GGR Policy Options Roundtable

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Introduction

In September 2020, the Committee on Climate Change (CCC) organised a roundtable to discuss the challenges and policy design principles that could bring greenhouse gas removal (GGR) approaches to market and deliver sustainable GGR in the UK. Roundtable participants were drawn from across academia, policy, and practitioner organisations with expertise spanning the range of GGR approaches (Table 1). This note summarises the key points from the discussions.

Purpose

UK policymaking for establishing GGR options remains at a relatively early stage. The purpose of this roundtable was to explore how policy can be developed to incentivise the sustainable deployment of GGR approaches at scale in the UK. Land-based and engineered GGRs both play a significant role in the CCC scenarios for how the UK could achieve Net Zero by 2050. The scenarios include tree-planting reaching up to 70,000 kha per year by 2050, increasing the area of peatland restored from the current 25% to 79% by 2050, and engineered removals in excess of 50 Mt CO_2 per year by 2050 through BECCS and DACCS.

Many land-based removals occur already today (e.g. planting trees) and are interlinked with emission reductions - with land use both a source and sink of carbon in the CCC scenarios. The CCC 'Land use: Policies for a Net Zero UK' report (January 2020) focuses on emissions reductions from farming and land use and includes policies relevant to land-based GGR[1].

GGR policy challenges

Establishing greenhouse gas removal as a new element of climate policy presents an opportunity to incorporate responsible innovation in the design of new policy. GGR approaches are extremely diverse in terms of scale of CO_2 removed, stage of development and the UK communities, industries and landscapes that will be impacted (Table 2). This diversity is a key challenge for the development of GGR policy options. GGR approaches span multiple government departments and economic sectors - presenting particular challenges to developing 'joined up' governance that is compatible with the existing policy landscape.

Types of policy

Policies can be direct, enabling or integrative[2]. Direct policies stimulate deployment where an intervention is made to change markets and behaviour. Enabling policies support investment and development of immature approaches; to provide monitoring, verification and reporting structures or; to support the development of networks, infrastructure and connections. Integrating policies act at a broader level, to set the context within which direct or enabling policies operate, e.g. land use policy, sustainable development goals. The discussions focused on direct and enabling policies but issues relating to integrated policies were considered.

Roundtable process

A short introduction by the CCC set out the scope of the discussion, including a summary of GGR approaches considered to be in and out of scope for the roundtable discussion (Table 2), set within the context of the CCC's 6th Carbon Budget analysis. Discussions were held in both plenary and two parallel groups, one group

focused on land-based removals and one on engineered removals (Table 1). Participants considered policy options to deliver GGR approaches in the UK over the short (next 10 years) and longer term (post 2030) and the strengths and weaknesses of alternative policies.

Pilot discussion with FAB-GGR project team

A pilot roundtable discussion was conducted prior to the CCC Roundtable with researchers from the Feasibility of Afforestation and BECCS for Greenhouse Gas Removal (FAB-GGR) project (Table 3). This interdisciplinary UKRI-funded research project (2017-2021) has explored uncertainties surrounding these two GGR approaches across disciplines and from supply chain to global scale.

This discussion highlighted the importance of setting GGR policies within the context of other relevant mitigation and land use policies, such as food, energy and biodiversity. Most UK land is privately owned with land manager decisions shaped by multiple factors which result in both an environmental impact and an economic response. Policies must recognise the trade-offs between carbon, environment and food production whilst addressing leakage through demand changes or trade, i.e. the risks of pushing food production elsewhere. GGR fits within a set of other actions that contribute to net zero, some of which are strongly connected e.g. dietary choices and their impact on agricultural demand.

Three core tensions for designing policy to deliver sustainable GGR were identified along with good policy design principles to address them.

First is the tension **between policy options that act across all GGR options, such as a carbon price mechanism, and those that are tailored to *specific GGR* approaches.** Challenges for specific GGR policies include the overlaps and interconnections between bioenergy feedstocks, forestry and agriculture. Sectoral policy approaches can lead to differences across regulations and standards from different government departments e.g. different sustainability standards between bioenergy for transport, power and new bio-based industries. *Recognise that GGR policies may have implications across multiple levels of governance.*

Secondly, a tension **between the simplicity of a carbon price policy mechanism and a more complex policy that includes other measures of social value**. A more nuanced policy might include matters of social justice, equity and fairness (e.g. shifting rural economies, private land ownership, burden sharing between rural and urban communities). Environmental and societal impacts of land-use change could also be included within policy design (e.g. water quality, flood mitigation, biodiversity conservation). The co-benefits of some land-based GGR approaches may be significant drivers of uptake but may also require some compromise regarding optimal GHG removal rates. *Recognise the value of policy measures that go beyond cost and carbon as an accelerator of GGR uptake and towards greater societal benefit.*

