

# RESTORING LAKE ECOSYSTEMS TO SUPPORT MORE EFFECTIVE IMPLEMENTATION OF EU POLICIES

## Key messages

- There are more than 500,000 natural lakes larger than one hectare in Europe, forming diverse and vibrant ecosystems that sustain life, culture and economy across the continent.
- Despite their immense value, Europe's lakes remain undervalued and increasingly vulnerable to pollution, emerging contaminants, hydrological alteration, over-abstraction and climate change.
- Lake restoration is a largely untapped pillar of the restoration economy. Realising its potential requires coordinated policies and targeted funding that treat lake restoration not as a niche activity, but as a strategic investment with significant ecological and socio-economic benefits.
- The 2026–30 EU policy cycle provides a timely opportunity to integrate lakes more explicitly into EU policy implementation, delivering benefits for water quality, nature restoration, climate adaptation, and blue economies, both locally and for downstream coastal communities.

## The value of Europe's lakes

Europe's lakes are essential natural assets that deliver preparedness for water, food and energy security and underpin public welfare, economic activity and freshwater biodiversity

- They supply drinking and irrigation water for millions of people and farmers, support inland fisheries, sustain tourism and recreation economies, and enhance the health and well-being of local communities.
- Lakes cool cities and landscapes, moderate local climates and contribute to regional attractiveness and economic development, particularly in lake-rich regions.
- Lakes provide important habitat for many of Europe's most threatened freshwater biodiversity, including internationally important populations of wetland birds, and priority fish species such as European eel.

Europe's lakes play a critical role in the continent's climate and water resilience

- Lakes reduce the vulnerability of communities to climate extremes through buffering floods and droughts, and stabilising water availability for households, agriculture, energy production and industry.
- Healthy lake ecosystems filter nutrients and pollutants and reduce treatment costs for drinking water.
- Restored lakes store more carbon in sediments over long timescales, contributing to climate mitigation.

**Together, these functions make lakes indispensable components of Europe's natural infrastructure. Protecting and restoring lake ecosystems is not only an environmental imperative, but a cost-effective investment in economic resilience and preparedness for water, food and energy security.**

## The State of Europe's Lakes

Many of Europe's lakes are under growing pressure from multiple, interacting stressors across their catchments. Over-abstraction and altered inflows and outflows disrupt natural water balances, while intensified agricultural and forestry land use in lake catchments increases nutrient and sediment runoff. At the same time, the loss and degradation of wetlands and floodplains reduces the landscape's capacity to buffer floods, retain sediments and filter pollutants before they reach lakes.

Lakes are particularly sensitive to these pressures because they act as sinks for water, nutrients and contaminants. Pollutants accumulate in lake sediments, creating legacy nutrient and chemical loads that can continue to affect water quality and ecosystem functioning for decades. As a result, lakes are increasingly affected by harmful algal blooms, which disrupt drinking-water supply, recreation and tourism, and undermine fisheries. Emerging contaminants, including PFAS, are also being detected in lake sediments, raising growing concerns for aquatic food webs, food safety and inland fisheries.

These pressures are reflected in EU-wide status assessments. According to the latest reported data for the Water Framework Directive<sup>1</sup>, only **54%** of assessed EU lakes achieve good ecological status, and only **19%** reach good chemical status, with **36%** of unknown chemical status. Diffuse pollution from agriculture is identified as one of the most widespread pressures, linked to unsustainable land-management practices and excessive nutrient inputs. Reporting under the Nitrates Directive further shows that **32% of lakes at EU level are eutrophic**, highlighting the persistent scale of nutrient enrichment affecting lake ecosystems. Together, these findings indicate that lake degradation remains a systemic challenge rather than an isolated problem.

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<https://www.eea.europa.eu/en/analysis/maps-and-charts/wise-wfd-dashboards>

## A Changing Climate Is Increasing Risks for Europe's Lakes

Climate change is intensifying these existing pressures and accelerating lake degradation across Europe. Lakes are warming rapidly, with surface water temperatures increasing faster than many marine and coastal systems. As a result, climate-driven impacts are becoming more frequent and severe, including:

- More frequent and intense harmful algal blooms in response to warmer temperatures
- Stronger deoxygenation of deep waters, reducing habitat of rare fish and impacting fisheries
- Increased evaporation affecting water supplies for drinking, irrigation and hydropower
- Increased magnitude and frequency of flood pulses during extreme rainfall events

These pressures interact and reinforce one another, pushing many lakes toward ecological tipping points from which recovery becomes increasingly difficult and costly. As lakes are essential supplies for drinking water, food and energy security, it is imperative to take action to preserve the services they provide.



## Connecting EU Policies Around Europe's Lakes

Addressing risks to lakes requires catchment-wide governance that reduces upstream pressures while restoring lake ecosystem resilience. Healthy lakes depend on how water, nutrients and sediments are managed across their catchments, requiring coordinated action from land use to shoreline and in-lake management.

