

CASE STUDY

CUSTOMER

The Welsh Government

DELIVERABLE

Environmental surveys
across Wales

Innovative new monitoring
and reporting methods

OUTCOMES

Exemplar monitoring and
evaluation of agri-
environment schemes

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GMEP is regarded as an exemplar of good practice. This programme has been identified at the UK, European and International level as being at the forefront of the ecosystem approach to evidence capture and scheme evaluation."

Rebecca Evans

Deputy Minister for Farming
and Food, Wales



Supporting farmers to deliver a more sustainable Wales

Evaluating Wales' largest environmental resources and services scheme

The challenge

Agriculture covers 81% of Welsh land – this makes farmers among the most critical stakeholders in Welsh Land Use policy. Meeting the demand for food, improving biodiversity, reducing pollution and greenhouse gas emissions and also adapting to climate change is a huge challenge.

The Welsh Government established the Glastir sustainable land management scheme to help balance these needs, providing farmers and land managers with financial support to implement environment-friendly practices.

The research

To provide continuous feedback on Glastir the Welsh Government commissioned the Centre for Ecology & Hydrology (CEH) to lead a parallel Glastir Monitoring and Evaluation Programme (GMEP) in partnership with 20 other organisations.

Specialist teams survey 300 1km squares across Wales over four-year periods, collecting data on greenhouse gases, freshwater quality and biodiversity, pollinating invertebrates, birds, habitats, soils, landscapes and historic features. These surveys provide evidence of change in response to Glastir and other pressures such as climate change and air pollution.

CEH and partners combine this information with historic data from other specialist monitoring programmes, providing an invaluable integrated understanding of the whole ecosystem. Models developed during GMEP forecast the improvements Glastir management expects to deliver so that adjustments can be made to maximize impact.



**Centre for
Ecology & Hydrology**

NATURAL ENVIRONMENT RESEARCH COUNCIL

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The reliable, robust scientific evidence gathered by GMEP allows the effectiveness and the value for money of Glastir to be monitored which is extremely important, especially for farmers and land managers to see what is being achieved through being in the Glastir scheme."

Bernard Llewellyn
NFU Cymru Rural Affairs
Board Chairman



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Outputs from GMEP include the application of new molecular techniques for soil biodiversity, mobile flux towers for measuring greenhouse gases, and a unified peat map for Wales to improve targeting of payments when negotiating Glastir contracts.

Other GMEP outputs include a Priority Bird Species Index for Wales for monitoring long-term trends, a Visual Quality Index for quantifying assessing change in the quality of landscapes, and a fine resolution predictive map of Annual Net Primary Productivity (i.e. plant growth) for Wales using a combination of remotely sensed data and plant trait modelling.

The outcomes

Research from the GMEP partnership has already provided feedback on the early stages of this national scheme. Analysis of the first set of baseline data alongside long-term historic data indicates stability for the Glastir outcomes, with little evidence of improvement other than headwater stream quality, greenhouse gas emissions and woodland area for which there has been improvement over the last 20 years.

Some other headline findings include:

- 91% of streams had some level of modification but 60% retained good ecological quality
- no change in topsoil carbon content over last 25 years
- 51% of historic features in excellent or sound condition
- two thirds of public rights of way fully open and accessible
- reductions in national nitrate leaching, nitrous oxide and methane emissions of 5-10% could be achieved by withholding nitrogen fertiliser and reducing stocking rate on larger improved grassland areas
- modelling forecasts indicate a potential reduction in flood-generating land of 1-9% through implementing the 'creation of new streamside corridors with trees planting' and 'extension of existing woodland edge' Glastir options
- 10% of Wales has good provision of two or more co-located ecosystem services, while 28% has the potential to gain more than it would lose in service provision if intervention measures were implemented.

This integrated analysis of the whole ecosystem, incorporating environmental, social and economic analysis, allows for a robust analysis of trade-offs and co-benefits of the different management options.

GMEP: current and past partners
ADAS • APEM • Bangor University • BiodiversIT
• BiOSS • Biological Records Centre • Bowburn
Consultancy • British Geological Survey • British
Trust for Ornithology • Butterfly Conservation •
Ecological Surveys Bangor • Ecorys • Edwards
Ecological Consultants Ltd • Freshwaters Habitats
Trust • Staffordshire University • University
of Aberdeen • University of Southampton •
University of St Andrews • University College
London • Victoria University Wellington



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GMEP data portal: <http://gmepp.wales>

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