Finally, a tension **between delaying action (by trying to make a perfect first step) and urgency of action.** Inaction can come from trying to account for *all* the complex and interconnected industries, organisations, communities and environmental considerations involved in GGR. Urgency of action arises from UK climate targets and inherently slower characteristics of GGR approaches such as the growth rate of trees and development of new industries and infrastructure. *Identify low regret actions, and create policies that are robust to different futures, i.e. allowing opportunities to change course.*

Challenges and considerations for UK GGR policy options

UK policy making

There are four specific challenges for the UK. Firstly, the UK is densely populated with associated high land prices, limited land resources, and multiple stakeholders. Secondly, GGR policy has to work within both national and devolved contexts, and the different constraints and opportunities that brings. Thirdly, there are new policies in the pipeline, such as a potential UK Emissions Trading Scheme and the ongoing Agricultural Bill, that will impact industries and sectors relevant to GGR. This shifting policy landscape provides opportunities for GGR but adds complexity to the design of new policies. Finally, wider economic uncertainty (e.g. Brexit, Covid-19) is hampering investment confidence. UK GGR policy should work with emerging policy changes to catalyse action, work with and within devolved administrations and provide clarity of direction to nurture new GGR industries.

Land-based removals

The time difference between action and delivery of carbon removal is a unique challenge for land-based removals. A mix of early and outcome payments may address this. Policies should consider sustainability criteria beyond delivering carbon removals. Uptake of land-based measures could be supported by encouraging end markets for perennial energy crops (e.g. BECCS power) and timber (e.g. construction) or through offsetting markets. A just transition for farming and forestry requires training and guidance to support shifts in sector practices. Stable policies provide confidence to make medium to long term changes in land use, e.g. planting perennial energy grasses, short rotation coppice and trees. Policies need to account for UK farmer competitiveness in a global market.

Most land-based GGR approaches have a sound evidence base with existing (e.g. Nature for Climate Fund) or forthcoming policies (e.g. Environmental Land Management scheme, ELM) to incentivise their uptake - delivering on these policies is a clear priority. For GGR approaches with a smaller evidence base, e.g. biochar and enhanced weathering, demonstration projects are needed to understand long-term impacts and GGR potential.

Engineered removals

Engineered removals are typically rooted in existing industrial sectors, characterised by a smaller number of large actors, and are often capital-intensive projects. Recent experience of incentivising energy projects provides examples for supporting their uptake (Table 4). Associations of policies with particular technologies could negatively influence public and industry opinion of a technology (for example, the use of subsidies such as price guarantees for new nuclear power). Broad ‘polluter pays’ principles, such as a simple obligation on a fossil fuel provider (or user), are seen as fair, with the understanding that the costs are ultimately passed on to consumers. Any direct mechanisms will have to be part of a wider carbon tax and trade policy context and will require ‘flanking’ with enabling policies (e.g. R&D funding, GHG accounting, liability frameworks) and integrating policies to ensure consistency with existing frameworks (e.g. UK ETS).

Public perceptions & just transition

Establishing robust, sustainable policies and approaches will depend on public engagement processes running alongside policy development. While there has been some academic research into selected GGR approaches, much more work is needed to understand the social and equity implications and to ensure that GGR is part of a just and fair transition. GGR is likely to result in significant changes to our landscapes, provoking personal and emotional responses. Developing socially robust policies will depend on building understanding of why

and how GGR has a role - to capture both hearts and minds. Climate Assembly UK has made a start in this direction.

There are few examples of what GGR 'looks like' - particularly approaches involving CCS - so how the wider social response will evolve remains uncertain. Initial opposition for offshore wind, for example, was replaced by broader support for the technology once it was visible and operational. Concern about geological storage of CO_2 (for example, as expressed in relation to CCS, BECCS or DACCS at Climate Assembly UK[2]) may dissipate as the technology becomes established, while current popular support for forestry may change as the scale and extent of deployment grows. Responses to GGR will be diverse and nuanced and will depend upon the scale at which it is done, where it is done and will change over time.

