



Nature-based solutions for climate adaptation: wetlands, peatlands and grasslands

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for a greener Europe*

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Summary

The impacts of climate change, such as extreme weather events, droughts and floods are increasingly frequent in Europe and around the world, resulting in social, environmental and economic damages. According to the European Environmental Agency (EEA), in the forty years “between 1980 and 2020, total economic losses from weather and climate-related events amounted to **EUR 450-520 billion** in the 32 EEA member countries” (EU countries + Norway, Switzerland and Turkey).

Nature-based solutions play a key role in climate adaptation. Some estimates suggest they could provide **37% of the mitigation** needed before 2030 to achieve the targets of the Paris Agreement. They have proven a cost-effective way to address climate change, biodiversity loss and land degradation. The EU recognizes the approach as an inherent part of many policies. The present policy brief focuses on three specific ecosystems that are among the most relevant in carbon storage and biodiversity enhancement. These are wetlands, peatlands and grasslands. With the new **Nature Restoration Law**, the European Union will potentially introduce binding targets on restoration of these ecosystems. Local and regional authorities will therefore play a vital role in including these targets in local and regional policies.

The following pages provide an overview of EU initiatives to inspire local and regional authorities and showcase ways to mitigate climate change. These include actions on restoration of wetlands, peatlands and grasslands, or the use of constructed wetlands and ponds to prevent floods. Furthermore, it presents a selection of Interreg Europe good practices from the projects **Land-Sea**, **AQUARES**, **WaVE**, **IRENES** and **PROGRESS**, with a high degree of replicability in other municipal contexts.

Table of Contents

Summary	2
Climate adaptation	4
Nature-based solutions	5
EU policies and funding instruments for NBS for climate adaptation	7
Policy solutions for climate adaptation	10
Wetlands	10
Peatlands	16
Grasslands	19
Policy recommendations	21
Interreg Europe resources	23

List of good practices and policy changes

<i>GOOD PRACTICE 1: Restoration of salt marshes at La Pletera (Spain)</i> _____	12
<i>GOOD PRACTICE 2: Constructed wetlands Gorla Maggiore (Italy)</i> _____	13
<i>GOOD PRACTICE 3: Polderlandscape Lage Vucht (Netherlands)</i> _____	14
<i>GOOD PRACTICE 4: Peatland rewetting and wind energy (Germany)</i> _____	17
<i>GOOD PRACTICE 5: Viability of grasslands</i> _____	20

Climate adaptation

The frequency and severity of climate and weather extremes is on the rise. According to a report from the **World Meteorological Organization**, Europe is warming up faster than any other continent in the world, increasing **more than twice the global average**. Longer and more frequent heatwaves, wildfires, floods and other climate change effects are affecting European economies and ecosystems as the warming trend continues.

These extremes range from unprecedented forest fires and heatwaves right above the Arctic Circle, to devastating droughts in the Mediterranean region. Economic losses from more frequent climate-related extreme events have already averaged over **EUR 12 billion** per year. July 2023 has been confirmed as the **hottest month on record**, accompanied by record sea ice level lows and record ocean surface temperature highs.

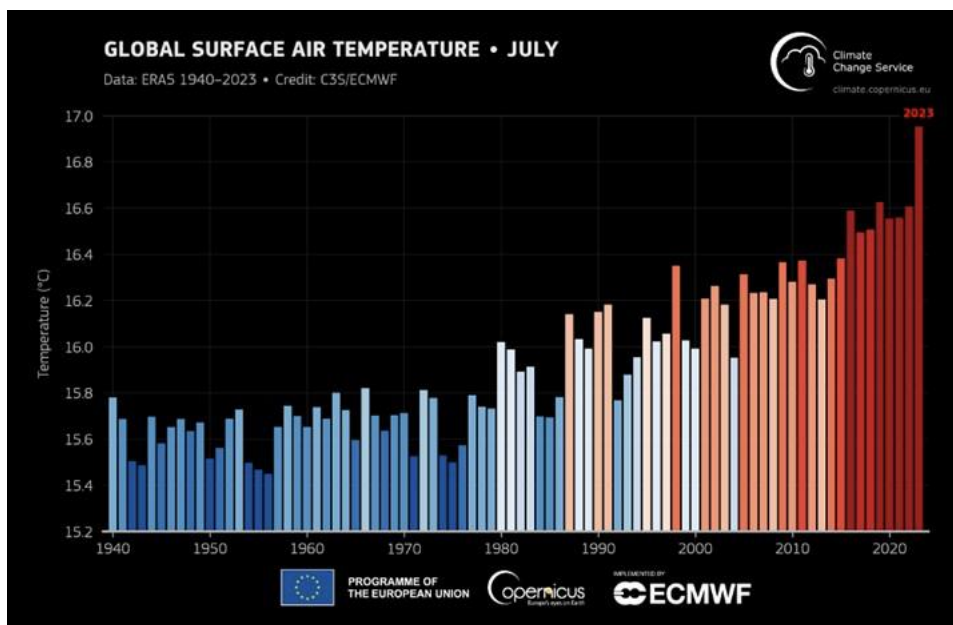


Image source: [WMO](#)

At the same time, Europe is one of the most advanced regions in cross-border cooperation in climate change adaptation. It has committed to climate neutrality by 2050 and to a more ambitious emission reduction target of at least 55% by 2030, compared to 1990 levels. Many relevant policies, which recognise protection of nature and use of **nature-based solutions** as an integral part of climate change adaptation and mitigation, have been adopted over the past couple of years.

Nature-based solutions

Nature-based solutions (NBS) integrate protection, restoration and sustainable management of natural and seminatural ecosystems (i.e. forests, peatlands and grasslands) and aquatic systems. The latest report from the Intergovernmental Panel on Climate Change (IPCC) demonstrated that nature-based solutions improve ecosystem health and reducing climate change effects like flooding, drought or soil erosion.

Solutions such as reduced deforestation, higher protection and restoration of ecosystems and improved management of working lands, such as farms, are among the top five most effective strategies for mitigating carbon emissions.



