Carbon Capture & Storage Association

Position Paper

Capturing the Greenhouse Gas Removal (GGR) opportunity:

Recommendations on a well-functioning GGR market in the UK

July 2026

Executive summary

Greenhouse gas removals (GGRs), enabled by Carbon Capture, Utilisation and Storage (CCUS), are crucial to achieving net zero and delivering a low-carbon economy. The Intergovernmental Panel on Climate Change (IPCC)[1] and the Climate Change Committee (CCC)[2] both agree that **we need GGR technologies generating net-negative emissions to decarbonise**. The Independent Review of Greenhouse Gas Removals (2025), led by Dr Alan Whitehead CBE, also highlighted that GGRs will be required to address where emission reductions cannot be achieved in alternative ways, including to address residual emissions in 2050 and beyond.[3] This forms **the most cost-effective route to net zero while also driving growth through industrial decarbonisation**.[4]

The UK **is uniquely positioned to be a global leader in GGR deployment** due to its vast geological storage potential, developing CCUS market, engineering and advanced manufacturing capabilities, as well as established hubs of global financial activity. Notably, according to the UK Carbon Markets Forum, the value the UK generated for the global carbon credit market was **£1.2bn GVA in 2025**.[5]

The Seventh Carbon Budget, which is now in law, demonstrates there is a requirement to scale up engineered GGRs to **20.7 million tonnes of CO_2 per annum ($MtCO_2pa$) by 2040 and 35.8 $MtCO_2pa$ by 2050**.[6] The realisation of this required GGR volume depends on the development of a well-functioning GGR market.

The CCSA highlights four essential building blocks for a well-functioning GGR market:

1. Initial build-out of essential CO_2 infrastructure, alongside signals for a future route to market for additional projects.
2. Demand signals for high-quality, durable GGR credits in supportive revenue markets such as compliance in the UK Emissions Trading Scheme (UK ETS) and voluntary carbon markets (VCM).
3. Revenue support for early GGR projects through clear funding allocation rounds and bankable carbon Contracts for Difference (CfD).
4. Robust standards and methodologies that instil trust in the market.

While the UK has made considerable progress in establishing some of these building blocks for a well-functioning GGR market to emerge, there remain significant gaps. The CCC, in its 2026 Progress Report, found *"a large share of the engineered removals that the Government plans for the Sixth Carbon Budget period to have insufficient plans"*.[7]

The CCSA believes this is due to the insufficient measures to stimulate predictable, long-term demand for high-quality, durable GGR credits. **Without sufficient secure demand for GGR credits, project reliance on government revenue support increases.** The core revenue provided to GGR projects through credit sales, either via the voluntary or compliance carbon markets, **reduces the cost and liability to the UK government** of developing this infrastructure and **building a self-sustaining GGR value chain that delivers economic growth to the UK**.

1 Intergovernmental Panel on Climate Change, Special Report: Global Warming of 1.5°C – Summary for Policymakers, 2018.
2 Climate Change Committee, The Seventh Carbon Budget, 2025.
3 Dr Alan Whitehead CBE, Independent Review of Greenhouse Gas Removals, 2025.
4 Department for Energy Security and Net Zero (DESNZ), Carbon Budget and Growth Delivery Plan, 2025.
5 City of London (UK Carbon Markets Forum, Seizing the UK's carbon credit opportunity: Measuring value to enable action, 2026.
6 Climate Change Committee, The Seventh Carbon Budget, 2025.
7 Climate Change Committee, Progress in reducing emissions: 2026 report to Parliament, 2026.

Analysis conducted by AFRY, a member of the CCSA, demonstrates that:

- **£1bn / year in the 2030s and >£3bn / year by 2050**

  could, on average, be saved by the UK Government in order to meet their climate ambitions under the Seventh Carbon Budget, by stimulating corporate demand for GGRs today.

- **£35bn in cumulative savings by 2050 will not be realised**

  if the UK does not ensure well-functioning GGR markets through stimulating sufficient demand for its durable, high-quality GGR credits.[8]

Without long-term clarity, investment certainty, and supportive revenue markets, the UK is missing the opportunity to lead the advancement of this critical climate technology and leverage its economic benefits.

The CCSA calls on the UK Government to deploy GGRs and CCUS at pace and, in its response to the Independent GGR Review, provide the GGR market with a clear roadmap for near-term and future targets.

To realise these savings and establish the UK as a leader in GGRs, the UK Government should:

1. **Stimulate early reliable demand for high-quality, durable GGR credits** by bridging the gap between compliance and voluntary market mechanisms, for example through; implementing sectoral mandates in aviation and data centres; providing clarity on credible corporate green claims; and harnessing global demand through a UK-led buyers' club and Article 6.2 under the Paris Agreement.

2. **Maintain momentum on CCUS infrastructure delivery** by progressing the build-out of the East Coast Cluster and HyNet alongside progressing Viking CCS, the Acorn Project and additional clusters (see figure 3) that can deploy along similar timelines, and allocating CCUS contracts in the 2027 Spending Review.

3. **Ensure CCUS business models are investable and bankable for early GGR deployment** by enabling negative emissions revenues from Waste-to-Energy CCS (WECCS), addressing risk allocation and bankability concerns in the GGR business model, addressing volume risk and finalising the Power Bioenergy CCS (BECCS) business model, implementing the Non-Pipeline Transport (NPT) business model, and using public finance institutions to crowd in private investment.

4. **Ensure ambition to bring GGRs into the UK ETS by 2029 is legislated for in good time to ensure full integration is achieved in this Parliament.**

5. **Build confidence in the GGR market** by rationalising the development of flexible, well-aligned, and innovation-driven standards that support first-of-a-kind deployment.

This work has been developed by the CCSA and members of the CCSA GGR & Carbon Markets Working Group and draws upon the CCSA's submission to the Independent GGR Review. We thank AFRY and all the members for their contributions.

8 AFRY, Analysis conducted for the CCSA GGR & Carbon Markets Working Group on the interplay between government support and corporate demand for GGRs. For further information, please see AFRY's Carbon Market Modelling Analysis & Forecasting, 2026.

Introduction

GGR technologies generate net-negative emissions, removing net amounts of CO_2 from the atmosphere. This is done through nature-based processes or **through CCUS-enabled technologies** such as Direct Air Carbon Capture and Storage (DACCS), Bioenergy with Carbon Capture and Storage (BECCS) and Waste-to-Energy Carbon Capture and Storage (WECCS). These carbon removal technologies are enabled by CO_2 transport and storage (T&S) infrastructure to permanently store the captured CO_2 in deep geological formations beneath the seabed.

