

## Abstract

Wetlands, particularly peatlands, hold a central position at the intersection of groundwater, surface water, and terrestrial landscapes. To enhance climate adaptation and mitigation, the aquatic ecosystem services provided by peatlands play a central role in the climate policies at EU and national scales.

In these policies, the measure of rewetting degraded peatlands under land use is explicitly mentioned. Peatland hydrology, especially emphasizing the role of groundwater related processes, is recognized as the key driver of vital ecosystem services peatlands provide. However, basic understanding of how hydrology impacts peatland functioning at the European scale, as well as detailed mapping products on groundwater and land use are currently lacking.

To address these knowledge gaps, ECO-WADE focuses on three key ecosystem services provided by peatlands:

- **Water Purification:** Peatlands play a significant role in water quality regulation by reducing excessive levels of reactive carbon, nitrogen and phosphorus, thereby mitigating eutrophication and improving water quality for drinking water purposes.
- **Water Regulation:** Peatlands act as natural reservoirs, storing and releasing water. This function is crucial for enhancing resilience during drought periods, sustaining environmental flows, and safeguarding the supply of clean drinking water.
- **Climate Regulation:** Peatlands are essential in capturing, storing, and preserving carbon, making them integral to national and global climate change mitigation strategies.

The overarching objective is to investigate the connections between hydrology and the three selected ecosystem services via case studies across four countries. High-resolution data products that comprehensively map peatland hydrology will be generated at pan-European scale. These include maps of water table depth, drainage and land use.

The potential impact peatland rewetting has on the three selected ecosystem services will be analyzed through a combination of field observations, data analysis and modelling carried out across case studies.

ECO-WADE will collaboratively develop an ecosystem services assessment tool with key stakeholders while acknowledging the wide variability in peatland functioning across Europe.

ECO-WADE recognizes the importance of a European perspective, as climate adaptation and mitigation require cross-country collaboration and coordination and will therefore develop national storylines to illustrate the historical utilization of peatlands, their current state, and their significance in current policy frameworks.

A diverse group of national agencies overseeing the planning and implementation of rewetting projects will be interviewed for this purpose. All knowledge and data generated within ECO-WADE will be synthesized to co-design and co-develop an assessment tool of multifunctional peatlands to facilitate a site comparison with respect to potential impacts of rewetting as well as climate change.

Furthermore, ECO-WADE aims to disseminate the obtained knowledge and generated data products effectively to decision makers and landscape planners in order to enhance the effectiveness of rewetting initiatives.



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### ► Project partners

- VRIJE UNIVERSITEIT AMSTERDAM - THE NETHERLANDS
- THE UNIVERSITY OF LIVERPOOL - UNITED KINGDOM
- TRINITY COLLEGE DUBLIN - IRELAND
- UNIVERSITY OF TARTU - ESTONIA
- UPPSALA UNIVERSITY - SWEDEN
- GEOLOGICAL SURVEY OF FINLAND - FINLAND

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3 years

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peatland hydrology  
groundwater; water quality  
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climate change adaptation

## KEYWORDS