In 2021, the European Commission released a **handbook on nature-based solutions**, to provide policymakers and practitioners with a comprehensive impact assessment framework and a set of indicators and methodologies.

According to the **International Union for Conservation of Nature** (IUCN), nature-based solutions are “*actions addressing key societal challenges through the protection, sustainable management and restoration of both natural and modified ecosystems, benefiting both biodiversity and human well-being*”.

The **European Commission** defines nature-based solutions as “*Solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience. Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions.*”

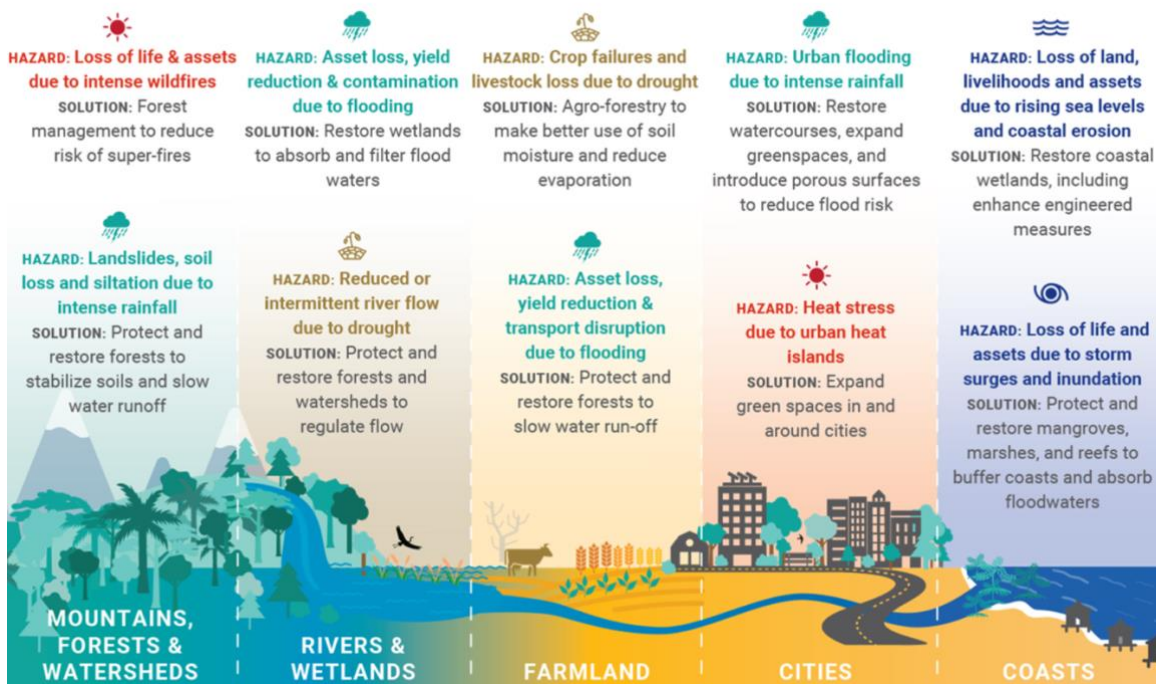


Image source: [Global Center on Adaptation](#)

Nature can be used as a valuable tool to strengthen the resilience of ecosystems, protect biodiversity and reduce the risk of extreme weather and climate-related disasters. Policy-wise, **NBS are considered the preferred solution on global and EU levels**. They are excellent risk mitigation tools, while providing additional benefits, including human wellbeing, biodiversity and economic benefits.

When implementing nature-based solutions, key success factors include:

- Political support, positive stakeholder engagement and use of participatory approach
- Availability of space for implementation
- Financial resources and financial incentives for landowners
- Clear demonstration of cost-effectiveness and benefits compared to other solutions
- Use of existing knowledge and clear monitoring mechanisms

EU policies and funding instruments for NBS for climate adaptation

Nature-based solutions are integral to achieving the goals of **the European Green Deal**, and specifically its sub-components:

- **EU Biodiversity Strategy**
- **EU Strategy on Adaptation to Climate Change**
- **Farm-to-Fork Strategy**

Nature-based solutions are supported by most policies in EU's environmental and climate change legislative framework. The proposed **Nature Restoration Law** could potentially bring a much needed increased level of protection and restoration targets for wetlands, peatlands and grasslands. A significant proportion of the 25% of the EU budget dedicated to climate action will be invested in biodiversity and nature-based solutions. Public authorities' purchasing power represents 14% of EU GDP and can serve as a powerful driver of demand for the products and services of companies that invest in or contribute to nature-based solutions.

Strategy on Adaptation to Climate Change

The new **EU Strategy on Adaptation to Climate Change** from June 2021 emphasises the need to promote nature-based solutions and recognises that cost-effective adaptation to climate change can be achieved by protecting and restoring wetlands and peatlands, as well as coastal and marine ecosystems, urban green spaces and other ecosystems. Having a greater number of biodiverse ecosystems leads to higher climate change resilience and provides more effective forms of disaster mitigation and prevention.

EU Climate Law

The **European Climate Law** has been adopted in June 2021 and has made the 2030 and 2050 climate goals obligatory. According to the law, nature-based solutions can benefit climate change mitigation, adaptation and biodiversity protection, enhancing natural carbon sequestration, adaptive capacities and resilience of ecosystems. It calls on Member States to adopt and implement national adaptation strategies, where nature-based solutions and ecosystem-based adaptation should be promoted.

EU Biodiversity Strategy for 2030

The **EU Biodiversity Strategy** recognises the role nature plays in regulating climate. According to the strategy, a cost-effective adaptation to climate change can be achieved by protecting and restoring wetlands, peatlands and coastal ecosystems, sustainably managing marine areas, forests, grasslands and agricultural soils, and developing urban green spaces. Nature-based solutions will be essential for reducing emissions and climate adaptation. The strategy recognises peatlands, grasslands and wetlands as significant carbon-rich ecosystems, which should be carefully protected. It also introduces a target for at least 25,000 km of rivers to be restored into free-flowing rivers by 2030 through the removal of mainly obsolete barriers and the restoration of floodplains and wetlands.