Specific policy options

Detailed points on specific policy options raised during the roundtable are presented in Table 5. Policy options for engineered carbon removals included mechanisms to de-risk investment and reduce market uncertainty while protecting taxpayers and creating new adaptive markets which support and incorporate technology innovations. Land-based removal policy options covered existing and proposed policies and incentives for farmers and land managers to change practices. Cross-cutting policy options included mechanisms to value negative emissions in a way that is seen to be fair and robust to support industry, farmers and landowners whilst avoiding double counting and negative sustainability impacts. Enabling policies are required regardless of what incentive mechanisms are adopted - these include the need to develop monitoring, reporting and verification (MRV) and amend existing legislative frameworks.

Looking longer term

A key design challenge for GGR policies is the diversity of GGR approaches (from planting trees to Direct Air Capture with CO_2 storage) and their different relative maturities or technology readiness level (TRL). GGR approaches intersect with, and have implications for, different sectors from food production to energy generation and construction to biodiversity conservation. The task is to balance policy certainty (e.g. for investor confidence) with the flexibility to adapt as commercial and societal understanding accrues, while avoiding policy and technology lock-in. MRV frameworks to support effective and sustainable GGR must be prioritised as they require time to develop and implement. Looking beyond 2050 there is the potential for net-negative carbon budgets - this would draw on a variety of potential GGR approaches expanding over the coming decades.

Policy design principles and recommendations

GGR approaches are varied and will emerge across a range of sectors, government departments and communities, and will intersect with different sectors and existing policies. To achieve net zero, GGR policy needs to scale up sustainable greenhouse gas removals by supporting the deployment of established approaches and the innovation of emerging approaches. This will require government leadership to establish policies that blend regulatory and market-based mechanisms to incentivise and maintain effective GGR. A robust system is required to verify that removals in the UK are not double-counted between different schemes, sectors, nations or accounting systems. The limits to sustainable GGR mean that removals should focus on specific sectors with restricted mitigation options (e.g. agriculture and aviation) but cannot be used as an alternative to mitigation actions (i.e. behaviour change and demand reduction) in these sectors.

There are notable differences between engineered carbon removals and land-based removals. They have very different: timescales of carbon removal; requirements for capital investment; number of actors or 'projects' required to implement approaches at scale; links to existing markets and revenue sources; risks to GGR permanence and remediation potential. However, these distinctions are not always clear and some approaches span this industry and land management divide. Where possible, avoiding policy silos along a land/engineered dichotomy may protect against omissions and foster a more joined up approach. For these reasons, both general (e.g. carbon pricing), differentiated (e.g. ELM) and blended policies (e.g. elements of a MRV framework may apply across all GGR with specific provision for geological and land-based storage) will be required.

The key GGR policy principles and recommendations emerging from the roundtable process are summarised below.

Principles

These six principles for good policy design can be applied to amendments to existing policies or new policies and to all policy contexts. In all these cases, GGR approaches provide a novel service - carbon removal.

- **Timescales - account for different timescales of carbon removal.**
  Different GGR approaches remove carbon across different temporal scales and policies must balance immediate and longer-term benefits.
- **Permanence - account for risks to carbon storage.**
  Different carbon storage mechanisms are exposed to different risks to storage security and opportunities for remediation in the event of carbon losses. Policies must support removals which are permanent or secure over the long term.
- **Transparency - be open and responsive to societal concerns.**
  Engaging with national and local communities alongside policy development will improve the prospects for successful and resilient policies and support procedural justice. Public engagement processes on GGR will be well-placed to take advantage of on-going support for the net zero target and can build on the success of Climate Assembly UK.
- **Fairness - support fair and just transitions.**
  Establishing policies that deliver incentives and obligations that are fair and contribute to a just transition will garner wider support for both policies and the approaches they underpin. This may entail principles such as the 'polluter pays', recognising that costs ultimately fall to consumers rather than taxpayers.
- **Clarity - provide clear and strong policy signals.**
  Commercial organisations need market certainty and this is historically low at the moment. Establishing confidence is crucial to secure investment and establish changes in practices (e.g. perennial energy crops into the power sector, use of timber in construction).
- **Flexibility - be able to respond to innovation and learning.**
  Policies must be robust to the uncertainty and diversity which characterises GGR. Given the variety of approaches at different stages of readiness and which interact with multiple actors, industries, sectors and existing policies, resilient policies will need to balance long-term predictability with adaptability as new approaches become ready.

Recommendations

Distilled from the Roundtable discussions are some clear recommendations for policies that support GGR.