> *"As we brace for a future with overshoot, negative emissions technologies such as carbon dioxide removals (CDR) and carbon capture, usage, and storage (CCUS) emerge as indispensable tools. Their judicious deployment, coupled with an unwavering commitment to emissions reduction, should, in my view, form a key element of our path to a stable climate".*
>
> **Lord Nicholas Stern, author of the Stern Review and Chairman of the Grantham Research Institute on Climate Change and the Environment[9]**

Engineered GGR technologies also provide important co-benefits. Technologies such as BECCS and WECCS generate low-carbon power and waste heat, creating wider energy system benefits. WECCS captures 50% fossil and 50% biogenic CO_2, so for every tonne of GGR generated from WECCS, this represents an additional tonne of fossil abatement, while also maintaining a critical sanitation service. In turn, Direct Air Capture (DAC) could also provide important benefits to CO_2 supply resilience in the food, drinks, agriculture and healthcare sectors.

GGRs are identified as a critical growth industry in the UK's Modern Industrial Strategy and will be **crucial to not only decarbonise hard-to-abate industries in the most cost-effective way**, but also to **address residual emissions** in 2050 and beyond.[9]

The UK Government commissioned **an Independent Review of GGRs**, led by Dr Alan Whitehead CBE. The report, published in October 2025, highlights the importance of GGRs in reaching net zero, **noting that the delivery of carbon removals, using a portfolio of GGR technologies, will be required to address where emission reductions cannot be achieved in alternative ways**. The Government response to these recommendations is currently outstanding.

Balancing residual emissions and deploying GGRs is not possible without associated CCUS infrastructure to capture and permanently store the CO_2 safely underground. Importantly, **the additional revenue provided to GGR projects, either via the voluntary or compliance carbon markets, also reduces the cost and liability to the UK government** of developing this infrastructure, helping to move towards a self-sustaining CCUS market.

In the last few years, the UK Government has progressed deployment and policy support for GGRs. In parallel, the VCM has been rapidly growing during 2025 with a slowdown in the first half of 2026, reaching 49 million tonnes of carbon removals sold.[10] **Maintaining progress this year and securing support through the 2027 Comprehensive Spending Review will be crucial to sustaining momentum and providing these projects with a clear route to market.** In this paper, the CCSA:

1. Highlights the need, potential scale and opportunity for the UK to invest in engineered GGRs.
2. Outlines the four essential building blocks that make up a well-functioning GGR market and where the current gaps lie.
3. Provides recommendations on how to bridge the gaps and realise significant cost savings towards a self-sustaining CCUS and GGR market.

9 Stern, Nicholas, The Growth Story of the 21st Century: The Economics and Opportunity of Climate Action, 2025.

10 CDR.fyi, Key Metrics, as of June 2026.

The need

The UK needs substantial amounts of negative emissions to achieve net zero targets. The CCC's Seventh Carbon Budget (2038-42) advice estimates that **20.7 $MtCO_2pa$** of engineered removals will be needed by 2040, rising to **35.8 $MtCO_2pa$ by 2050** in the Balanced Pathway Scenario (see figure 1). More than half of this should be delivered by 2040. This pathway includes a mix of GGR technologies, including BECCS, WECCS, DACCS, and limited contributions from enhanced weathering and biochar. Engineered removals are **projected to start contributing from around 2028** and need to deliver **6% of emissions reductions by 2040**.

The Government's *Carbon Growth Budget Delivery Plan*, published in October 2025, also states that ***"CCUS, including GGRs, forms part of the most cost-effective route to net zero, and represent a significant economic opportunity, decarbonising industry and power in a way that drives growth"***, **forecasting 17.4 $MtCO_2pa$ by 2037 in carbon savings via permanent GGRs during the Sixth Carbon Budget period (2033-37)**.[12] However, the Government's plan lacks details on how this rapid ramp-up in engineered removals will be achieved after 2030.

The UK's 2030 climate target to reduce emissions by 68% on 1990 levels by 2030 is within reach; however, this is dependent on maintaining policy support and momentum for net zero. The CCC's 2026 Progress Report states that without clarity on long-term funding and connections to CO_2 T&S infrastructure to support the volume of GGR projects required, *"there is considerable risk associated with a large share of planned engineered removals in the Sixth Carbon Budget period"*. Therefore, **in order for GGRs to put the "net" in net zero in 2050, they need to start scaling up now**.

Required GGR volumes Mt/year
Climate Change Committee, Balanced Pathway

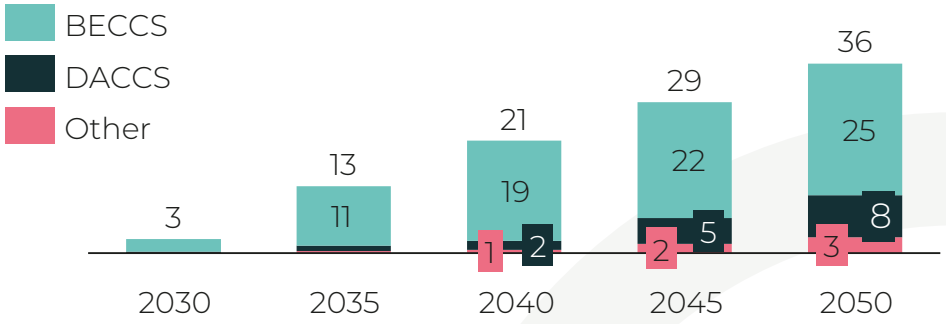


Figure 1 Required GGR volumes in the Balanced Pathway Scenario of the 7th Carbon Budget ($MtCO_2/pa$). WECCS is accounted as part of BECCS in the CCC's modelling for the 7th Carbon Budget. Source: Climate Change Committee, 2025

11 Climate Change Committee, The Seventh Carbon Budget, 2025.
12 Department for Energy Security and Net Zero (DESNZ), Carbon Budget and Growth Delivery Plan, 2025.
13 Climate Change Committee, Progress in reducing emissions – 2026 report to Parliament, 2026.

The scale

Globally, a variety of GGR methods are scaling, including both nature-based and engineered removals, with the latter taking up a small portion (**estimated to be 1.07 $MtCO_2$pa currently**) of the market.[14] The 3rd edition of the State of CDR report finds that, while current delivery of carbon removals is almost entirely made up from nature-based methods, "novel" CDR, which includes BECCS and DACCS, **has been growing at 40% per year and dominates forward GGR sales**.