By aligning water, nature, agriculture and climate policies with a source-to-sea approach, the EU can simultaneously deliver cleaner water, healthier ecosystems and greater climate resilience – in lakes and downstream coastal waters. The upcoming

2026–30 policy cycle offers a critical window to translate this systems approach into concrete restoration action through coordinated planning and investment.

Despite their central role in water and food security, biodiversity and climate resilience, lakes remain largely implicit in recent EU legislation – including the Nature Restoration Regulation and the Water Resilience Strategy – risking their contributions being overlooked in policy implementation.



## Key EU Policies for Restoring Europe's Lakes

EU Policy	Relevance & Key Provisions for Lakes	Opportunities & Recommendations
<b>Bathing Water Directive</b>	Lakes designated as bathing waters are subject to monitoring, classification and management of pollution sources affecting public health and recreation.	<ul style="list-style-type: none"> <li>● Integrate lake restoration and catchment nutrient reduction measures to improve bathing water quality.</li> <li>● Use monitoring as an early warning signal for eutrophication and harmful algal blooms.</li> <li>● Align management measures with WFD objectives and lake restoration actions in RBMPs.</li> </ul>
<b>Common Agricultural Policy (CAP)</b>	Shapes land use and nutrient management across lake catchments through conditionality, eco-schemes and agri-environment-climate measures. Critical for reducing nutrient runoff driving eutrophication.	<ul style="list-style-type: none"> <li>● Target existing eco-schemes and agri-environment measures to lake catchments.</li> <li>● Align CAP investments with RBMP and NRR objectives.</li> <li>● Redirect funding toward nature-based solutions that retain nutrients and water in the landscape.</li> <li>● For future CAP plans, prioritise investments that protect water quality and ecological function of lakes (e.g. buffers, wetlands and ponds).</li> </ul>
<b>Drinking Water Directive (DWD)</b>	Requires catchment-based risk assessment and preventive source protection for abstraction points (Articles 7–8), to be implemented by July 2027. Many drinking water sources are lakes.	<ul style="list-style-type: none"> <li>● Integrate lake restoration into drinking water risk assessments.</li> <li>● Prioritise catchment measures that reduce nutrient and chemical inputs – e.g. native afforestation of catchments, peatland and wetland restoration.</li> <li>● Reduce long-term treatment costs with preventive action.</li> </ul>
<b>Water Resilience Strategy (WRS)</b>	Establishes a source-to-sea approach to restoring the water cycle, strengthening drought and flood resilience and promoting nature-based solutions. Lakes are key freshwater storage and buffering assets.	<ul style="list-style-type: none"> <li>● Recognise lakes as strategic freshwater storage, buffering and regulation assets</li> <li>● Embed lake basin management and governance more explicitly in drought, flood and water-security planning.</li> <li>● Prioritise catchment-to-lake nature-based solutions in resilience investments.</li> </ul>
<b>Nature Restoration Regulation (NRR)</b>	Sets binding restoration targets contributing to restoring at least 20% of the EU's land and sea areas by 2030 under Article 4 and ecosystem-specific obligations (Articles 5–13).	<ul style="list-style-type: none"> <li>● Embed lakes and associated wetlands explicitly in National Restoration Plans.</li> <li>● Ensure their contribution to Article 4 targets.</li> <li>● Link lake restoration to Natura 2000 and biodiversity objectives.</li> </ul>
<b>Nitrates Directive</b>	Regulates agricultural nutrient pollution through Action Programmes in Nitrate Vulnerable Zones; requires monitoring and reporting on eutrophication.	<ul style="list-style-type: none"> <li>● Strengthen implementation in lake catchments.</li> <li>● Align Action Programmes with RBMP lake objectives.</li> <li>● Prioritise upstream nutrient reductions.</li> </ul>
<b>Water Framework Directive (WFD)</b>	Core legal framework requiring good ecological and chemical status; implemented through River Basin Management Plans (3 <sup>rd</sup> cycle 2022–27; 4 <sup>th</sup> cycle 2028–33).	<ul style="list-style-type: none"> <li>● Engage in public consultations to better integrate lake restoration and conservation measures in 4<sup>th</sup> RBMPs.</li> <li>● Strengthen measures addressing eutrophication and hydromorphological pressures.</li> <li>● Improve lake-specific monitoring and early-warning.</li> </ul>

# What Mission Lakes is doing to support these policy goals?

- Demonstrating innovative measures – Nature-based solutions and circular economy measures are being demonstrated operationally in lake basin management at 20 lake basins across Europe.
- Showcasing best-practice governance, including demonstration basins where this is inclusive of downstream coastal communities in a source-to-sea approach.
- Promoting citizen science to enhance monitoring of water quality and biodiversity, and increase engagement in lake basin management, restoration and planning under the WFD.
- Delivering prioritisation frameworks and guidance on effective measures for Mission stakeholders and Member State leads developing National Restoration Plans for the NRR.
- Demonstrating the cost-effectiveness of lake restoration to enhance the blue economies around lakes and deliver climate resilience to unlock private financing.



## Additional resources



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