

Context

Peatlands are wetland ecosystems that store vast amounts of carbon and regulate water cycles. When intact, they act as long-term carbon sinks; when drained or degraded, they release CO₂, methane and nitrous oxide, increasing climate risks such as floods, droughts and wildfires.

Today, around 12% of peatlands globally and over 90% in Central Europe are degraded. Forested peatlands are especially complex systems, with strong variability in hydrology, soils, nutrients and management practices, making sustainable management and restoration particularly challenging.

Open Labs

ForPeat operates 8 Open Labs across Europe, where forest peatland management and restoration practices are tested under real conditions.

- 1 Sanginjoki, Kivalo, Lettosuo & Ylpässuo, Finland
- 2 Rumba, Estonia
- 3 Weerribben Wieden National Park, Netherlands
- 4 Karlstift, Austria
- 5 Biebrza National Park, Poland
- 6 Paul da Gouxa, Portugal
- 7 Alpe di Villandro, Italy
- 8 Uppsala, Sweden



The project

ForPeat addresses these challenges by the sustainable management, monitoring and restoration solutions for forested peatlands to enhance carbon sequestration, biodiversity and water quality. By combining field monitoring, modelling tools and nature-based solutions, the project supports climate-resilient forest management while addressing key trade-offs between tree growth, soil carbon losses, methane emissions and ecosystem health.

From Measurement to Management

Across all Open Labs, ForPeat combines field measurements, modelling, and stakeholder engagement to evaluate trade-offs and co-benefits of forest peatland management.

Greenhouse Gases & Carbon

- ▶ Measure CO₂, CH₄ and N₂O fluxes using eddy covariance towers and chamber methods
- ▶ Quantify carbon balances under different forest management and restoration practices

Hydrology & Water Quality

- ▶ Monitor water levels, flows, and retention capacity
- ▶ Assess nutrient, dissolved organic matter and heavy metal leaching

Biodiversity

- ▶ Evaluate biodiversity responses to forest management and restoration actions

Soil

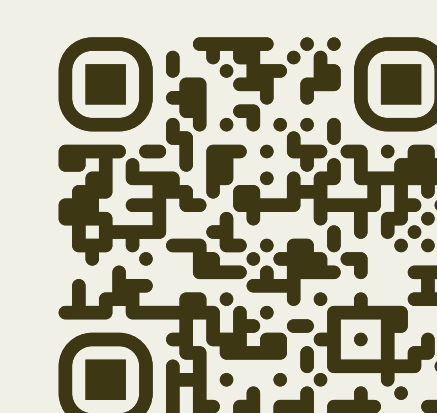
- ▶ Analyse peat soil properties and nutrient dynamics
- ▶ Assess impacts on soil microbial communities

Social & Governance

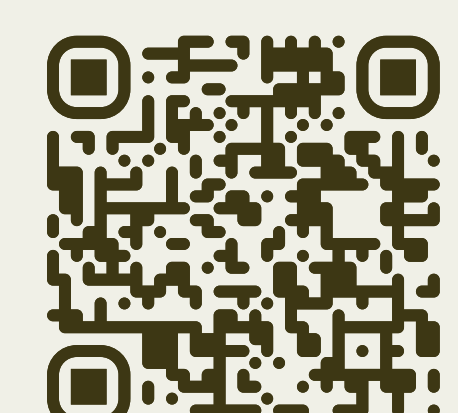
- ▶ Assess needs, flexibility and acceptance of management options among land-owners, policymakers and industry

Integration & Decision Support

- ▶ Model trade-offs and co-benefits between carbon sequestration, biodiversity, water quality and socio-economic outcomes Support evidence-based decision-making for scalable forest peatland management
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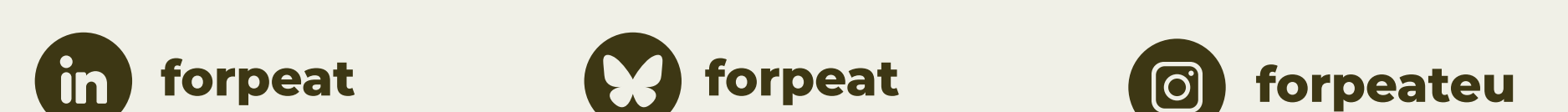


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