

Greenhouse gas removals: call for evidence for independent review

Department for Energy Security & Net Zero

Submitted to Greenhouse gas removals: call for evidence for independent review

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1.What is your name?

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3.What is your organisation?

Agriculture and Horticulture Development Board

4. Disclaimer on data sharing: We may publish a summary of all responses. Would you be happy for your response to be published in full? (Options: Yes; Yes, but without identifying information; No, I want my response to be treated as confidential).

Yes

5.What is the potential scale of GGRs in the UK?

This could include, but is not limited to: potential scale of removals by technology type or for projects you are involved with; what assumptions that is based on, for example access to land, storage infrastructure, feedstock availability or biomass prioritisation; timelines for delivery of removals; and how the scale of removals may increase over time. Any information on the factors affecting these trajectories is also welcome.

Answer:

Considering the basis of both nature-based and engineering-based GGR approaches, agriculture holds significant potential to deliver on GGR efforts. Especially when considering that agricultural land accounts for roughly 70% of the total area of the UK¹.

Nature-based approaches include agroforestry, hedgerows, habitat restoration, and soil carbon sequestration. The Northern Ireland ARC Zero project is a good example of the significant role soil holds with carbon sequestration on farm. The project measured the carbon stocks across 7 farms (two dairy farms, three beef and sheep farms, one arable and beef farm, one willow and dry cows farm) and found that for six of the seven farms 93% to 98% of their carbon stocks were located in the soil. The seventh farm (willow and dry cows) found 80% of its carbon stocks in the soil, not the trees². There has been a lot of focus on increasing woodland to increase the rate of carbon sequestration, but this project highlights that soils have the potential to hold more carbon than trees in the agriculture setting, with a wide range of results across different land parcels. Soils have the potential to offer a significant opportunity for increasing carbon removals.

Wanting to understand what this could mean across the rest of the UK, AHDB are running an Environmental Baseline Pilot which aims to establish the amount of net carbon on a range of different farms and land uses across Great Britain, taking account of carbon stored in soil, hedges and trees as well as greenhouse gas emissions and sequestration³.

On a UK wide scale, farmers and landowners need to understand what carbon their land and operations are currently emitting, sequestering, and storing. The Baseline Pilot will include the accounting of carbon stored in soil, hedges and trees, as well as greenhouse gas emissions. This data will help drive change, forging a fairer and more resilient path towards becoming net zero by 2050, and gives integrity to the process.

6. What are the co-benefits of GGRs?

This could include, but is not limited to: GGR co-products, non-carbon environmental benefits, and supporting the Government's Growth and Clean Energy Superpower Missions. Any information on the size and determinants of these co-benefits is helpful, either at an economy-wide or project level.

Answer:

Nature-based GGRs come with an array of co-benefits. Firstly, many nature-based approaches can operate alongside food production, making most of the land. With a

¹ Defra (2025) [Agricultural Land Use in United Kingdom at 1 June 2024 - GOV.UK](#)

² Gilliland and Casement (2023) [Arc-Zero-Final-Report.pdf](#)

³ AHDB (2025) [Environment Baseline Pilot | AHDB](#)

finite amount of land, a multifunction land use approach is imperative when wanting to achieve UK's climate and environmental commitments while also safeguarding food security.

Secondly, additional to the capturing and storing of carbon, nature-based GGRs come with a range of environmental co-benefits including supporting biodiversity, enhancing soil health, reducing water run-off and improving water quality^{4 5 6 7 8}.

However, to realise these benefits there needs to be clear monitoring, reporting and verification (MRV) in place to ensure outcomes are recognised, provide transparency, and safeguard integrity.

7. What are the barriers to and enablers of GGR deployment in the UK?

This could include but is not limited to: evidence or information about what makes the UK an attractive place, or not, in which to invest and deploy GGRs; the strengths and limitations of the current scientific evidence base of effectiveness and environmental impact; policy and regulatory environment; availability and prioritisation of resources; costs and constraints of access to storage; and public perceptions. In each case we would like any evidence on the determinants and impacts.

Answer:

Currently, a long-term land use vision is absent and there is inconsistency in public funding making it hard for farmers and landowners to plan ahead and feel confident in land use decision making. Policy, including ELM, the Land Use Framework, the Food Strategy, and the 25-year Farming Roadmap, needs to be clear and consistent, so to de-risk land use decisions and encourage the uptake of GGR.

The voluntary carbon market lacks clear standardisation and transparency. Carbon credits created through GGR should reflect genuine environmental improvement, and the asymmetry of information needs to be addressed so to prevent farmers from undervaluing their assets. Moreover, clarification on permanence framework and liability regarding a reversal event is required.