EU Nature restoration law

In June 2022, the European Commission adopted the proposal for a **Nature Restoration Law** aiming at restoring European ecosystems and to contribute to achieving the EU climate adaptation and mitigation objectives. To achieve this, legally binding targets for nature restoration are proposed. The aim is to cover at least 20% of EU's land and sea areas by 2030 with nature restoration measures, and eventually extend these to all ecosystems in need of restoration by 2050.

The proposal estimates that the **benefits** of restoring peatlands, marshlands, forests, heathland and scrub, grasslands, rivers, lakes and alluvial habitats, as well as coastal wetlands, can **amount to as much as EUR 1.860 billion**. It also calls for extended restoration and rewetting of drained peatlands.

European financial support for NBS in climate adaptation

The EU plans to allocate 7.5% of the 2021–2027 Multiannual Financial Framework (MFF) **to support biodiversity objectives** by 2024, and 10% in 2026 and 2027. According to the EU Biodiversity Strategy, through EU structural and investments funds (ESIFs) and direct funding instruments, such as LIFE and Horizon Europe programmes, around **EUR 100 billion will be available for biodiversity spending, including restoration**.

The European Regional Development Fund (ERDF): has supported endeavours such as The Active Wetlands project, which identified possible solutions of **reducing agricultural nutrient load** by enhancing nutrient retention in the watersheds. During the project, Estonian and Finnish farmers, rural advisors and decision-makers learnt more about how wetlands can be used to reduce the nutrient load from agriculture. By establishing small pilot wetlands, the project established practical designs and methods to increase the efficiency of agricultural wetlands. The "Raised Bogs – A Unique European Area" project addresses the challenge of reconciling larger-scale tourism with properly protecting peatland and sites from potential damage.

LIFE programme: Since its creation in 1992, the LIFE programme has supported over 1,800 nature and biodiversity projects in order **to safeguard Europe's natural heritage**. Despite the programme's small size, the EUR 2.2 billion invested so far in these projects has done much to implement EU's biodiversity policies and strategies. In the present programming period, the LIFE programme will continue to enable nature, biodiversity and climate adaptation oriented projects. To this end, the new regulation governing the programme between 2021 and 2027 has allocated a budget of EUR 2.143 billion for the '**Nature and Biodiversity**' subprogramme, and EUR 947 million for the '**Climate Change Mitigation and Adaptation**' subprogramme.

The LIFE Programme has played a very important role for peatlands in Europe. So far 363 peatland conservation and restoration projects have been co-financed by LIFE. The Blanket Bog project has been successful in **restoring large areas of blanket bog** in Northern Scotland. It has been able to remove commercial forestry from 1,556 ha of land that had previously been blanket bog. The blocking of drains has benefited the condition of more than 16,600 ha of peatland, including existing Natura 2000 sites. Another example is the Lille Vildmose project, which managed to restore the largest remaining raised bog in lowland northwest Europe.

Horizon Europe: it provides funding for **protecting and restoring ecosystems and biodiversity**, sustainably managing natural resources on land and at sea, and achieving climate neutrality and adaptation. Horizon Europe Cluster 6 – on food, bioeconomy, natural resources, agriculture and environment aims to reduce environmental degradation, halt and reverse the decline of biodiversity on land, inland waters and sea, and better manage natural resources in both urban and rural areas. An ambitious WaterLANDS project (Water-based solutions for carbon storage, people and wilderness) has been launched to restore wetland sites across Europe that have been decimated by human activity, and lay the foundation for scalable protection across much wider areas.

The EU Just Transition Fund is a new programme running from 2021 to 2027, created to **support regions transitioning away from fossil fuel industries**. EUR 57 million is dedicated to supporting the restoration and rehabilitation of degraded peatlands and regeneration and repurposing of industrial heritage assets.

The EU also supports nature-based solutions via the **BiodivClim Knowledge Hub** dedicated to the “potential of nature-based solutions for mitigating and adapting to climate change”, and via the **research call on nature-based solutions**. The call was launched on 11 September 2023.

European Territorial Cooperation also provides considerable support for regional and local authorities wishing to learn how other peer organisations across Europe implement nature-based solutions and climate adaptation measures in their policies. In the following chapters of this brief, several good practices identified in the framework of Interreg Europe will be highlighted. **Interreg Europe** provides opportunities for exchange of experience on any policy objective, including the possibility to test out solutions through pilot actions.

Policy solutions for climate adaptation

EU Member States, regions and municipalities are setting up measures to mitigate the effects of climate change and to adapt to the changing conditions. The following section outlines the importance of wetlands, peatlands and grasslands as some of the most effective carbon sinks on the planet. Policy measures and good practices adopted in European regions to restore these ecosystems are also indicated.

Wetlands

The **Ramsar convention**, an international treaty on wetlands, defines wetlands as “...areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres.”