As set out in figure 1, the Sixth and Seventh Carbon Budgets require significant amounts of engineered removals to be deployed, alongside deep emissions reductions. With the right policy and investment signals in place, **the CCSA found that the existing UK GGR project pipeline (2025) could deliver 18.2 $MtCO_2$pa by 2035**.[15] This is sufficient to keep the UK on track to meet both the Government's *Carbon Budget and Growth Delivery Plan* and the CCC's Seventh Carbon Budget advice (See figure 2).

This is complemented by a variety of CCUS clusters and supportive infrastructure where GGR projects could deploy in the UK, as shown in figure 3. The CCSA Delivery Plan Update 2025 found **over 100 CO_2 capture projects in various stages of development alongside 12 CO_2 T&S clusters**.[16]

Despite the potential for a strong and diverse portfolio of UK-based GGR projects to contribute to the UK's climate targets, **there remains a significant gap between operational GGR projects and the UK Government's GGR ambitions**, deadlines for which are fast approaching. The level of scale-up needed is not unprecedented and has been successfully delivered in other sectors, such as solar energy. **Allocation of government support to GGRs in the next Comprehensive Spending Review, alongside robust demand stimulation during 2026 will be critical to establishing the UK's GGR sector and attracting private investment and growth.**

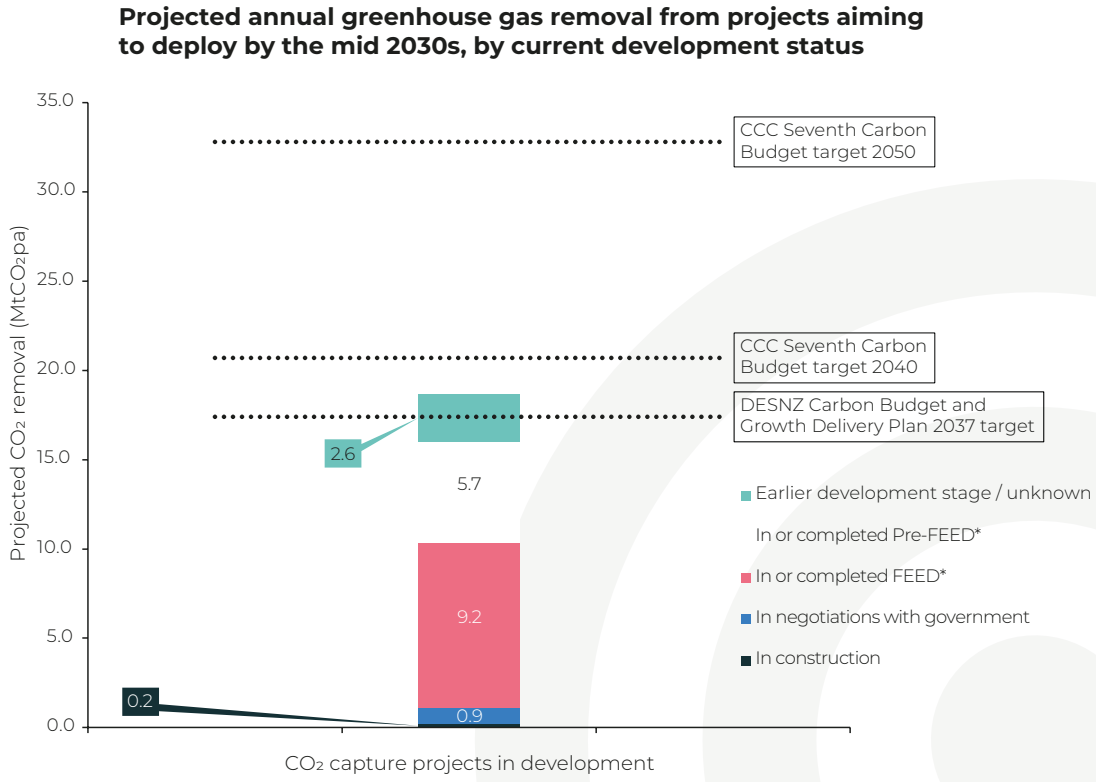


Figure 2 Projected annual greenhouse gas removal ($MtCO_2$pa) from projects aiming to deploy by the mid-2030s, categorised by current development status. This study was conducted in 2025 and therefore does not take into account projects that may now be developed through the East Coast Cluster Teesside Selection Process. Source: CCSA Delivery Plan Update, 2025

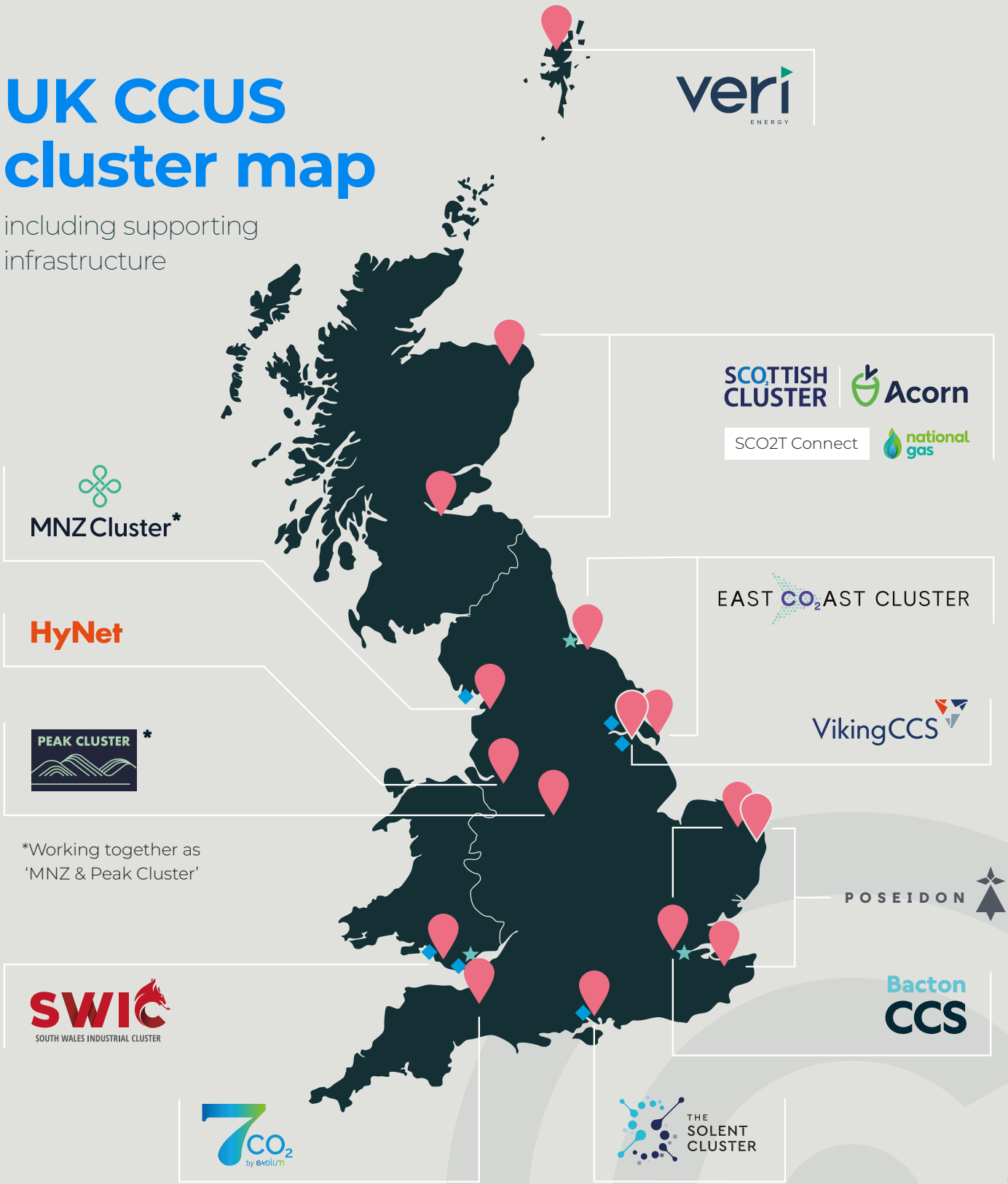
14 The State of Carbon Dioxide Removal, 3rd Edition, 2026.

