Rewarding Environmental Public Goods on Hill Sheep Farms – Case Study

This case study was prepared to inform the debate on future agricultural policy. It was developed as part of a study to explore how the resources currently spent on CAP basic and coupled payments, as well as agri-environment, could be redirected to improve delivery of environmental outcomes. The projections are based on a number of assumptions and are therefore considered for illustrative purposes only.

Key messages

1. Hill sheep farms have the **potential to generate greater environmental benefits** in the future.
2. **Farm incomes can be maintained** given the potential for fixed cost savings, even where livestock numbers are reduced.
3. Agroforestry combined with habitat conservation have little to no impact on net profit, and **income could be enhanced by payments for public goods.**
4. **Large-scale nature restoration has the potential to increase net profit** while delivering multiple benefits. Income could be further enhanced by rewarding the significant public goods delivered.
5. Environmental outcomes can help make land-based businesses **more resilient to climate change and future challenges.**

What is a public good?

Public goods are all the things we enjoy and value in life, but we cannot buy the way we do with other goods.

Examples of public goods include biodiversity, flood protection, air quality, animal welfare, and cultural values.

In the context of agriculture, public goods generally refer to those activities for which there is no direct market.

Illustration of Environmental Public Goods

Biodiversity e.g. soil biodiversity, pollinators, native woodlands, farmland birds

Water Quality e.g. soil health, riparian woodlands, healthy peatlands

Flood Management e.g. woodlands, farm wetlands, healthy peatlands, hedgerows, agroforestry, re-meandering rivers.

Air Quality e.g. woodlands

Soil Health e.g. min till, reversion to grasslands, hedgerows

Climate Change Mitigation e.g. legumes and herb-rich swards, woodlands, agroforestry, hedgerows, peatland restoration

Climate Change Adaptation e.g. natural flood management, agroforestry for shade and shelter

Public Access to land e.g. gates

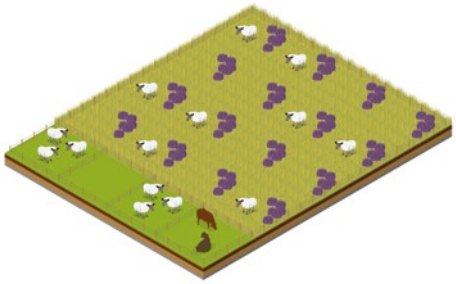
Landscape e.g. diversity of habitats, linear features

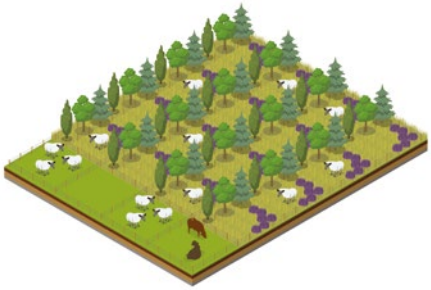
Findings

In addition to the status quo (baseline), the following are three alternative illustrations with an outline assessment of the potential to improve environmental outcomes and an indication of their financial impact. Further examples can be found in the full report.

FBS* representative farm model

Baseline represents the current situation of the farms as it might look 12 years in the future, on a business as usual basis.





FBS* representative farm model

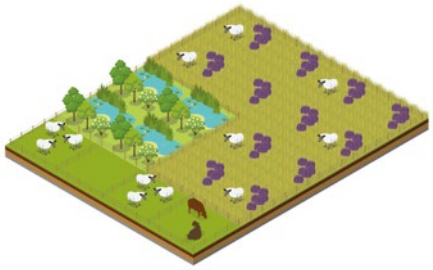
Agroforestry, based on shelter belts with up to 2,500 trees per ha.

Financial impact ↔

Focused on shelter belts on the rough grazing land, it has no financial impact.

Public goods ↑↑

Brings diversity in the upland farmed landscape with potential benefits for biodiversity depending on the tree species mix. Potential for carbon sequestration and flood mitigation. Reduced run off and soil erosion. Improved animal welfare.



FBS* representative farm model

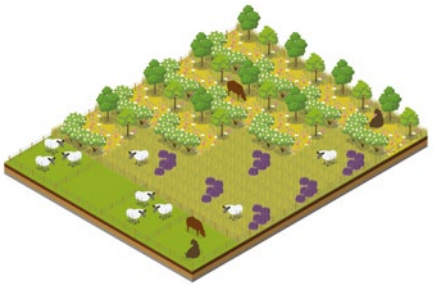
Habitat conservation, existing or new creation following prescribed management. Assumed 20% of land (permanent grass and rough grazing) no longer in agriculture.

Financial impact ↔

Very little effect on net profit despite reduction in livestock numbers; likely to be implemented in rough grazing area.

Public goods ↑↑

Boundaries, in-field strips, diverse swards, field wetlands, pollinator zones etc. would boost biodiversity. Some of these measures can also play a role in reducing run off, flood risk and soil erosion.



FBS* representative farm model

Nature restoration with limited management, and enabling natural processes to shape the landscape. Some grazing by herbivores to maintain clearings in trees/ shrubs. Groundworks may be needed for water courses. On rough grazing with 50% of farm assumed.

Financial impact ↑

Despite the reduction in livestock numbers, the opportunities to reduce fixed costs result in an increase in net profit.

Public goods ↑↑↑

Ambitious improvement in the type and scale of wildlife habitat provision, which could include mosaics of habitats e.g. wetlands, peatlands, scrub and woodlands, species-rich grassland, re-meandering of rivers. Delivery of multiple benefits.

Key: ↑ increase ↓ reduce ↔ no impact

*FBS: Farm Business Survey

 Clover ley

 Permanent grass & beef

 Rough grazing & sheep

 Agro-forestry shelter belts

 Nature restoration

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Lampkin N, Shrestha S, Sellars A, Baldock D, Smith J, Mullender S, Keenleyside C, Pearce B, Watson C, 2020. Preparing the Evidence Base for Post-Brexit agriculture in Scotland – Case studies on alternative payments. *NatureScot Research Report No. 1201* - NatureScot use only. https://www.nature.scot/professional-advice/land-and-sea-management/managing-land/agriculture-and-land-use-policy-development

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