

Greenhouse gas removal by accelerated peat restoration

GGR-Peat is one of five projects testing innovative methods of removing greenhouse gases (GHGs) from the atmosphere as part of a £30 million greenhouse gas removal (GGR) research programme funded by UKRI. Peatlands are carbon-rich wetlands that occupy 12% of UK land area and currently store 3 billion tonnes of carbon (the same as the forests of the UK, France and Germany combined). However, for many years peatlands have been losing this carbon to the atmosphere, as a result of human disturbance via drainage, forestry, overgrazing, and peat extraction. By re-establishing, optimising and enhancing conditions that lead to peat formation, healthy peatlands will be restored and CO₂ will be trapped. Pwllpeiran is one of three demonstrator sites testing interventions that have the potential to accelerate peatland recovery. The associated research is taking place on an area that was formerly drained and agriculturally improved, but which has reverted over time to purple moorgrass/rush-dominated bog. The other two demonstration sites are on i) a degraded heather-dominated bog in the South Pennines, and ii) a horticultural farm near Doncaster.



The large-scale experimental plots that have been set up at Pwllpeiran are testing combinations of removing existing vegetation, planting Sphagnum mosses (a keystone species for this type of ecosystem), adding biochar, and adding non-CO₂ GHG emission suppressants (such as gypsum). We are working in collaboration

with colleagues from the Centre for Ecology and Hydrology (CEH), the University of Manchester and the University of East London to quantify the effects of the different treatments. GHG emissions are being measured regularly, along with plant cover and biomass, soil structure and infiltration rates, and insect numbers and diversity. Staff at Pwllpeiran are also contributing to project workpackages evaluating social, political and economic pathways to GGR implementation and routes to sustainable scalability.

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