Ecosystem markets for a green recovery: Policy challenges and opportunities

Summary

Ecosystem markets have the potential to fund significant reductions in Greenhouse Gases from the land use sector, while providing new income streams for a sector that has in some areas been significantly impacted by Covid-19. However, to stimulate demand for and supply of projects for new ecosystem markets, a number of policy actions are needed.

Key policy messages

In the next year:

- Design new schemes (e.g. Nature for Climate Fund in England) and future agri-environment schemes explicitly to leverage (rather than outcompete) private investment, increasing overall funding available to sustainable agriculture and conservation.
- Consider modifying existing agri-environment agreements when they come under full UK control where this represents a win-win for land managers and the public interest, to deliver additional public goods via private schemes.
- Fund landscape scale facilitators (e.g. for a region's SSSIs, per National Park, or by National Character Area) to get new entrants and aggregate supply for integrated public agri-environment and private ecosystem market schemes.
- Provide public funding for intermediaries to help develop new ecosystem markets.

Longer term:

- Scope the potential for standards/protocols that could generate new projects and investor confidence in new land use systems.
- Fund evidence synthesis to identify robust interventions for ecosystem markets, and further build the evidence base for soil carbon emissions factors by facilitating or funding a process to agree essential variables that should be monitored in future projects.

The challenge

Ecosystem markets have the potential to fund significant reductions in greenhouse gases from the land use sector, while providing new income streams for a sector that has in some areas been significantly impacted by Covid-19:

- Emissions from the UK land use sector (calculated at 58 million tonnes CO_2e in 2017) have been cited as a major barrier to the UK meeting its net zero commitments under the Paris Agreement by the Committee on Climate Change, who have identified afforestration, peatland restoration and low carbon farming practices as important ways to reduce greenhouse gas (GHG) emissions from soils, livestock and manure management by 10 million tonnes CO_2e by 2050.
- In the meantime, the Covid-19 outbreak and measures to contain it have had widespread impacts on the farming sector, including reduced demand for food consumed out of the home (e.g. cafés, restaurants, hotels and hospitality) and loss of business for farms that have diversified into public attractions (e.g. agri-tourism, visitor attractions, farm shops, home and garden etc.). Restrictions on movement designed to contain the virus have restricted the availability of seasonal labour for harvest operations, and many livestock sales, haulage and auction mart operations have been severely disrupted.

In addition to funding GHG reductions, ecosystem markets could support climate adaptation and biodiversity gain and - if deployed correctly - underpin resilient food supply:

- Agricultural land covers 17.7 million hectares in the UK and conservative estimates put the sequestration potential of this land at between 1-2 tonnes CO_2e per hectare per year.
- Recent research by the environmental think tank Green Alliance suggests that airlines alone will be looking to invest between £4-18 billion per year in offsets between now and 2035 through the Carbon Offsetting and Reduction Scheme. If even a fraction of that investment is channelled into the UK's carbon offset market, this could represent a significant new income stream for the sector.
- 4.7 million tonnes CO_2e (over their growing lifetimes) were financed through the UK's Woodland Carbon Code in 2019-2020. With each tonne retailing at between £5 and £15, this illustrates the current size of the voluntary carbon market for woodland carbon alone, a market severely constrained by the availability of suitable land for planting.
- Based on available land that could be converted to regenerative agricultural practices that could reduce emissions and sequester soil carbon, there is potential for the UK's farmland to attract significantly more private carbon finance.
- However, to unlock this potential, standardisation and regulation will be needed to give investors confidence in the integrity of the offsets they are buying.

The research

The Resilient Dairy Landscapes project and iCASP collaborated to review current ecosystem markets operating or being developed in the UK and Europe based on scheme documentation, 17 interviews with scheme representatives and intermediaries and two workshops attended by 12 and 13 stakeholders in the UK and Europe respectively.

The Resilient Dairy Landscapes team is evaluating one scheme in depth, assessing the delivery of public goods from Landscape Enterprise Networks via empirical data collection and modelling of ecosystem services and animal welfare outcomes of interventions funded under the scheme.

The team is collaborating with a consortium of private and third sector organisations to extend the analysis to understand demand and supply issues from a range of perspectives including interviews with farmers and investors. This will feed into a feasibility study for a future UK Farm Soil Carbon Code.

Challenges to expanding ecosystem markets

There are number of demand side challenges that may hold back investment in new ecosystem markets in the UK, for example the cost of monitoring outcomes to ensure investments have delivered benefits. There is also a range of supply-side challenges that may limit the supply of land and projects for ecosystem markets, for example due to concerns about contract lengths or effects on land prices (Table 1).