⁴ Jones et al (2024) [Potential for Carbon Credits from Conservation Management: Price and Potential for Multi-Habitat Nature-Based Carbon Sequestration in Dorset, UK](#)

⁵ Smith et al (2019) [Land-Management Options for Greenhouse Gas Removal and Their Impacts on Ecosystem Services and the Sustainable Development Goals | Annual Reviews](#)

⁶ Wallace et al (2021) [Hydrological Processes | Hydrology Journal | Wiley Online Library](#)

⁷ Montgomery et al (2020) [Hedgerows as Ecosystems: Service Delivery, Management, and Restoration | Annual Reviews](#)

⁸ Holden et al (2019) [The role of hedgerows in soil functioning within agricultural landscapes - ScienceDirect](#)

There is a lack of a joined-up approach when it comes to certain aspects of GGRs. For example, trees planted as part of the adoption of agroforestry techniques are not currently recognised in the National Inventory. There are also potentially limitations with tenancy agreements on the tree variety that can be planted (i.e. they have to be fruit-bearing trees to ensure it isn't viewed as land being taken out of agriculture).

Additionally, if a farmer or landowner does decide to engage, startup costs and administration burdens will likely be greater per unit of output for smaller scale GGR operators. It is important to note, a high-quality nature based GGR can only occur if the operator knows what their carbon emissions and sequestration starting point is. This is especially the case for small scale landowner wanting to undertake woodland GGR. If carbon is not measured, steps cannot be taken to capture and store it. Without an accurate baseline and plans for re-measuring there can be no recognition of the improvement delivered. This lack of recognition makes incentivisation challenging.

8. What is the economic cost of deploying GGRs?

This could include but is not limited to: information, project-level or sector-wide, on the per-tonne costs of GGR technologies in 2030, 2040 and 2050 in the UK or overseas; evidence on the reasons for differences in domestic and overseas deployment; factors affecting deployment costs; and how costs are expected to evolve over time.

Answer:

Quantification of carbon removed and stored is key to ensuring a high integrity GGR system. Baseline and having a clear methodology for MRV is crucial but can be costly. It is critical that measurement is included in the process, so that we have a baseline and a re-measurement clearly showing the improvement. This builds integrity into the system.

For agriculture to engage with GGR in a meaningful way one needs to be able to quantify the carbon removed and stored from the atmosphere. As mentioned in the response to question 7, there is a financial burden linked to GGR project deployment. There needs to be financial incentives for farmers as well as a funded baseline, in order for them to engage with a GGR project.

9. What approaches are there for transitioning away from public investment and attracting private investment in GGRs?

This could include but is not limited to: evidence on overall private demand for GGRs via VCM or otherwise; information on stimulating VCM demand; and views on other approaches to reducing public finance burden such as mandates and trading schemes

Answer:

To transition toward private funding, demand from the private sector should be well established. The VCM is often referred to as the 'Wild West' as it holds many unknowns and inconsistencies, for example, around MRV requirements, permanence frameworks, and management of potential reversal events. This does not incentivise engagement.

It is important that a clear framework and standards are set from the start so not to punish the first movers, including how the benefit of GGR projects and allowances will be monitored in the long run. This is important as monitoring costs need to be covered accordingly in the sale of the allowance and agreements may span across centuries.

10. What are the roles and options for all GGRs, domestically and internationally, to balance the UK's residual emissions?

This could include but is not limited to: potential of international GGR deployment; opportunities and barriers from Article 6 framework; the role of nature-based GGRs such as afforestation, soil carbon enhancement and ecosystem restoration; the role of more novel technologies such as marine carbon dioxide removal; and alternative deployment strategies.

Answer:

If the UK is to reach its net zero aspirations, we need to look at all the tools in the toolbox that enable that to be achieved. This isn't just about reducing emissions, but also removals, including nature-based GGRs. However, to incentivise change the resulting outputs need to be measured – allowing those delivering the changes to be recognised and suitably rewarded.

When it comes to balancing UK agricultural emissions it is important to recognise all the actors involved in the supply chain, including those impacted by association such as financial institutions, and the complexity surrounding it. Clear MRV is required to demonstrate where carbon sequestration is taking place and to whom the carbon credits are appointed to so to avoid double counting and maintain integrity.

Nature-based GGR comes with an array of environment co-benefits which will contribute towards afforestation, soil carbon enhancement, and ecosystem restoration. All vital outcomes if wanting to meet UK's climate and environmental commitments. For example, the creation and management of hedgerows holds multiple benefits in addition to carbon sequestration, including providing food, habitat, and connectivity for wildlife, reducing water runoff, preventing soil erosion, shade for

livestock, and are a natural barrier both as a defence to crops by acting as a windbreak during storms, and for biosecurity of livestock.

11. How can GGRs contribute to security of supply, with respect to the UK's energy system?

This could include, but is not limited to: the relative prioritisation of biomass use; the energy consumption of GGR technologies; and the potential contribution of GGR technologies to security of supply in line with the different GGR deployment pathways.

Answer:

There is concern that with the expansion of feedstock for bioenergy, food production will be displaced. This displacement of land could threaten food security and lead to further increases in food prices.