

EIP-AGRI Operational Group Farm Carbon - Experimental Investigations of Results-based Payments for Carbon Farming of Peatlands under Agricultural Management

Bottom-up/grassroots solutions to reducing GHG emissions from peat grasslands and sequestering carbon in other habitats in Ireland

EAFRD-funded projects

Location: Camcor, Little Brosna and Silver Rivers, Irish Midlands, Ireland

Programming period: 2014-2020

Priority: P4 – Ecosystems management

Focus Area: Biodiversity restoration, preservation & enhancement

Measures: M16 - Cooperation

Funding: RDP support - 1 147 000 (EUR)

Timeframe: 2021 to 2023

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dairy family farms, ranging from large-scale intensive operations to more extensive farm-holdings including organic ones. Each farm has an area of peat pasture within the catchments of the Camcor, Little Brosna and Silver Rivers in the Irish Midlands.

In the context of the project, the means of achieving GHG emissions reduction and carbon sequestration include investigating an integrated quantification of three 'pillar' measures of environmental quality (i.e. biodiversity, greenhouse gas emissions and water quality) to underpin public and/or private results-based payments for farmed peatlands; development of an Irish Peatland Code to provide private finance for restoration of other peatland habitats; and conducting Ireland's first paludiculture trials to underpin a future eco-food scheme.

Project results

- > Peatland rewetted by the end of 2023 should total 40 hectares of peat pasture, 10 hectares of cutover, cutover wood and fen and five hectares of blanket bog. This will result in an equivalent of 320-690 avoided tCO₂e emissions from 85K tonnes of stored carbon.
- > 2 000 m² of new pond habitats will have been created and a landscape-level restoration plan for Ballinamoe Bog will see the rewetting of a 40-hectare bog complex of high bog, cutover and cutover wood resulting, in avoided emissions of about 200 tCO₂e and locking in 120K tonnes of carbon.

Summary

Agriculture contributes a disproportionate 32% of Ireland's GHG emissions, with peat grasslands constituting perhaps the largest and as yet uncounted proportion of this. The 23 participating farms in this EIP-AGRI Operational Group are a combination of beef and



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Key lessons and recommendations

- All measures should be specifically tailored to each farm and provide a range of options for the rewetting of peat grasslands (and other habitat improvement measures).
- Farmers' opinions and concerns must be extensively solicited and addressed carefully.
- The maximum environmental outcomes can be achieved through a broad and deep ecological knowledge to incorporate best conservation practices coupled with a common sense (non-dogmatic) approach to balance measures proposed with standard farming practices and objectives.

Context

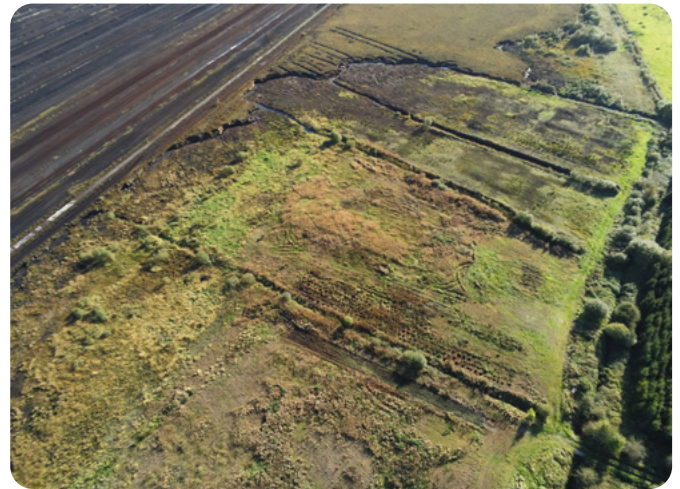
The EIP-AGRI Farm Carbon project stemmed from a call to reduce Greenhouse Gas (GHG) emissions from an estimated 350 000 hectares of Ireland's drained peat grasslands which emit up to an estimated eight million tonnes of carbon dioxide per annum. These grasslands are also a significant source of water pollution in the form of Dissolved Organic Carbon (DOC) and nutrients. Furthermore, the long-term trend in farm incomes is one of decline, meaning that most smaller farmers are part-time only, which threatens the viability of farmsteads, farm succession and the wider rural community. Lastly, against a background of universal decline in Ireland's biodiversity, farm birdlife associated with wetland habitats is the most threatened cohort, indicating a similar decline in other groups of wetland plants and animals.

The 23 farms participating in this project are a combination of beef and dairy family farms, ranging from large-scale intensive operations to more extensive farm-holdings, including organic ones. Each farm has an area of peat pasture within the catchments of the Camcor, Little Brosna and Silver Rivers in the Irish Midlands.

Objectives

The project is investigating bottom-up/grassroots solutions to reduce GHG emissions from peat grasslands and sequester carbon in other habitats in a manner that will:

- raise farmer awareness (and that of the wider public) regarding the sustainable management of peatlands and other farm habitats;
- diversify farm income streams through results-based payments and increase farm profitability by reducing inputs; and,
- enhance the environmental performance of farms in the areas of biodiversity, water quality, carbon storage and soil health.