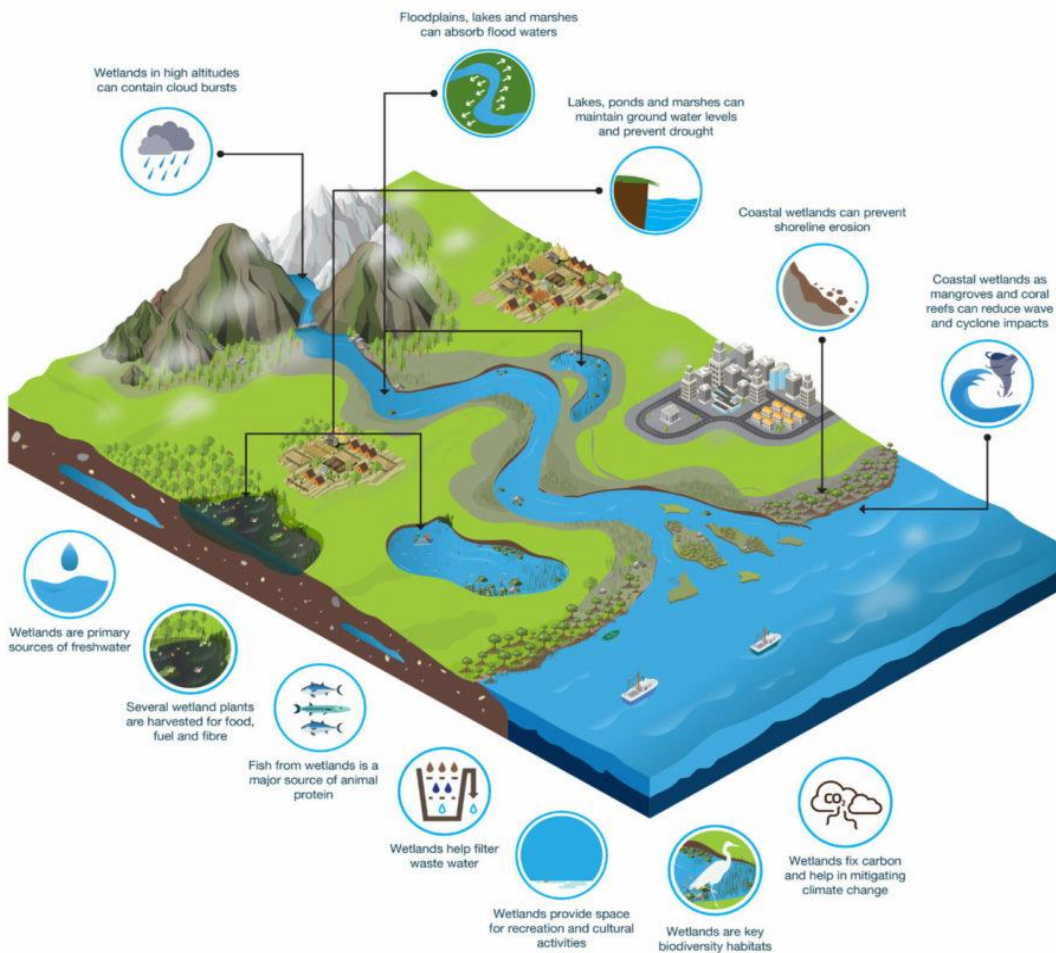


Image source: [Wetlands International](#)

As per the definition above, wetlands exist in many different forms, including peatlands, rivers, deltas and floodplains. While they cover a small percentage of land, they are crucial ecosystems and the primary source of freshwater. They prevent floods, droughts and shoreline erosion, purify water, recycle nutrients, maintain groundwater levels, provide important biodiversity habitats and are central to agriculture and fisheries.

MAES ecosystem types (Mapping and Assessment of Ecosystems and their Services) narrow down wetland classification to the “inland wetlands” category, so coastal wetlands are classified as marine inlets and transitional water. All the ecosystem types are highly interlinked, since water is released from upland peatlands into rivers, and then moves through marshes and lakes, before rivers issue into coastal wetlands and other coastal habitats.

Wetlands are the world’s most effective carbon sink, storing twice as much carbon as the world’s forests. Their protection and restoration is critical in climate change mitigation and adaptation. Landscape scale restoration should be prioritized and will result in the creation of healthy ecosystems, better soil health, improved water cycles, enhanced biodiversity and protection against natural disasters.

Freshwater (inland) wetlands have high biodiversity conservation value, because they are home to up to 40% of the world’s flora and fauna. **Since 1900, more than 64% of wetlands have been lost** through drainage and conversion to land-use or agricultural purposes, and much of the rest has been damaged. In Europe, 35% of wetlands has been lost since 1970s, and **70-90%** of Europe’s floodplain area is **ecologically degraded**.

Benefits of restoring wetlands

The diversity and scale of benefits of ecosystem services provided by wetlands, as well as the potential costs resulting from their degradation, have only been recognised recently. The services include the supply of adequate quantities and quality of water, with associated health and well-being implications, climate change mitigation and adaptation, disaster risk reduction, food security, and the supply of various materials.

7 benefits of restoring wetlands

A well restored wetland can provide many of the services performed by the original natural wetland. Here are seven ways restored wetlands can benefit us directly:

- 1 Revive biodiversity**
40% of the world’s species live or breed in wetlands. Restoring wetlands powers the local food chain and attracts wildlife.
- 2 Replenish and filter water supply**
Wetlands naturally filter water, remove pollutants and boost the local water supply.
- 3 Store carbon**
Specific types of wetlands, especially peatlands, mangroves, intertidal marshes and seagrass beds are exceptionally efficient carbon sinks.
- 4 Blunt the impact of floods and storms**
Restored wetlands can act as sponges against excess rainfall and flooding, buffer coastal storm surges, and can shield communities in extreme weather.
- 5 Improve livelihoods**
Wetlands create livelihoods in fishing and aquaculture, and also provide goods like reeds and grasses. These opportunities often benefit indigenous populations.
- 6 Boost eco-tourism**
A restored wetland can be a sustainable magnet for visitors; a natural attraction that draws tourists along with opportunities to serve them.
- 7 Enhance well-being**
Revitalized wetlands provide a place to relax, experience nature – and enjoy sense of satisfaction at their resurgence.

Ramsar
Convention on Wetlands

World Wetlands Day
2 February 2023
It's time for wetland restoration

Coastal wetlands

Deltas are important ecosystems found at the mouth of a river, where the water spreads into coastal wetlands and shallow waters. Bridging the land and the sea, coastal wetlands are home to many plants and animals. They protect against storms, store tremendous amounts of carbon, provide water for agriculture, build up soils, and provide timber and medical plants. Unfortunately, **these ecosystems are rapidly disappearing**, mainly due to **infrastructure development**. As a result, increased coastal erosion and flooding led some European regions to reconstruct their deltas. It is estimated that protecting coastal wetlands could save the insurance industry around **EUR 50 billion** annually through reducing flood damage losses.