- **Deliver on *existing* policy measures that remove carbon.** These mostly apply to land-based removals, for example support new woodland and peatland restoration.
- **Amend existing and forthcoming policies.** GGR can be incorporated through, for example, new sustainability criteria and tightening (negative) GHG emission thresholds. This can support prompt implementation of low-regret, well-evidenced measures that can be delivered quickly (e.g. peat extraction bans, building regulations, CO_2 transport in pipelines).
- **Act quickly and design policies that can evolve and be revised.** New policies are needed now to deliver a variety of GGR approaches, including those with long lead-in times to commercialisation. These policies should be flexible to support new GGR approaches as they mature.
- **Develop both general and differentiated policies.** Identify mechanisms which can be applied across approaches and technologies, alongside technology- and sector-specific provision.
- **Define Monitoring, Reporting and Verification (MRV) frameworks.** This is a critical and urgent requirement for all GGR approaches and policies to ensure genuine climate benefits. Different MRV frameworks may be required for different types of CO_2 sequestration (biological, geological, soil etc).
- **Continue to support innovation with technology neutral R&D funding.** The current BEIS 'Direct Air Capture and other Greenhouse Gas Removal' programme[4] aims to develop a portfolio of large-scale approaches. It is important that this and future innovation funding contributes further to the portfolio approach and does not lock-in to a particular technology.
- **Align with adaptation policies.** This will ensure long-term resilience and effectiveness in the face of climate impacts and exploit potential for co-benefits (e.g. choice of tree species, protecting infrastructure from flood risks).

Incentives and policy mechanisms alone are not enough to deliver sustainable GGR. Strong political leadership is essential as there will be opportunities and challenges for different sectors and communities across the UK. The amount of GGR needed to achieve net zero is determined by decarbonisation efforts elsewhere in the economy and across society. It is important that mitigation ambition is not weakened by a reliance on over-optimistic levels of GGR.

References

[1]Land use: Policies for Net Zero UK (2020) Committee on Climate Change. January 2020. https://www.theccc.org.uk/publication/land-use-policies-for-a-net-zero-uk/

[2]Vivid Economics (2019) Greenhouse Gas Removal (GGR) policy options – Final Report. Report prepared for BEIS, June 2019. https://www.vivideconomics.com/wp-content/uploads/2019/09/Greenhouse_Report_Gas_Removal_policy_options.pdf

[3]The path to net zero: Citizens Assembly UK report (2020) House of Commons. September 2020. https://www.climateassembly.uk/report/read/final-report.pdf

[4]Direct Air Capture and Greenhouse Gas Removal Programme (2020) BEIS. November 2020. https://www.gov.uk/government/publications/direct-air-capture-and-other-greenhouse-gas-removal-technologies-competition

Table 1 Roundtable Participants

Name	Organisation	Breakout group
Naomi Vaughan (co-chair)	University of East Anglia	Land
Clair Gough (co-chair)	University of Manchester	Engineered
Peter Coleman	BEIS	Land
Pete Smith	University of Aberdeen	Land
Jonathan Scurlock	National Farmers Union	Land
Ian Tubby	Forestry Commission	Land
Tim Rayner	University of East Anglia	Engineered
Laura Hurley	BEIS	Engineered
Steve Smith	Oxford University	Engineered
Mike Smith	NECCUS	Engineered
Emily Cox	Cardiff University	Engineered
Piers Forster	Committee on Climate Change	Land
Indra Thillainathan	Committee on Climate Change	Land
David Joffe	Committee on Climate Change	Land
Mike Hemsley	Committee on Climate Change	Engineered
Richard Taylor	Committee on Climate Change	Engineered
Mike Thompson	Committee on Climate Change	Engineered

Table 2 GGR approaches that were considered 'in scope' and 'out of scope' by the CCC for the 6th carbon budget. Presented to participants during the introduction.

Approach	Modelled by CCC?	Commercialisation*	Removals potential, other factors
In scope			
Peatland restoration	Yes	Ongoing	Still net source in 2050, removals later
Afforestation, reforestation	Yes	Ongoing	Large, especially later in century
Perennial energy crops, SRF	Yes	Near-term in 2020s	Small (energy crops) to modest (SRF)
Agro-forestry, hedge planting	Yes	Ongoing	Modest (agro-forest) to small (hedge)
Habitat restoration	No	Unclear	Likely small, lack of robust data
Wood in construction	Yes	Ongoing	Small