15 CCSA, CCUS Delivery Plan Update 2025, 2025.

16 CCSA, CCUS Delivery Plan Update 2025, 2025.

UK CCUS cluster map

including supporting infrastructure



Supportive Infrastructure

◆ Navigator Terminals - multi-model CO_2 terminals

Navigator

★ ABP Ports with developing CCUS infrastructure

ABP | ASSOCIATED BRITISH PORTS

Figure 3 UK CCUS Cluster Map, including supportive infrastructure. CCSA, 2026

The policy landscape

To realise the potential project pipeline of **18.2 $MtCO_2pa$ by 2035**, policy support and **momentum must be maintained**, with clear signals for near-term deployment and demand. Credible policy and market frameworks alongside investment certainty to derisk early projects is essential. In 2025, we have seen the UK Government significantly progress supportive and enabling policies for GGRs. **Figure 4 outlines the CCSA's perspective on the four necessary building blocks to enable an early GGR market and policy progress against them.** These building blocks are interlinked, therefore they should all progress concurrently to establish a well-functioning market.

Overall, the UK has progressed policy support on GGRs, including through relevant consultations, infrastructure and standards development, but **significant gaps remain in long-term investment certainty, sufficient demand signals, and market instruments needed to enable deployment at scale**.

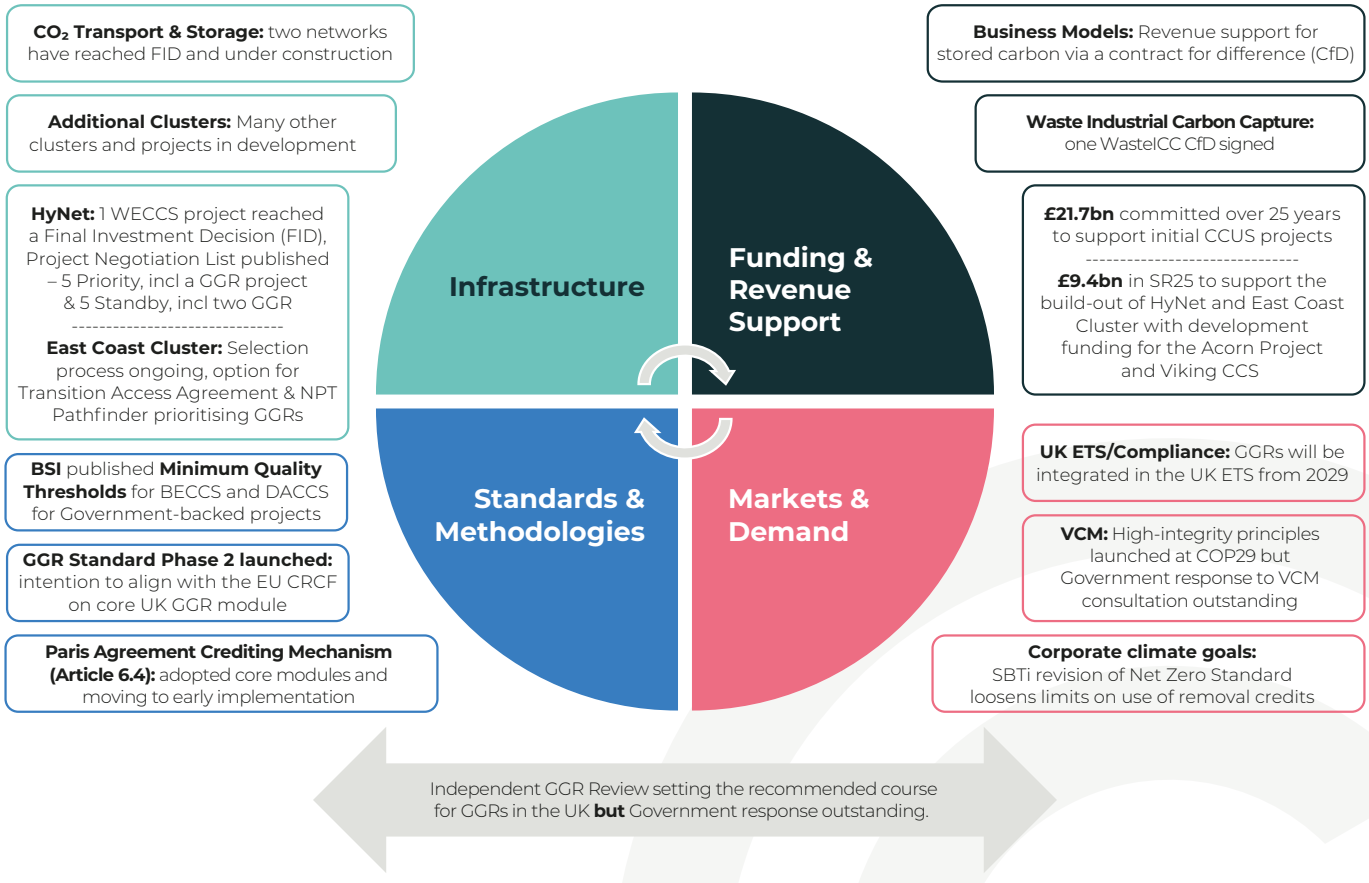


Figure 4 GGR market building blocks and associated policy progress. Source: CCSA, 2026