In the Interreg Europe project **DeltaLady**, European regions explored the potential of deltas' natural and cultural heritage, and the use of ecosystem services in river deltas to strengthen regional economies. The Romanian partner has had experience with wetland restoration in the Danube Delta, the largest fen area in Southern-Eastern Europe. **Over 51,000 ha have been restored** since 1993, amounting to 48% of the area of agricultural polders. Unfortunately, while restoration works are ongoing, concurrent transformation of wetlands into polders continues as well. Over the past ten years, 8,800 ha of wetlands have been lost. The new Danube Delta Biosphere Reservation Regulation 2023 should ensure stronger protection of existing wetlands and continuation of the restoration works.

GOOD PRACTICE 1: Restoration of salt marshes at La Pletera (Spain)



The saltmarshes of La Pletera (Spain) harboured a series of lagoons that were drained in 1987 in order to build an almost one kilometre-long promenade and six apartment blocks, of which only one was ever finished. Tons of rubble were dumped in the saltmarshes before the project was abandoned in the early 1990s. The area was subject to even more degradation after that.

The restoration of La Pletera has **regenerated the coastal saltmarshes and their typical natural structure**: parallel strips of coastal dunes, dune slacks, saline lagoons and saltmarsh vegetation. The rehabilitation concerned the elimination of the unfinished promenade, streets, services, infrastructures, breakwater and piles of rubble, and the return of this coastal system to its original state. The project aimed to demonstrate that, even in an area with great demand for residential land, it is possible to restore altered areas and reinstate their full ecological performance.

This practice is a very valuable example of **recovering coastal wetlands** and highly degraded habitats that are suffering from strong anthropic pressure due to their location. La Pletera sets an important precedent, in particular within the Mediterranean basin where coastal wetlands have been disappearing as beach tourism has increased since the mid-twentieth century.

[Click here to find out more about this practice.](#)



Image source: [Life Pletera](#)

Mediterranean wetlands are the most risk-prone, as the region is already **impacted 20% more by climate warming** than the rest of the world, with increasingly frequent heat waves, storms and droughts. The Mediterranean region is a global biodiversity hotspot, with wetlands supporting more than a third of species. However, 52% and 28% of its marine and freshwater biodiversity, respectively, has been lost since 1992, and **36% of its wetland-dependent species** are globally threatened. In addition to the changing climate, wetlands in the Mediterranean areas are under stress from intensive agriculture, which consumes two thirds of the region's freshwater, and from the impacts of tourism, property development and industry along the coastline.

To preserve wetlands and improve the current situation, local policymakers should **ensure effective use of international agreements, implement nature-based solutions**, such as ecosystem restoration and integrated management mechanisms (Integrated River Basin Management, Integrated Water Resources Management and Integrated Coastal Zone Management), **cooperate with the private sector** to ensure conservation measures are deployed, and **promote sustainable farming practices**.

With the number of freshwater wetlands declining rapidly, some are starting to build new, **constructed wetlands**. One of the reasons these are being built is to aid wastewater treatment. Constructed wetlands usually require manual adjustments to the amount of water in the system, so that the desired purifying qualities are achieved. The two main types of constructed wetlands include subsurface flow systems and free flow systems (which resemble the way a natural wetland works). In some instances, such as the example from Gorla Maggiore (here below), the two types are combined in a more complex solution.

GOOD PRACTICE 2: Constructed wetlands Gorla Maggiore (Italy)



Image source: [Network Nature](#)

Nature-based solutions, such as constructed wetlands, contribute to a wide scope of policy goals. In addition to increased water regulation efficiency, they also provide important benefits through the improvement of different ecosystem services, such as flood mitigation and increased biodiversity.

The combined sewer overflow-constructed wetland of Gorla Maggiore is located within the area's "Water Park". This **green infrastructure** is composed of a set of constructed wetlands on the shore of Olona River in an area previously used for poplar plantation. The site includes a pollutant removal area with a grid, a sedimentation tank and four vertical sub-surface flow constructed wetlands, a surface flow constructed wetland with multiple jobs (**pollution retention, buffer for flood events, maintenance of biodiversity and recreation**). Moreover, a recreational park with restored riparian vegetation, green open space, information panels, hiking and cycling paths and other services has been provided. The newly constructed wetlands and park perform as good as or even better than the grey alternative for water purification and flood protection.

[Click here to find out more about this practice.](#)

GOOD PRACTICE 3: Polderlandscape Lage Vucht (Netherlands)



Image source: [WAVE](#)

The large polder landscape Lage Vucht is located at the northside of Breda. Back in history, the Lage Vucht played an important role in the defense of Breda as the polder could be inundated to form a water defence line. The flooded area would be overseen from small fortifications (redoubts) on the Zwarte Dijk.

A polder is drained wetland and was used until recently for **agricultural purposes**. To get the right ecosystem, the polder has to **be supplied with water of low acidity**. Therefore, Waterakkers was constructed: a giant helophyte filter. The water has to be pumped into the polder. Rather than just engineering a plain solution, it was decided to make **the cultural and natural heritage of this area more comprehensible for visitors**. In the waterredoute, a modern, land art like interpretation of a redoubt, the flow of filtered water into the polder is visibly regulated. The realisation was a good example of collaboration between waterboard, the forestry commission and the ecologists and the heritage specialists of the municipality. An external spatial designer made the design while taking care of the motives of the stakeholders. The nature reserve of the Vuchtpolder was developed to stop the declining number of meadow bird species. First results from the nature reserve are positive.

[Click here to find out more about this practice.](#)

Preserving and restoring fragile ecosystems in the Ebro Delta

Interview with Nil Segura Alvarez, EURECAT, Spain (Land-Sea project)

In terms of ecosystems and nature restoration, what are the main challenges for the Ebro delta?

The Ebro delta, like many other deltas around the globe, has seen its sediment inputs decreased by 99% due to dam construction since the 60s. This lack of sediment, combined with natural dynamics, sea level rise, and deterioration of natural habitats, threatens not only the different ecosystems of the Ebro delta, but also the communities living in and around it and the economic activities associated with them. There is also a need to naturalize the coastline and make it permeable to marine storms and more resilient to sea level rise.