Bioenergy with CCS	Yes	Late 2020, ramp 2030s+	Large
Direct Air Capture with CCS	Yes	Ramp late 2030s+	Large
Carbon-negative cements	No	From late 2020s	Small
Biochar	No. NZ speculative	From late 2020s	Small, unlikely best use of bioenergy
Enhanced weathering	No. NZ speculative	Mid-term, in 2030s	Modest
Accelerated weathering	No	Mid-term, in 2030s	Unclear, high energy input
Sea water electrolysis with CCS	No	Long-term, in 2040s	Unclear, high energy input
Out of scope			
Bio-based plastics/chemicals	No. Discussed in 2018 Bio-review	Some near-term, others in 2030s	Only likely a temporary store of carbon (disposal with CCS would be BECCS)
Burial of solid biomass or micro/macro-algae	No	Algae unlikely in UK	Not best use of bioenergy resources, higher GHG savings if used with CCS
Iron/macronutrient ocean fertilisation	No	Unlikely	Restricted by international frameworks (London Convention and Protocol)
"Blue carbon" (restoration of seagrass beds, tidal marshes, mangroves)	No	?	Very small potential in the UK

Notes.

1. Non-GGR approaches that were also out of scope were (i) Carbon capture and utilisation – due to very rapid return to atmosphere (e.g. synfuels from DAC) and (ii) Geoengineering (e.g. cooling gases, surface albedo, clouds, earth insolation).
2. Although out of scope, participants noted that land management to improve soil organic carbon is underpinned by UK, European and global long-term experiments and any reversibility concerns also apply to all biological carbon sinks. The contribution of peatland restoration to mitigation should not be undervalued even though CCC analysis shows it to still be a net source by 2050.

Table 3 Pilot discussion participants

Name	Institution
Dr Clair Gough	University of Manchester
Dr Nem Vaughan	University of East Anglia
Prof Brett Day	University of Exeter
Prof Jason Chilvers	University of East Anglia
Dr Irene Lorenzoni	University of East Anglia
Prof Tim Lenton	University of Exeter

Dr Astley Hastings	University of Aberdeen
Dr Diarmaid Clery	University of East Anglia
Dr Laurie Waller	University of East Anglia

Table 4 Example GGR policy options that were presented to participants.

Full integration with UK ETS (traded CO_2 price), potentially with multipliers
Storage or Negative CO_2 obligation for fossil suppliers & other emitters (traded certificates)
Flat payment for each tCO_2 of negative emissions achieved, set by Government
Reverse auction for negative emissions, contracted by Government at lowest £/t
CfD for negative emissions, contracted by Government at lowest £/t (top-up on traded CO_2 price)
High CfDs for product outputs e.g. power, heat, H_2, biofuels
Capital grants (especially for early or smaller projects)
Cost Plus Open Book (co-funded capital, opex paid by Gov)
GGR tax credits (tradable)
Government pays for action on natural capital (e.g. tree planting grants, ELM), CO_2 may not be verified
Regulations or standards enforcing use (e.g. building regs, peat extraction ban)
Addressing non-financial barriers (e.g. supply chains, skills, tenancy/landlord constraints)

Table 5 Detailed points on specific policy options raised during the roundtable. Note these are comments captured during the discussion rather than an exhaustive list of policy options, and are not necessarily the views of the authors or the CCC.

Policy option	Benefits	Challenges
Engineered carbon removal		
Building regulations for zero carbon homes and covering GHG balance over the whole lifecycle.	Technology neutral; changes demand for high carbon products (glass, concrete, cement etc.).	Building policy is already complicated; Government resistant to anything that might be seen as suppressing house building.
Short-term **innovation funding** to develop and deploy new GGR engineered removals in a technology-neutral manner.	Expands range of options at high TRL and deployable scale and starts to bring down costs.	Lack of demand for funds if done without a route to market deployment; need for industry match funding is harder to achieve for technologies that are not currently deployable.
Guaranteed prices to de-risk investments e.g. **Contracts for Difference** (with variable payments) and reverse auction.	Could involve multiple streams (e.g. power auctions), to support different types of technologies at different stages of development.	Needs upfront price information; requires very careful definition due to heterogeneity of GGRs even within technologies (e.g. BECCS).
Market creation policy - 'Commit and Review'.	Government backed target (e.g. 6 Mt CO_2 abated by BECCS in 2030) with BEIS business model adapted to create	Taxpayers need to be protected.