Table 1: Supply and demand side challenges to the creation and expansion of ecosystem markets in the UK.

Demand side challenges	Supply side challenges
• Complexity of demonstrating additionality and permanence of benefits. • Costs of monitoring and verification of benefits. • Coordination of investments to avoid non-paying beneficiaries piggybacking on investments. • Benefits for one investor cancelling out benefits for others. • Confidentiality concerns can prevent co-procurement of outcomes by investment consortia. • Limitations in some schemes around monitoring, reporting and verification, and hence ability to guarantee delivery, claims that can be made and range of ecosystem services verified.	• Uncertainty over interaction between private scheme and eligibility for post-Brexit agri-environment schemes and tax relief. • Concerns over contract lengths, linked to fears over land prices. • Risk of new statutory designations (peatland only). • Difficulties identifying and contacting landowners post-GDPR. • Need for intermediaries to reduce complexity and get new entrants whilst aggregating supply from multiple holdings. • Danger of ecosystem service trade-offs when investors have competing priorities or when multiple interventions are combined (studies tend to look at outcomes from interventions in isolation rather than combination).

There are also a number of policy challenges that need to be resolved to enable the expansion of existing ecosystem markets and the creation of new markets to channel private investment into the land use sector, for example:

- Public funding is a key part of payments in many schemes (e.g. the Peatland Code and Woodland Carbon Code only need 15% private funding to meet additionality criteria), but there is a danger that public funding crowds out private investment if set too high (as happened to varying extents with the Woodland Carbon Guarantee in England and Peatland Action in Scotland). This leads to the perverse outcome of Government paying for outcomes that the market could have delivered.
- Voluntary standards and protocols are needed to provide market confidence but it is not clear who should own and manages such Codes, given that environment and agriculture are devolved issues.
- There is insufficient evidence to create reliable emissions factors for many land use systems and interventions that could reduce GHG emissions or sequester carbon.
- Other than the Woodland Carbon Code (via the Forestry Act) no legal mechanism to ensure permanence of interventions designed to reduce emissions and sequester carbon. In this context, Conservation Covenants (England) and Burdens (Scotland) could be extended to enable organisations other than the National Trust and National Trust for Scotland to enter into them.

Policy opportunities

- The Woodland Carbon Code and Peatland Code are seeing a significant increase in corporate interest, despite the current economic downturn. However, both typically also rely on Government grants (to be considered additional they only need 15% private finance).
- In contrast, regional ecosystem markets like Landscape Enterprise Networks (LENs) are operating successfully with very limited public funding. Although they are attracting significant regional investment despite limited monitoring, verification of outcomes is necessary to attract wider national investment.
- Governance mechanisms now exist to integrate peatland and woodland carbon market projects with LENs. This could increase investment in a LENs landscape by bringing in investors from outside the region, and creates opportunities to manage climate, biodiversity, water quality and flood risk outcomes at a wider landscape scale, across dairy, arable, peatland and woodland areas.
- However, to attract national and international investment in dairy and arable projects, a UK Farm Soil Carbon Code would be necessary to provide guidance to projects and guarantees to investors.
- Nestlé is developing its own scheme for UK and French operations, Regenerate Asset Management and the Hadrian Bond Consortium are developing a pilot environmental impact bond to improve soil carbon of farms in the North of England, and a consortium of university and private sector players are conducting feasibility study for a UK Farm Soil Carbon Code.
- If successful, private investment in agriculture could significantly cushion the anticipated 2024 public funding cliff edge.

Table 2: Five options for integrating public agri-environment funding with private funding via ecosystem markets.