By recovering these natural habitats and sediment flow through the river, several ecosystem services would be improved, such as water quality, carbon sequestration, food provision, as well as flooding and erosion risk reduction.

Larger effort must be made also to control and prevent the entry of invasive species to this fragile and very valuable ecosystem.

In your view, what steps can local and regional authorities take to prioritise nature restoration and better benefit from the ecosystem services of the delta?

There is a need for local, regional, national, and international authorities to align priorities and to establish a **long-term strategy** to prioritize nature restoration. As said before, there are several ecosystem services that those habitats would provide to our society, and we should take advantage of new opportunities, like the EU Nature Restoration Law, to actively lead this change in nature conservation and become a point of reference for other regions. To do so we need different authorities to share the same vision and work cooperatively, which is not always the case.

To date, what impact could be achieved with the measures on coastal and wetland restoration in the delta?

Protecting and restoring the wetlands of the Ebro delta would not only benefit biodiversity (mainly birds), but also economy. Wetlands act as a protective barrier against marine storms and sea level rise, they are one of the most efficient carbon fixing ecosystems in the world (there is potential for establishing carbon offset schemes), they act as filters to improve water quality which would benefit habitat regeneration in the bays where heavily endangered species such as [Pinna nobilis](#) are struggling to survive.

Ultimately, the increasing interest in eco-tourism could trigger a shift in the region's economic activities – from productive/industrial systems to nature conservation-based eco-tourism, which would make the Ebro delta resilient to climate change. To achieve these goals, large scale restoration is needed, but one thing is clear: **the costs of not acting will far exceed what it takes to recover natural ecosystems now.**

***EURECAT** is the Technology Centre of Catalunya and has a strong track record in nature restoration and climate adaptation projects. The Climate Research Unit of EURECAT leads the creation of the **Climatic Resilience Center**, a consortium of academic, governmental, private and NGO partners working towards achieving climatic resilience.*

Peatlands

Peatlands are wetlands with a thick water-logged layer of soil made up of partly decomposed matter. They represent about a half of all wetlands on Earth and are considered one of the most valuable terrestrial ecosystems in climate change fight. While they **cover only 3-4% of the planet's surface, they store up to one third of soil carbon** (twice as much as the whole world's forest biomass). Beyond their carbon storage function, they provide many additional benefits. They store and filter water, slow peak flows and reduce the impact of floods. Their unique ecosystem is home to equally unique flora and fauna. Yet over **50 million hectares** have been converted to land used for intensive agriculture and forestry, eroded by overgrazing and used for mineral and peat extraction.

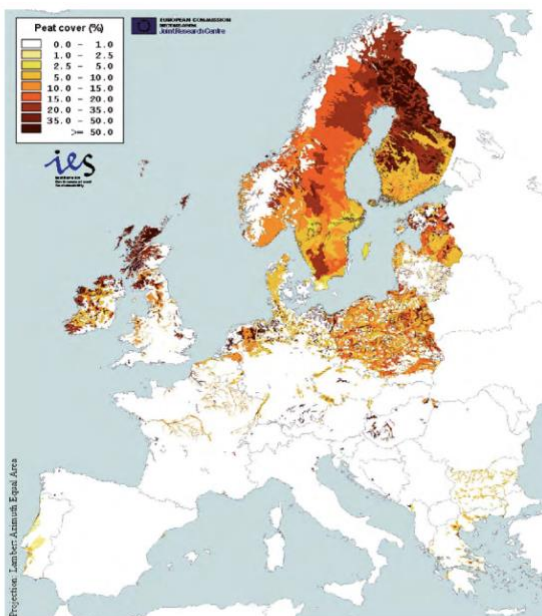


Figure 1. Peatland distribution in Europe (the map shows the relative cover (%) of peat and peat-topped soils in the soil mapping units (SMUs) of the European Soil Database)

Source: *Peatlands for LIFE*

Conservation and restoration

Priority should be given to conservation of pristine peatlands, which provide a vast number of valuable ecosystem services, and of which **close to 20% are currently protected**. In terms of restoration, typical actions include rewetting (restoring the water table that allows the re-establishment of a functional peatland ecosystem that accumulates peat and carbon by damming and closing drainage systems), elimination of invasive alien species, and reintroduction of peat-forming vegetation. Rewetting drained soils could capture up to 104 million tonnes of carbon annually.

In several European countries, large scale restoration works are underway, although these are addressing only a fraction of the damaged area. Noteworthy examples have been the restoration of 170 000 hectares of mires in the United Kingdom and **40% of Belgium's peatlands**. On page 14 of this policy brief is an example of peatland rehabilitation in Ireland. For detailed peatland restoration techniques, refer to the **Global Guidelines for Peatland Rewetting and Restoration** developed by Ramsar, or the **“Best Practice Book for Peatland Restoration and Climate Change Mitigation”**, developed by members of the LIFE Peat Restore Project.

GOOD PRACTICE 4: Peatland rewetting and wind energy (Germany)



Image source: [IRENES](#)

The municipality of Schwanewede is pursuing the goal of having **100% of its electricity consumption** covered by renewable sources of energy by 2030, and developed a wind farm to supply 12,000 private households with electricity. As a compensatory measure for the construction of the wind farm, an area of 3,000 m² has been reforested with a site-typical forest and 12 ha of a local drained moor has been rewetted. Built dams trap precipitated water, rewetting the moor area in the long term. The peatland restoration now not only **enhances the habitat for flora and fauna**; the development of the area back into a bog stops the release of carbon dioxide from the peaty soil caused by drainage and could lead to binding of the climate-damaging gas in the form of peat again in the long term. The measure thus makes a significant contribution to climate protection. The revitalisation of the peatland will be biologically monitored for 12 years.

Around 80 landowners had to agree to their land being withdrawn from use, since much of the land could not be used for agricultural purposes and thus had been more of a financial burden for the landowners, who were satisfied with the proposed solution to receive rent for their land for at least 20 years. In addition, the electricity supplier offers all residents in the vicinity of the wind farm a low-priced, locally tailored electricity tariff.