The following gaps remain for GGR deployment:

Infrastructure

- Delivering carbon removals will require sufficient CO_2 infrastructure to be developed concurrently. Without access to essential T&S infrastructure, including non-pipeline transport (NPT), CO_2 emissions cannot be permanently stored offshore.
- Uncertainty over project selection timelines and allocation processes for T&S network connections prevents accurate business planning and increases the risk of project closure or relocation.
- Filling existing T&S capacity with GGR projects diversifies CO_2 volumes within a network. Government initiatives such as the NPT Pathfinder process and the provision of contracts such as the Transition Access Agreement, which do not require the support provided by an existing CCUS business model, are positive steps towards enabling GGR scale-up.
- Developing of non-firm T&S products to enable CO_2 volumes from GGR projects and ensuring the CCUS Network Code is able to take into account merchant projects accessing the T&S network, including those where captured CO_2 has been aggregated from multiple projects, are also important enablers.

Revenue support & funding

- The publication of the GGR business model in August 2025 provided a positive path forward for GGR projects in the UK. However, it is crucial that this continues to be developed to address investability and bankability concerns on future contract iterations.
- For large-scale BECCS, progress has significantly slowed as the bespoke Power BECCS business model has not received an update since December 2023, despite transitional support mechanisms having been being put in place. Lack of communication regarding next steps for the Power BECCS business model and concerns over how volume risk is treated within the contract considerably hurts investor confidence and committed development expenditure from the private sector.
- Commercial models for NPT, particularly crucial for dispersed GGR sites, are also yet to be defined. Unfinalised business models pose a significant barrier to deployment of GGRs in the UK as investors and project developers do not have sufficient visibility of the risk allocation between the UK Government, the Transport and Storage Company (T&SCo) and the GGR developer. This makes it impossible to negotiate offtake contracts with interested corporate parties for the supply of durable GGR credits.

Demand

- There is a significant lack of demand-side and VCM policies for GGRs in the UK. Without sufficient predictable demand to balance the level of supply needed to meet climate targets, projects will be unable to reach financial close and invest at scale.
- Carbon Direct, in their 2026 State of the VCM report, highlight the 19 million tonne demand gap between corporate climate targets and corporate climate action.[17] The report suggests that to meet these corporate climate targets in the 2030s, companies need to act now and begin procuring today.
- The Science Based Targets Initiative (SBTi) revised Corporate Net Zero Standard could be a key catalyst for demand, as could driving standards for low carbon building products, coupled with procurement mandates or incentives that would ensure removed CO_2 is embedded into novel building materials.
- The UK has committed to integrating GGRs in the UK ETS which is a welcome and essential step towards building supportive revenue markets. However, political uncertainty over integration timelines and the ongoing negotiations for linking the EU and UK ETS systems undermines investor confidence over the near and longer term.

17 Carbon Direct, 2026 State of the VCM: Closing the CDR Demand Gap, 2026.

- The Energy from Waste (EfW) sector is due to enter the UK ETS in 2028, while Decarbonisation Readiness Requirements are already in place for combustion assets. These regulatory signals need to be matched by supportive markets that enable projects to act on the market signal created by the ETS. An effective GGR market, which rewards sites for decarbonising and delivering carbon removals, will support investment decisions and enable sites to meet the intent of regulation while reducing cost impacts on local authorities.

- Overall, voluntary demand remains uncertain and unstructured, and no strong policy signals exist to bridge the gap between compliance and voluntary early corporate action. There is, therefore, a critical missing signal, ahead of compliance markets emerging, to create sufficient demand for GGRs.

Standards & methodologies

There is a large number of GGR standards developed by individual jurisdictions as well as internationally such as the Paris Agreement Crediting Mechanism (PACM). The existence of a multitude of standards creates divergence in accounting frameworks and associated quality thresholds. This, in turn, creates market fragmentation and does not support the development of high-trust voluntary markets when there is little comparability across jurisdictions and private standards bodies.

Policy coordination

Responsibility for GGR policy is currently split across various Government departments: engineered removals is led by the Department for Energy Security and Net Zero (DESNZ); waste and forestry by the Department for Environment, Food and Rural Affairs (DEFRA) and devolved administrations; while low-carbon fuels are led by the Department for Transport (DfT). Clear and strategic coordination across Government is needed to ensure a coherent approach to GGR deployment.

Policy clarity

Long-term policy, investor certainty and timely decisions are crucial for GGR projects to progress in the UK. Similar to any emerging technology deployment and associated market development process, engineered removal technologies need sufficient time and clear long-term policy and market signals to advance and benefit from iterative lessons learned. Delaying action risks missing critical opportunities to scale effectively and realise benefits for the UK. As the CCC states, the overall Seventh Carbon Budget target *"is deliverable, provided action is taken rapidly"*.[18]

Outstanding GGR Policy

- Government response to the Independent GGR Review *(published in October 2025)*
- Next steps for the GGR business model *(last published in August 2025)*
- Publication of the Power BECCS business model *(last updated in December 2023)*
- Enabling negative emission sales in the Waste Industrial Carbon Capture (ICC) business model *(last update in November 2025)*
- Government response to the Voluntary Carbon and Nature Markets consultation *(closed in July 2025)*
- Technical consultation on integration of GGRs in the UK ETS *(no timeline provided)*
- Innovation funding to improve TRL levels of various GGR technologies
- Full BSI methodologies *(to be published in 2027)*
- A decision on the linkage of the UK and EU ETS *(EU-UK Summit postponed)*
- Government response to the Common Biomass Sustainability Framework consultation *(no timeline provided)*

18 Climate Change Committee, The Seventh Carbon Budget, 2025. https://www.theccc.org.uk/publication/the-seventh-carbon-budget/#post-49721-_Toc187753770

The opportunity

GGRs can be a driver of economic growth for the UK due to the following factors:

- **Geological storage:** The UK's plentiful geological CO_2 storage potential, estimated to be 78 gigatonnes, enables it to establish itself as an exporter of GGR services, beyond the capacity needed to account for its own residual emissions.