Description	Strengths	Weaknesses
1. Funds delineation – using public investment to fund a discrete menu of 'value-added' components within a package of nature-based solutions		
The concept here is to break out and use public funds for practical scheme components that are ancillary to privately funded ecosystem function delivery, and for which there is a clear public benefit justification. Designed-in and delivered from the start, these would ideally be spatially defined and discrete within a site.	• Clear 'lines of sight' between sources of funding and outcomes, help with transparency. • Helps boost scale and viability of projects. • Funds multifunctionality.	• May not realise the full potential for 'leverage' presented by more fully integrated payments and action. • Potential for funds to be mis-allocated – for example funding public access infrastructure that realistically will only be used for site management.
2. Trigger funds – setting up government funding that only 'triggers' when a certain level of private sector funding is achieved		
'Trigger funds' would be government funds (directed at carbon, and / or other site outcomes) that would only be released once a certain level of private payments was reached. A single universal percentage level could be used, or stepped trigger levels could be used based on site prioritisation (ideally determined regionally).	• Allows Governments to co-fund ecosystem functions, without 'squeezing out' private sector finance. • The effect of private finance triggering public funds could assist in demonstrating additionality.	• Set too low, trigger levels may have the effect of capping the level of private sector funding. • Trigger funds would create organisational complexity.
3. Establishing fund matching / co-investment as a default principle		
An extension of 'trigger funds' in that it establishes a wider default that public funds should only be issued on the basis that a level of private sector funds are already in place for a package of nature-based solutions.	'Signalling' to build confidence within the marketplace – avoiding both demand and supply side players being caught in an 'opportunity cost dilemma'.	Risk that public-benefit oriented projects, where there is little private sector demand, will be disadvantaged.
4. Using a transparent cost-benefit matrix to target public sector funds		
Public funds would be adjusted according to a matrix of public benefit versus private finance potential. Stepped, or differential, rates of funding would need to be guided by a transparent set of tests.	• Creates 'smarter' funding, 'stepping up' funds for more difficult, or public-good oriented schemes or locations. • Provides a 'safety net' to fund valuable projects for which there is no private market.	Adds complexity, and requires a defensible and widely applicable set of tests.
5. Creating integrated systems for public-private implementation		
This is an organisational task; to enable public and private funding mechanisms to interact. It means overcoming mismatches in organisation scales, timelines, terminology, definitions, and metrics. Integration could happen in various ways, but is scale dependent; a funding synergy in East Anglia won't be the same as one in Cumbria. Our recommendation is that public funding shapes itself around emerging private sector markets.	System integration (or at least alignment) will be critical to avoiding public sector funds neutralising potential private sector investment.	Depending on the level of integration, it could increase bureaucracy, and reduce the agility of private sector delivery.

Policy actions

- **Design future agri-environment schemes explicitly to leverage (rather than outcompete) private investment to increase overall funding available to sustainable agriculture and conservation.** Defra are investigating the potential for carbon trigger funds in the design of some of their schemes under the Nature for Climate Fund, but there are a range of options available (Table 2).
- **Fund landscape scale facilitators:**
    - **England, Wales and Northern Ireland:** Facilitators could be employed in similar roles to Catchment Sensitive Farming Officer (or extend these existing roles) or Peatland Action Officers in Scotland, to get new entrants and aggregate supply for both public agri-environment and private ecosystem market schemes (which are designed to dovetail with each other – see previous point).
    - **Scotland:** Expand the role of Peatland Action Officers to promote the Peatland Code as an option that could increase funding for landowners and increase supply of projects to the Peatland Code (where demand is currently outstripping supply of projects).
- **Provide public funding for intermediaries to help develop new ecosystem markets**, explaining new schemes and stimulating demand among investors. Following the LENs model, these intermediaries could also aggregate demand for ecosystem services at landscape scales to overcome concerns that competitors might "piggyback" on investment outcomes and to avoid trade-offs and maximise synergies between different investments in the same landscape.
- **Scope the potential for standards/protocols that could generate new projects and investor confidence in new land use systems** e.g. in addition to the current feasibility study for a Farm Soil Carbon Code, researchers are seeking funding for a similar study to explore the feasibility of a Saltmarsh Code.
- **Fund evidence synthesis to identify robust interventions for ecosystem markets:** Invest in building the evidence base for public goods outcomes from output-based schemes currently operating in both the public sector (i.e. agri-environment) and private sector (e.g. LENs). Based on Rapid Evidence Syntheses, our two projects only found a robust evidence base for half the Countryside Stewardship options we reviewed. Robust evidence is needed for interventions to be included in a future Farm Soil Carbon Code. N8 AgriFood, University of Leeds and Newcastle University have developed a Rapid Evidence Synthesis training programme for PhD and post-doctoral researchers that can deliver reviews for around £2,000 each whilst building synthesis skills across the sector.
- **Build the evidence base necessary to develop soil carbon emissions factors by facilitating or funding a process to agree essential variables that should be monitored in future projects.** To develop emissions factors for a future Farm Soil Carbon Code, more data is needed that is comparable, and so can be synthesised effectively. Following methods developed for peatlands, Government could facilitate or fund a process to reach agreement on essential variables and methods that should be prioritised by those conducting research and monitoring. Public and private schemes could then make the collection of data on these essential variables a funding condition, to build the evidence base.

Find out more

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To see the evidence this policy brief is based on, visit: https://www.resilientdairylandscapes.com/publications

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