[Click here to find out more about this practice.](#)

UNEP developed a list of recommended actions to be adopted by policymakers as they develop national and regional **peatland policies and action plans**. They advise to:

1. **Develop and maintain data systems** on peatland extent, condition and uses (i.e. using National Wetland Inventories).
2. **Expand protected peatland** areas.
3. Place **buffer zones** around peatlands, so that potential risks can be prevented in time.
4. Strengthen **regulations** to prevent peatland drainage for agriculture and forestry, or peat extraction.
5. Introduce **plans to phase-out existing harmful operations** and establish **licences** requiring adapting more sustainable practices during the transition period.
6. Create **subsidies and fiscal mechanisms** that incentivize practices that support the protection, restoration and sustainable management of peatlands.
7. Disincentivise activities that are driving peatland degradation and conversion.

8. **Combine public and private sector** funding to scale-up the conservation, restoration and sustainable management of peatlands. A range of **green finance instruments**, together with carbon trading and other ecosystem market mechanisms have the potential to provide returns to investors and benefits to local populations.
9. Establish **monitoring frameworks** to ensure progress on conservation and restoration actions is tracked and reported.

Peatland restoration must consider ecological, social, economic and political factors. Public participation is essential, particularly if substantial concerns are anticipated. Without addressing all social and economic barriers, restoration will be short-lived and superficial. Restoration goals may not only include restoration of the full former ecosystem but may also aim at restoring selected ecosystem services. As different goals may conflict, they must be formulated concretely and in priority order. Lastly, it is important to raise awareness to achieve restoration at the necessary scale.

Peatland rehabilitation, Eastern and Midland Regional Assembly (Ireland)



The **Regional Spatial and Economic Strategy (RSES) 2019-2031** of the Eastern and Midland Region (EMR) in Ireland recognises that climate change poses a real threat to the functions of ecosystems, and that high biodiversity habitats such as wetlands and peatlands are key for both climate mitigation and adaptation measures, providing important carbon sinks, water attenuation and flood protection.



Image source: [EMRA](#)

As set out in the RSES, **peatlands are considered among the most important ecosystems in the world**, because of their key value for biodiversity, regulation of climate, water filtration and supply. It recognises that there has been significant damage to peatlands in the EMR region due to peat extraction and agricultural expansion, together with the associated drainage and burning related to these land uses.

In response to this, the policy instrument includes consideration of the potential contribution of peatlands to climate change mitigation and adaptation, ecosystem services and water management in its guiding principles for development on peatland areas. The Eastern and Midlands Regional Assembly (EMRA), partner in the **PROGRESS project**, worked to enhance the Strategy and its capacity to support the horizontal integration of ecosystem concerns into sectoral policies and plans. Project learnings informed RSES submissions on the **Midlands Pathway to Transition strategy**, the **Mid-Term Review of the National Peatlands Strategy** for Ireland, and the inclusion of a specific priority on peatland restoration in **Ireland's EU Just Transition Fund Programme 2021-2027**.

For the **Midlands Pathway to Transition strategy**, the focus on biodiversity and improved governance of ecosystem services was enhanced, with a focus on peatland rehabilitation. Through interregional seminars and workshops, the PROGRESS project revealed the importance of considering the wider ecosystem services

associated with our natural and cultural heritage in addition to economic and social considerations which were the focus of the strategy. Finally, the improved capacity of EMRA in relation to governance for ecosystem services developed through its participation in PROGRESS allowed it to include a specific priority dedicated to supporting the restoration and rehabilitation of peatlands and wetlands in the [EU Just Transition Fund Programme for Ireland 2021-2027](#).

Grasslands

Grassland covers approximately **40% of the global terrestrial area and 69% of the world's agricultural area**. In Europe, around **21% of the total surface area and 34% of agricultural land is covered by grassland**. Grasslands are among the most diverse ecosystems in Europe, ranging from desert-like areas in the southeast, to humid and nutrient-rich meadows in the northwest. They are very rich in flora and fauna, with as many as 80 different plant species per square meter.



Image source: [LIFE VivaGrass project](#)

Grassland habitats provide **important ecosystem services**, including erosion control, high water infiltration capacity, water purification linked to nitrate uptake, and support of wildfire control. They are essential for **feeding livestock**, while also offering **recreational opportunities**. They also act as important carbon sinks, storing carbon in the soil. However, they are under pressure from climate change effects, such as fires and longer periods of drought, as well as human impacts: changes in agricultural practices, infrastructure development and overgrazing. For these reasons, they are disappearing at an alarming rate and are considered one of **Europe's most threatened ecosystems**.

Grassland protection and restoration is essential for **carbon sequestration** and **biodiversity protection**. One [study](#) found that restoring open, grassy ecosystems in Germany could reduce the nation's plant extinction risk by up to 82%. Some protection measures are adopted under the EU Nature Directives and the [EU Pollinators Initiative](#). Most European grasslands are maintained through grazing and cutting, with rotational grazing considered one of the best nature-based solutions for grassland protection.

Valorising grass, which is often left unused, can create new opportunities for farmers and rural businesses. The **GO-GRASS project** co-financed by the Horizon 2020 to “develop **cost-effective and sustainable circular business models** considering social, economic and environmental circumstances in rural areas across Europe.” The obtained raw material will go into the production of bio-based products, replacing existing fossil-based alternatives, such as fertilisers or plastic packaging. Reclaiming otherwise lost natural resources could have a considerable impact on the reduction of EU-level greenhouse gas emissions. The project aims to replicate successful solutions on a large-scale, especially in remote communities with unexploited resources.

Incredible Grasslands

Benefits for people, nature and climate



Image source: [Plantlife](#)

GOOD PRACTICE 5: Viability of grasslands



The project, named “Integrated Planning Tool to Ensure Viability of Grasslands” (LIFE Viva Grass), aims to **prevent the loss of High Nature Value grasslands** and increase the effectiveness of seminatural grassland management, by developing the Integrated Planning Tool. The tool applies the ecosystem services approach to **support decision making** and **land use planning** by strengthening linkages between social, economic and environmental aspects of rural development policies and grassland management. The project also demonstrates opportunities for the multifunctional use of grasslands’ ecosystem services as a basis for sustainable development of rural areas.

