example (Table 1), restoration can provide **employment** in rural areas or for those who previously worked on peat extraction within the company.

Additionally, restoring peatlands can have a positive impact on local **tourism** and offer recreational opportunities. Positive solutions such as bog bridges and boardwalks already exist on several peatlands, also serving as an **educational** element, which is well-needed, since the value and benefits of wet peatlands are still largely underestimated.¹² Therefore, peatlands restoration can contribute to achieving the Sustainable Development Goals as well, since it can offer a clean and reliable source of water, helping generate economic benefits and reduce exposure and vulnerability to disasters.⁵

Restoring its **good reputation** through applying NbS could be a motivating factor for the sector. Especially because in Europe, peatlands are the most degraded ecosystems,¹⁰ therefore, there is a huge potential for the sector to contribute to changing this. Rehabilitation and revegetation of peatlands is a **business opportunity** for the industry, given that companies are motivated to undertake peatland restoration as a corporate and social responsibility. Thereby, they are applying for 'best practice' certification that includes commitment to restore sites when extraction ends. Peat extraction companies have the machinery and knowledge for peatland restoration, which, with the appropriate regulatory environment and finance, could be **upscaled to the landscape level**.



Cooperation (MERLIN & the Peat Extraction Sector)

Regardless of peat extraction's coverage of peatlands in Europe, the sector could play a significant role in addressing environmental challenges respective to the sector. MERLIN needs to base suggestions on transformation and mainstreaming on practical experience. Whilst many different aspects of how the Peat Extraction Sector might mainstream NbS were discussed, we would like to focus on **revegetation**, not just on-site rewetting, but **linking the extraction sites to wider peatland restoration approaches**. In the MERLIN project we will focus our work with the sector on the issues in bold:

- The Peat Extraction Sector has expertise, and together with MERLIN, could help to provide information and training on how to **revegetate** sites and sustain the vegetation through appropriate after-use site management.
- Enable **large-scale restoration** beyond sites of peat extraction to the wider landscape level since companies have the tools and expertise that could be upscaled. This would ensure that NbS standards are met and that NbS is implemented not only on peat extraction fields but at a landscape level, in cooperation with other sectors. Large-scale restoration will require enabling regulations in which the benefits and incentives to the Peat Extraction Sector are clear.
- Enhance **cooperation** between peat extraction industry and other stakeholders including public agencies and other private organisations, to fund NbS projects at a landscape level and tap into the skills, knowledge, and equipment of the industry to mainstream NbS.
- Share innovative **funding mechanisms** and business approaches for a wider peatland restoration that involves the sector, in order to increase financial motivation for restoration. For instance, blue carbon credits can incentivise peatland restoration, as their generation is based on the tonnes of carbon captured and stored by the project, and these credits can later be sold to larger entities wishing to offset their GHG emissions. Moreover, it may be necessary to have a financing scheme specific to the sector to achieve net zero emissions.
- Calculate, if possible, **GHG emissions** from extracted peatlands and methodologies for achieving net zero emissions in the sector.
- Help improve **planning and licence processes** to overcome the regulatory bureaucracy, which hinders the appropriate restoration of peatlands following extraction. MERLIN could serve as an intermediary between the peat extraction companies and various state regulators to facilitate the transformation process, with the aim to make the licences clearer with regards to restoration.

For **cross sectoral cooperation**, the relationship between the Peat Extraction Sector and freshwater NbS has to be understood. In general, all the MERLIN sectors (Hydropower, Navigation, Peat Extraction, Agriculture, Insurance) rely on the others to manage water



resources better, to avoid floods and droughts to keep operating profitably. Peat extraction is directly related to parts of Agriculture, such as Horticulture, and through rewetting, it can help with water levels for Insurance, Hydropower, Navigation and Water Supply and Sanitation. According to the MERLIN Case Studies (<https://project-merlin.eu/cs-portal/case-study-14.html>), restoration of Peat Extraction helps treat water quality. The industry could also support and help the restoration of wetlands on peat-based habitats used for Agriculture.



Next Steps

Overall, MERLIN is building a Community of Practice to support an understanding of NbS and how MERLIN can enable the mainstreaming of NbS in the Peat Extraction Sector; as well as how Peat Extraction can work with other sectors.

Together with participants from the six sectors, in the next year MERLIN will:

- Continue to engage with the sector to exchange ideas and develop understanding of their needs, challenges, and opportunities for NbS.
- Examine the EU policy context and how in the future policy could better enable NbS.
- Incorporate issues of social justice alongside ecological and economic considerations in the process to mainstream NbS within the sector.

In the longer term, MERLIN will:

- Identify opportunities for cross sector partnerships by applying a value chain approach.
- Co-develop route maps for transforming the sector's relationship with NbS.

For more information on how we collaborate with the sectors' representatives or to discuss how you can help MERLIN please contact Anna Bérczi-Siket (Anna.Berczi-siket@wwf.hu) or Kirsty Blackstock (Kirsty.Blackstock@hutton.ac.uk).

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