- **CCUS infrastructure & revenue support:** The UK is progressing with the deployment and build-out of essential CCUS infrastructure. Through the CCUS Cluster Programme, the UK Government has established comprehensive support schemes and bespoke CfDs for a variety of carbon capture applications, including biomass and EfW.

  The GGR business model, for example, is a carbon CfD that provides long-term revenue certainty to GGR projects by paying the difference between an agreed strike price and the market value of the carbon removal credits produced. The top-up payment is currently only paid for credits produced and sold, therefore the it is critical for projects to be able to access secure and sufficient demand in order for the CfD to be bankable.

- **Finance:** The UK hosts well-capitalised financial institutions and hubs of global financial and insurance activity in the City of London that have extensive expertise in the development of carbon markets. The UK also has deep expertise in sustainable finance and commodity innovation and a comprehensive carbon market ecosystem. The UK Carbon Markets Forum estimates that **the value the UK generates from the global carbon credit market was £1.2bn GVA in 2025**.[19] McKinsey also forecast **a gigaton scale global carbon removal market worth up to $1.2 trillion by 2050**[3]. Hosting and delivering carbon credit services in the UK can, therefore, not only leverage existing financing and market capabilities, but also be a core pillar of the UK's global competitiveness and export-led growth.

- **Carbon markets:** The UK has vast experience with setting up and operating carbon markets,[20] demonstrated by the UK ETS as well as the establishment of the Woodland Carbon Code and the Peatland Carbon Code that provide government-backed monitoring, reporting and verification (MRV) and credit issuance systems. The UK also played a key role in shaping Article 6 of the Paris Agreement and established key VCM initiatives such as the Integrity Council for the Voluntary Carbon Market (ICVCM) and the Voluntary Carbon Markets Integrity Initiative (VCMI).

As a result, the UK:

- **is uniquely positioned to be a global leader in GGR deployment** and capitalise on the associated first mover advantages and growth opportunities;

- has the potential to **establish itself as the global trading centre of GGRs**, taking advantage of this market potential;

- and, **in stimulating corporate demand for GGRs, could save nearly £35bn by 2050 in GGR costs**.[21]

As shown in figure 1, the UK has set ambitious targets for engineered GGRs, with CCC modelling showing a requirement growing to **36 $MtCO_2$pa by 2050**. The realisation of required GGR volume depends on **sufficient revenue streams for GGR projects**.

19 City of London (UK Carbon Markets Forum), Seizing the UK's carbon credit opportunity: Measuring value to enable action, 2026.

20 City of London (UK Carbon Markets Forum), The role of the UK in carbon markets: a path to global leadership, 2025.

21 AFRY, Analysis conducted for the CCSA GGR & Carbon Markets Working Group on the interplay between government support and corporate demand for GGRs. For further information, please see AFRY's Carbon Market Modelling Analysis & Forecasting, 2026.

According to AFRY analysis shown in figure 5, **corporate demand for GGRs in voluntary and compliance markets could save UK government on average £1bn per year in the 2030s and >£3bn per year by 2050**.[22]

Growing the market and available demand for GGRs now, accelerates the transition towards a self-sustaining CCUS market, which will require less government support to meet needed GGR volumes in the future. **Savings reach £180m per year in 2030 and average ~£1bn/year in the 2030s while annual savings continue rising to £1930m in 2040 and >£3000m in 2045.**[23]

Developers will rely on revenues from **government support, through the GGR carbon CfD and/or GGR credit sales** into carbon markets, both compliance and voluntary. AFRY's carbon market modelling provides scenarios that describe varying levels of climate ambition and demand for GGRs under voluntary and compliance routes:[24]

- **Central:** In a thriving voluntary market backed by supportive government actions and appropriate integration with compliance markets, corporates strive to meet their climate goals leading to global net zero by 2060 and make important use of permanent GGRs.
- **Low:** In a less stimulated market, corporates pursue less ambitious climate goals leading to net zero by 2070 and make limited use of permanent GGRs.

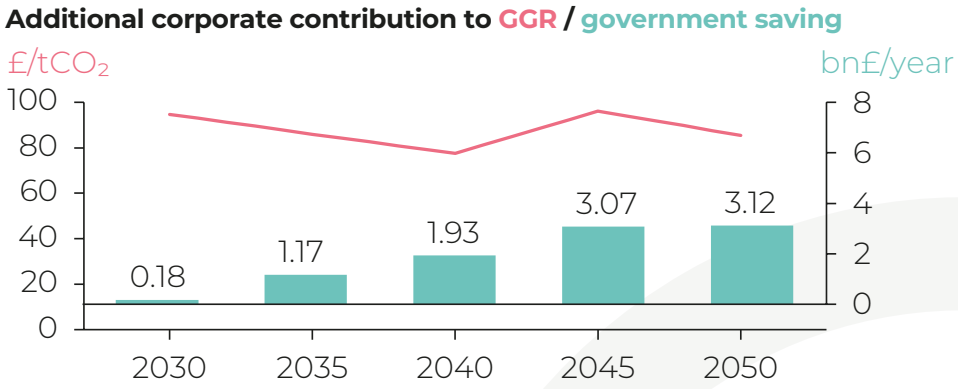


Figure 5 The difference between AFRY's modelled GGR price in the Central and Low scenarios serves as a proxy for the additional corporate contributions per tonne of CO_2 in a thriving market enabled by appropriate policy and demand-side incentives, compared to one where activity remains limited, noting that UK GGRs may be sold into voluntary or compliance markets in the future.

22 ibid

23 AFRY, Analysis conducted for the CCSA GGR & Carbon Markets Working Group on the interplay between government support and corporate demand for GGRs. For further information, please see AFRY's Carbon Market Modelling Analysis & Forecasting, 2026.

24 AFRY, Market Analysis and Forecasting: Carbon Markets, n.d.

Recommendations

If the UK is to take advantage of this growing market, there are policy and regulatory gaps that need to be addressed and the window of opportunity to address them is narrowing. With momentum already building in UK GGR deployment, **timely government decisions can secure a competitive edge, enabling the UK not only to become a global leader in GGRs, but also to materialise essential cost savings in the delivery of this critical technology**.

Government upfront investment, through revenue support, is needed to establish a well-functioning, predictable and long-term GGR market, de-risk initial projects and attract private investment. At the same time, international corporate buyers are seeking urgent certainty for the supply of durable, high-quality GGR credits to meet their net zero obligations in the 2030s and beyond. There is already clear demand for agreeing contracts now for the delivery of GGRs by 2030, but without a predictable stable market, it is difficult for such projects to take final investment decisions.

