

ReStore: Assessing the effects of peatland restoration measures on ecosystem carbon exchange and storage

This project, led by NORCE Research AS in collaboration with COWI AS, Western Norway University of Applied Sciences (HVL) and The Norwegian Institute for Nature Research (NINA), will investigate the effect of different peatland restoration measures on greenhouse gas exchange (uptake and release) and carbon storage over time. This will provide an important knowledge base for decision-makers and land-use managers on the short- and long-term effectiveness of restoration measures on carbon uptake and storage and thus, guidance on implementing the most efficient restoration measures in ongoing and future development projects and peatland restoration.

Peatlands store large amounts of carbon in their soils and provide a multitude of other ecosystem services, including preserving biodiversity, minimising flood risk, and ensuring safe drinking water. However, these vital ecosystems have historically been degraded through landuse change and are still under pressure from development. Peatland degradation leads to the release of large quantities of greenhouse gases and biodiversity loss. Hence, peatland conservation and restoration have globally emerged as a key solution to reduce climate change and increase biodiversity.

Our approach

Over 2026 and 2027 we will target several peatland restoration sites in Norway with different restoration ages, meaning time since restoration measures were implemented, to study how a variety of restoration measures impact greenhouse gas emissions and carbon storage.

- We will assess the effect of active revegetation, addition of Sphagnum moss, on greenhouse gas exchange in peatland restoration sites.
- We will examine how redistribution of peat after road construction has affected greenhouse gas uptake and release by comparing restored-managed, restoredunmanaged, and undisturbed peatland areas.
- We will study the long-term effects of peatland restoration measures on carbon accumulation, storage and carbon exchange

Expected outcomes

We will provide much needed knowledge on how different peatland restoration measures and time affects carbon uptake and storage in restored peatlands. The project will result in contributions to the scientific community through several scientific publications and presentations at international conferences. Furthermore, the results will be communicated to decision makers and the larger public through a dedicated project website, popular science articles, newsletters and social media.