	fiscal certainty for this initial period; provides certainty and a route to market.	
Inclusion in **Emissions Trading Scheme** (e.g. incentivise BECCS in UK ETS by allocating installations free permits).	Technology neutral.	Price confidence/volatility, and near-term prices unlikely to be sufficiently high to drive deployment of more expensive GGR options/volatility, and near-term prices unlikely to be sufficiently high to drive deployment of more expensive GGR options.
Land-based carbon removal		
Incentives for farmers/ landowners: e.g. market pull for energy crop production, with link between sustainability criteria and land use (ELM etc).	Evidence base for energy crops exists, land theoretically available and market pull principal proven (e.g. RHI and RO); payments made on measured increase in soil carbon; could incentivise more novel options such as enhanced weathering for which the UK needs farm-scale learning.	Energy crop 'offer' must be compelling to land owners (financially and in terms of regulations and future land use flexibility); difficult to spin up quickly (next 10 years); could be expensive for government; disjointed support at different parts of the supply chain will slow delivery or lead to market failure; needs to be annual and based on real carbon benefits (MRV); enhanced weathering will require direct subsidy.
Agricultural reform across the UK to maximise carbon storage in a verifiable way with a mix of early and outcome payments (e.g. per tCO_2e stored or avoided). Remove subsidies for unprofitable and climate damaging practises.	Scope to transform livestock production based on good practice, with support and training to help farmers diversify and transition away from intense livestock to providing GGR; potentially net revenue/lifestyle positive for transitioning farmers.	Understanding equity of payments - who is paying for what; regulatory baseline needed to define rules, e.g. net zero per farm or allowing trading between farms towards industry wide goal? Need to work with livestock farmers; must be nuanced and specific (case by case).
Make GGR central to **ELM (Environmental Land Management Scheme)**	Well known forthcoming policy (UK and in devolved administrations); clear CO_2 benefit; ELM covers most land in UK.	Important but too late (post 2025); confused with other things such as biodiversity; too optional.
Farming shift to forestry	Farmers as point of delivery; spread education; extends land used.	Drop in land prices; traditional separation of forestry and farming; land use regulation; land availability; scalability; slow to change farmer culture; low take-up rate; ensure right species are planted for climate.
Delivery of **Climate Fund for Nature/England Tree Strategy**	Manifesto commitment of 30k ha of woodland a year implementation already in development.	Need several years of stable policy and support measures to give investors confidence to change land use; may not be sufficient interest from landowners to sustain long term take up; needs overwhelming

		public support at local level and government must back landowners in suitable woodland designs.
Cross-cutting mechanisms		
Obligations on fossil companies with tradable certificates. Option to link to an industry **offset/accounting** market for GGR permanent storage, avoiding double counting.	Polluter pays principle, seen as fairer than subsidies; technology neutral and fiscally sustainable (costs not on government); potential flexibility to increase scale over time and provide direction, e.g. part of obligation towards earlier-stage options; simple and straightforward if removals already operational (e.g. permit to extract a tCO_2 in the UK or imported to UK requires a verified removals certificate); industry support as part of net-zero pathways; industry prepared to pay; could cover domestic and international as part of ETS.	Fit with mass of existing/planned carbon policy (e.g. carbon emissions tax, ETS), will require significant policy re-wiring; in a commodity market the fossil fuel producer has no involvement in its use to generate electricity, so what obligation is being put on them?; more complicated in the early stages of GGR options; seen as an excuse for not mitigating; potential double counting; demand may outstrip supply; MRV - hard to verify at a project scale; may offshore fossil fuel activities.
Carbon pricing - development of a market/ value for negative emissions For example, biocarbon market price guarantee, accessible to farmers and growers through a variety of reward payments as well as supply chains.	Fee and dividend carbon pricing as a socially just way to implement carbon price. Encourage market certainty e.g. for energy crops and Short Rotation Coppice/ Short Rotation Forestry and potentially afforestation; start now with: review of existing agri-environment policy measures; support "initial conditions" required e.g. stronger domestic bioenergy supply chain; gradual introduction of carbon pricing focused on benefits and shielded by carbon border pricing to protect farmers against initial costs.	Must provide certainty for investors, taking account of the different current price points, without "picking winners". Needs to ensure the non-carbon sustainability issues are addressed; needs demand to give confidence on supply.
Enabling policies		
Development of **MRV** (monitoring, reporting, verification) for negative emissions.	Necessary for any policy	MRV will take time to establish and might remain challenging or partial for some GGRs for a while; should MRV require differentiation between geological storage and land-based solutions?
Amend **legislative frameworks**	For example, remove barriers to CO_2 transport and storage (including offshore); clarify ownership, licensing and liabilities around the subsoil and ocean storage; amendment of the Climate Change Act (e.g. Section 29, 1(b)) to include engineered carbon removal as a form of "UK removals".	