The CCSA urges the Government to address the outstanding policy gaps mentioned in the "policy landscape" above and recommends the below market enablers and policy signals to create **long-term investor certainty and reap the economic growth benefits of establishing a well-functioning GGR market in the UK**. The recommendations are categorised under the four building blocks of a well-functioning GGR market, noting signals for early or future deployment, and ranking them by order of priority (out of a marker of five).

Summary of recommendations

1. Stimulate near-term corporate demand through targeted policy incentives
2. Bridge voluntary and compliance demand through hybrid mechanisms and sectoral mandates
3. Harness global demand through a UK-led buyers' club
4. Ensure the ambition to bring GGRs into the UK ETS by 2029 is legislated for in good time, so that full integration can be achieved in this Parliament
5. Clarify routes to market and the approach to funding allocation for CCUS
6. Expand the CCUS market by enabling industries across the UK to access alternative CO_2 transport solutions such as ship, road and rail to unlock dispersed GGR projects
7. Enable negative emissions revenues from WECCS
8. Address bankability concerns in the GGR business model
9. Finalise the Power BECCS business model
10. Leverage public finance to accelerate early deployment
11. Pursue rationalisation, alignment and use of existing standards

Markets & demand

(early & future deployment)

At this early stage of GGR market creation, there is a **clear need for Government to step in and stimulate the market.** GGR projects are thus derisked, and private entities and investors can then provide initial capital needed for deployment. It is paramount to ensure that GGR projects have a clear path to revenue support certainty and have visibility of the funding envelope available so that public investment is matched with private investment at the market creation phase. However, this also needs to be supplemented by **measures to stimulate predictable, long-term demand for high-quality, durable GGR credits, as the key to unlocking the market and reducing overall support provided by the Government**.

1. Stimulate near-term corporate demand through targeted policy incentives

Introduce a package of near-term policy measures to unlock early corporate procurement of high-quality, durable GGR credits. This should centre around providing corporates with sufficient confidence and incentives for early action in GGR credit procurement through long-term offtake agreements. Early corporate action in GGR procurement will secure better deals while also supporting GGR supply chain development. Strengthening voluntary demand in the late-2020s and early-2030s is modelled to reduce the cost of GGR deployment, enabling £1bn per year savings to the UK Government in the 2030s and >£3bn per year by 2050. The CCSA recommends the following near-term demand incentives.

a. **Clarify the UK's stance on corresponding adjustments** under the Paris Agreement Nationally Determined Contributions (NDCs) as this could act as a barrier for UK-based GGRs to attract global demand. Corresponding adjustments for carbon removed and stored in the UK but purchased by a non-UK entity currently only count to meet the UK's NDC rather than provide adjustments to meet emission reduction goals of the purchasing country.

b. **Engage with financial entities such as the Financial Conduct Authority (FCA) and the London Stock Exchange (LSE) to provide regulatory incentives such as GGR procurement guidance or clear reporting requirements** to establish early corporate participation in GGR markets through advance market signals.

c. **Provide clarity on corporate environmental reporting through the UK's Green Claims Code** to give corporates confidence that GGR credit purchases are credible and recognised as part of net zero strategies. This will support derisked early corporate action for multi-year offtake contracts which are essential to build the investor confidence needed to reach financial close for GGR projects.

2. Bridge voluntary and compliance demand through hybrid mechanisms and sectoral mandates

Develop mechanisms that create early, semi-compliance demand ahead of full inclusion of GGRs in the UK ETS in 2029, giving corporates confidence to contract GGR supply at scale now. This could include driving demand for GGRs and Low-Carbon Products through green public procurement requirements and sector specific mandates. For example, GGRs represent a good opportunity to reduce the costs of decarbonising aviation which is a growing sector without many decarbonisation options.

Bringing forward corporate demand will accelerate deployment and unlock cost reductions, directly enabling cost savings for the UK Government by reducing the level of government support required. **This should include a clear transition pathway from voluntary to compliance markets,** ensuring early corporate buyers are not penalised as regulation evolves, as set out in recommendations 1a and 1c. Enabling hybrid demand mechanisms, combining voluntary commitments with mandated obligations, and **funnelling GGR deployment to sectors where it is most cost-effective to do so, will create predictable and bankable revenue streams for GGR projects**.

a. This can include **implementing a well-designed GGR requirement for aviation residual emissions, through a net zero aviation mandate, that does not undermine existing SAF obligations or investments today**. The integration of GGRs with the SAF Mandate, as recommended by the Independent GGR Review, should be introduced on a pragmatic timeline, to enable both a clear route to market for SAF production and GGRs. Overtime, as both markets mature, this should support greater competition between decarbonisation options while ensuring both SAF and GGR supply chains have the confidence needed to scale.

b. In addition, **sectoral mandates could be explored for data centres, whereby they are built "decarbonisation ready" through mandating early procurement of GGRs** in order to meet both the Government's AI Superpower and Clean Power Missions, recognising this is a rapidly evolving policy landscape. Interactions with CCS-enabled power projects are explored further in an upcoming CCSA position paper.

3. Harness global demand through a UK-led buyers' club

Position the UK as a hub for international GGR demand by leading coalitions of GGR buyer countries to aggregate corporate purchasing power and instil trust in the VCM. Expanding and stabilising the global buyer base will drive economies of scale, reduce costs, and deliver significant long-term savings to the UK Government in meeting required GGR volumes.

a. **Establish a demand aggregation initiative:** An example of such an initiative, includes the EU Buyers' Club which is voluntary initiative launched by the European Commission to aggregate private demand for certified carbon removals, supporting the Carbon Removals and Carbon Farming Regulation (CRCF). It is structured as a voluntary market platform and matchmaking marketplace facilitated by the European Commission. Its primary objective is to kick-start a high-integrity European market for carbon removals by directly connecting buyers with project developers generating CRCF-certified units. The CCSA recommends the UK Government take up a similar role in aggregating corporate demand for GGRs and securing financing by bringing government-backed suppliers together with interested buyers.

b. **Sign bilateral agreements on GGRs through the Paris Agreement Article 6.2 mechanism** to showcase UK leadership on GGRs and enable offtake for UK-based GGR projects under the NDC framework as well as technology expertise exports from the UK. Examples of world-leading agreements on durable carbon removals include the one signed by Norway and Switzerland in June 2025 that committed to the pilot transfer of small volumes of 100-10,000 tCO_2 from BECCS and other credits. Despite small volumes these agreements provide a strong signal to GGR developers that they can access global demand for their durable carbon removal credits, backed by government.