The project was implemented in the three Baltic States, nine case study areas (two farms, four municipalities, two protected areas and one county) and by 16 partners including NGOs, scientific institutions, an IT company, local authorities, and protected area administrations. The **tool is not territory bound**, which means that it can be adapted to any other country outside the Baltics, given that the required data is available.

[Click here to find out more about this good practice.](#)

Policy recommendations

Examples from Interreg Europe projects and the wider Interreg Europe community can be a source of inspiration for many, and it can provide real benefits for those who wish to engage in the development of nature-based solutions at local level. A summary of the main lessons learned from the investigation of such experiences is provided below, in the form of advice for policymakers.

Policy and finance

- Use an **ecosystem services approach** to support decision making and land use planning by strengthening linkages between social, economic and environmental aspects of rural development policies and ecosystem management. Get inspired by a good practice from the [PROGRESS](#) project, the [Integrated Planning Tool](#), to ensure viability of grasslands.
- Integrate **concrete NBS provisions** in policies across different sectors
- Enable **financing** resources for NBS interventions: explore the ERDF, the JTF if applicable to your area, and other EU-funding programmes such as LIFE and Horizon Europe
- **Integrate concrete restoration measures for wetlands, peatlands and grasslands**. Legislative and regulatory targets are one of the most important tools available to municipalities and regions.

Mapping and monitoring

- **Develop tools for estimating impact**, benefits and cost-effectiveness of NBS in quantitative terms across ecosystems
- Dedicate research funding to **further knowledge and monitoring** of climate change mitigation potential of NBS across ecosystem types

Actions on the ground

- **Restore ecosystems**. Get inspired by the policy change from the [PROGRESS](#) project on the rehabilitation of peatlands in Ireland. Explore the solution employed in the municipality of Schwanewede ([Germany](#)), where they have combined rewetting of peatland with a wind energy project ([IRENES](#) project). Inspiration for coastal wetlands restoration can be gained from [La Pletera](#), under the [Land-Sea](#) project.
- **Construct wetlands, floodplains** and other reservoirs to prevent flooding. Get inspired by good practices in the [AQUARES](#) project (the constructed Gorla Maggiore wetlands) and the [WaVE](#) project, where a part of a drained [wetland](#) was rewetted.

Empowering and cooperating with stakeholders

- Ecosystem restoration must consider ecological, social, economic and political factors. **Public participation** is essential, particularly if substantial concerns are anticipated. Without addressing all social and economic barriers, restoration will be short-lived and superficial.
- Support **targeted training** and sharing of NBS best practices with key stakeholders
- **Involve citizens** by making information available, actively communicating, providing consultation and ensuring active participation. Make use of technology and try innovative methods of communication.
- **Raise citizen and stakeholder awareness** about the importance of nature restoration. Use a wide range of communication channels for the most reach.
- **Collaborate with NGOs** and private sector to ensure protection and restoration of ecosystems, such as wetlands, peatlands and grasslands. Join forces for bigger impact.

Interreg Europe resources

The Interreg Europe Policy Learning Platform experts provide a tailored set of resources, contacts, or in-depth analyses to help you find the answers you are looking for. Explore our services that can help you solve regional policy challenges.



Via the **policy helpdesk**, policymakers may submit their questions to receive a set of resources ranging from inspiring good practices from across Europe, policy briefs, webinar recordings, information about upcoming events, available European support and contacts of relevant people, as well as matchmaking recommendations and peer review opportunities.



A **matchmaking** session is a thematic discussion hosted and moderated by the Policy Learning Platform, designed around the policy needs and questions put forward by the requesting public authority or agency. It brings together peers from other European regions to present their experience and successes, to provide inspiration for overcoming regional challenges.



Peer reviews are the deepest and most intensive of the on-demand services, bringing together peers from a number of regions for a two-day work session, to examine the specific territorial and thematic context of the requesting region, discuss with stakeholders, and devise recommendations.

Interreg Europe Policy Learning Platform information

- Policy brief on [Rivers and wetlands: drivers of sustainable regional development](#)
- Policy brief on [Nature restoration: Forest ecosystems](#)
- Policy brief on [preserving and restoring biodiversity](#)
- Policy brief on [good governance for biodiversity](#)
- Webinar recordings from the climate adaptation series on [wetland restoration](#) and [coastal restoration](#)
- Workshop on [bringing back nature to the city](#)
- News on [Dam removal: Towards 25,000 km free flowing rivers](#)
- News on [Bringing back nature across Europe](#)

Other resources

- [The European Green Deal](#)
- [The European Climate Law](#)
- [The EU Biodiversity Strategy](#)
- [The EU Nature Restoration Law](#)
- [Global Peatlands Assessment: The state of the World's peatlands](#), UNEP
- [Global guidelines for peatland rewetting and restoration](#), Ramsar
- [Best practice book for peatland restoration and climate change mitigation](#), developed in the LIFE Peat Restore Project
- [Go Grass White paper](#)
- [Petland Atlas 2023](#)

Interreg Europe Programme

Interreg Europe is an interregional cooperation programme co-financed by the European Union. With a budget of 379 million euros for 2021-2027, Interreg Europe helps local, regional and national governments across Europe to develop and deliver better policies through interregional cooperation projects and its Policy Learning Platform services. The programme promotes good practice sharing and policy learning among European regions in 29 countries – the EU27, Norway and Switzerland. Interreg Europe contributes to the EU cohesion policy together with the other European Territorial Cooperation programmes known as Interreg.

Interreg Europe Policy Learning Platform

The Policy Learning Platform is the second action of the Interreg Europe programme. It aims to boost EU-wide policy learning and builds on good practices related to regional development policies.

The Platform is a space where the European policy-making community can tap into the know-how of regional policy experts and peers. It offers information on a variety of topics via thematic publications, online and onsite events, and direct communication with a team of experts.

Community members can use the free services we propose to policymakers looking for tailored advice on their policy challenges.

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