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Activities

- Initial surveys have been carried out on the participating farms to determine baseline measures of biodiversity (plants, birds, bats), carbon stocks (peat depth and carbon content), physical, chemical and biological soil quality with a scope to match interventions to site properties, GHG emissions, water quality (biological and chemical quality), plant productivity (by multi-spectral drone) and above-ground carbon storage (by LIDAR drone). The project has been integrated with other research work, namely the NUIG-Teagasc project ReWet, providing detailed measurements of water table levels on eight farms and eddy covariance tower monitoring of an improved peat pasture via NASCO (National Agricultural Soil Carbon Observatory).
- Farmers have undergone online training and on-site workshops (e.g. on multi-species grasslands, peatland management, etc.) and social impact studies conducted by interview to identify key issues that need to be addressed to promote the necessary cultural shift away from field drainage towards 'rewetting'.
- Public awareness of the issues has been promoted via public talks at national conferences and events, articles and blogs, websites, social media and pieces on national television.
- Survey results have been collated to produce Whole Farm Plans addressing all on-farm habitats (peatlands, hedgerows, woodlands and pastures) from which farmers select their chosen improvement measures to increase carbon sequestration, reduce GHG emissions, enhance biodiversity and/or improve water quality.
- Mitigation/restoration measures have been implemented. These include habitat creation, rewetting and improvement across farmed



and marginal peatland habitats, hedgerows, meadows, ponds and woodlands as well as results-based scorecards for each of these.

- Follow-up field surveys will determine the new results after the implementation of the chosen improvement measures. The differences between measurements before and after implementation of remedial actions (e.g. rewilding, partial/full rewetting, paludiculture, etc.) will establish the new Shannon value (an index of biological variability).
- Additional qualitative sociological research will further investigate motivators and barriers to building the trust between farmers and organisations they work with, to strengthen future collaboration by fully addressing all issues raised by farmers.
- A combination of methods, arguments and tools have been developed to enhance the sustainability of the whole farm, but in particular the farmed peatland habitats (e.g. partial/full rewetting, rewilding, paludiculture trials etc.) to provide alternative income streams to farmers. These include a range of Water Table Management (WTM) measures to address a range of farmed peatland scenarios and farming practices.
- A literature review and data mining has been conducted to analyse GHG emission trends in order to produce tier two to three emission factors for Irish peatlands and for the subsequent prediction of the effect of changes in farm management on GHG emissions and optimisation and farmer benefit following the adoption of such measures.

Main results

- Peatland rewetted by end of 2023 should total 40 hectares of peat pasture, 10 hectares of cutover, cutover wood and fen and five hectares of blanket bog (equivalent to 320-690 avoided tCO₂e - tonnes of CO₂ equivalent - emissions from 85K tonnes of stored carbon).
- 2 000 m² of new pond habitats will have been created and a landscape-level restoration plan for Ballinamoe Bog will allow the rewetting of a 40-hectare bog complex of high bog, cutover and cutover wood, resulting in avoided emissions of about 200 tCO₂e and locking in 120K tonnes of carbon.
- An Irish Peatland Code drafted for peat grasslands (with future inclusion of additional peatland habitats) for deployment in the voluntary carbon market, including worked case studies of Group Project Designs of farms for high quality (stacked) offsetting from implementation of emission reduction measures via water table management of peat soils and other actions.
- New paludiculture crops will be under trial in the areas of pasture, floristry, forestry, fruit, vegetables, construction and clothing materials to identify the most promising for future production.

- 10K followers on social media channels and a series of awareness-raising films on peatlands, sustainable management of farmed peatlands and other farm habitats.
- A range of suitable solutions, arguments and case studies for appropriate water table management (partial/full rewetting, paludiculture, etc.) of peat pastures has been developed based on extensive discussions and interviews with farmers to support the cultural shift from drainage to rewetting and achieve the desired reduction in GHG emissions. This includes a staged, results-based payment to farmers which maintained a supply of grazing for livestock and gave farmers control of the process.
- A range of other measures across farm hedgerows, meadow, scrub and woodland to improve biodiversity and increase carbon sequestration, for example, installation of filtration ponds, hedge-laying, etc

Key lessons and recommendations

- All measures should be specifically tailored to each farm and provide a range of options for the rewetting of peat grasslands (and other habitat improvement measures).
- Farmers' opinions and concerns must be extensively solicited and great care taken to properly address these. However, in the first instance the participating farmers have a keen first-hand awareness of biodiversity loss and climate change and consequently show a great interest, enthusiasm and commitment to the work being undertaken.
- The maximum environmental outcomes can be achieved through a broad and deep ecological knowledge to incorporate best conservation practices coupled with a common sense (non-dogmatic) approach to balance measures proposed with standard farming practices and objectives.
- As the project developed, the need for additional competencies emerged and these were identified and brought into the team as required.
- Future projects would place a significant emphasis on full evaluation and review of partner performance to ensure suitability of their contributions with strongly worded options to enforce contractual obligations.

Additional information:

greenrestorationireland.coop



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