4. Ensure the ambition to bring GGRs into the UK ETS by 2029 is legislated for in good time, so that full integration can be achieved in this Parliament.

This should include a flexible supply control framework that recognises the additional value of a GGR credit in relation to an allowance. Integration should also be delivered alongside EU-UK ETS linkage but not delayed by it. It should be delivered alongside the establishment of a robust Carbon Border Adjustment Mechanism (CBAM) covering all relevant sectors, to support a strong carbon price trajectory capable of enabling investment in the sector. This will establish long-term, compliance-driven demand for GGRs, crowd in private capital, and reduce reliance on taxpayer-funded revenue support.

Infrastructure (early & future deployment)

2026 has seen the UK Government progress the selection process for the East Coast Cluster, including through favourable structures for GGR projects such as the NPT Pathfinder and the Transition Access Agreement, which are aimed at projects requiring no or limited Government support. Momentum needs to be maintained to unlock the UK's potential GGR pipeline of up to 18.2 $MtCO_2$pa by 2035 and ensure projects can align with associated T&S capacity and delivery timelines.

5. Clarify routes to market and the approach to funding allocation for CCUS, including through:

a. **Progressing the buildout of the East Coast Cluster and HyNet, alongside continued development of Viking CCS, the Acorn Project, and additional clusters** (see figure 3) **that can deploy along similar timelines.**

b. **Allocating CCUS contracts in the 2027 Spending Review to the next CCUS projects and clusters** allowing them to reach key investment decisions this Parliament. This should include clarity on deployment of merchant CCUS projects and cross-border CO_2 storage.

6. Expand the CCUS market by enabling industries across the UK to access alternative CO_2 transport solutions such as ship, road and rail to unlock dispersed GGR projects

Enable NPT projects, including aggregator-led projects, to participate in CCUS allocation rounds to ensure dispersed GGR sites, such as biomass, EfW and anaerobic digestion facilities, can access CO_2 T&S infrastructure. This can unlock a variety of medium and small-scale GGR volumes, promote merchant GGR models that rely on VCM revenues rather than government support, and deliver a more diverse and resilient CO_2 network.

Funding & revenue support (early deployment)

7. Enable negative emissions revenues from WECCS

Review the "Restrict & Review" clause of the Waste ICC business model to ensure WECCS projects can generate revenues from negative emissions. As soon as WECCS projects can engage with the VCM to sell the portion of GGR credits they generate, costs to Government of the Waste ICC business model will be lowered.

8. Address bankability concerns in the GGR business model

Refine provisions related to risk allocation, volume support and the fair market value principles to better reflect current VCM conditions and liquidity.

9. Finalise the Power BECCS business model

Provide an urgent update and clear timeline for the Power BECCS business model to restore investor confidence and unlock private sector investment in large-scale BECCS deployment, which will be critical to both meeting the Carbon Budgets and required GGR volumes as well as the UK Government's Clean Power 2030 Mission. Address how volume risk is treated within the contract as this remains a key risk of the current business model design, as published in December 2023.

10. Leverage public finance to accelerate early deployment

Utilise GB Energy, the British Business Bank and the National Wealth Fund, including lowering access thresholds, to unlock investment and support GGR innovation alongside supportive shared infrastructure on which GGR projects rely. This should be targeted to both pre-FID and post-FID project delivery as well as development expenditure to help projects reach commercial scale. In addition, align strategic priorities of these public finance bodies on CCUS and GGRs to enable the scale-up needed.

Standards & methodologies
(early & future deployment)

There is already a large number of standards and methodologies for GGRs that are being developed both by individual jurisdictions, including the UK BSI GGR Standard, and internationally, the PACM. However, the proliferation and diversification of standards can become a challenge during future deployment of GGRs, creating market fragmentation and divergence. The CCSA supports the development of quality thresholds for UK-based GGR projects that receive government support in order to instil confidence in the market and provide a government-backed standard but encourages less divergence in GGR standards.

11. Pursue rationalisation, alignment and use of existing standards where possible.

a. **Adopt flexible, innovation-driven, standards for early GGR deployment through BSI Phase 2.** As GGRs are first-of-a-kind (FOAK) technologies, overly prescriptive approaches to standard-setting restricts learning-by-doing and iterative improvements. Flexible standards can build confidence in the VCM while also enabling early deployment.

b. **Progress alignment of the UK GGR standard with the EU CRCF.** to support market interoperability, build investor confidence, and enable a level-playing field among eligibility criteria for GGR technologies. This should include alignment with international standards and focusing on a single approach so as to not increase the number of standards available.

List of acronyms

BECCS:	Bioenergy with Carbon Capture and Storage
BSI:	British Standards Institution
CBAM:	Carbon Border Adjustment Mechanism
CCC:	Climate Change Committee
CCS:	Carbon Capture and Storage
CCSA:	Carbon Capture and Storage Association
CCUS:	Carbon Capture Utilisation and Storage
CDR:	Carbon Dioxide Removal
CfD:	Contract for Difference
CRCF:	Carbon Removals and Carbon Farming
DAC:	Direct Air Capture
DACCS:	Direct Air Carbon Capture and Storage
DEFRA:	Department for Environment, Food and Rural Affairs
DESNZ:	Department for Energy Security and Net Zero
DfT:	Department for Transport
EfW:	Energy from Waste
ETS:	Emissions Trading Scheme
EU:	European Union
FCA:	Financial Conduct Authority
FID:	Financial Investment Decision
FOAK:	First of a kind
GGR:	Greenhouse Gas Removal
GVA:	Gross Value Added
ICC:	Industrial Carbon Capture
ICVCM:	Integrity Council for the Voluntary Carbon Market
IPCC:	Intergovernmental Panel on Climate Change
LSE:	London Stock Exchange
MRV:	Monitoring, Reporting and Verification
$MtCO_2pa$:	Million Tonnes of CO_2 per annum
NDC:	Nationally Determined Contributions
NPT:	Non-Pipeline Transport
PACM:	Paris Agreement Crediting Mechanism
SAF:	Sustainable Aviation Fuel
SBTi:	Science-Based Targets Initiative
SR:	Spending Review
T&S:	Transport and Storage
T&SCo:	Transport and Storage Company
tCO_2:	Tonnes of CO_2
TRL:	Technological Readiness Level
UK:	United Kingdom
UK ETS:	UK Emissions Trading Scheme
VCM:	Voluntary Carbon Market
VCMI:	Voluntary Carbon Markets Integrity Initiative
NDCs:	Nationally Determined Contributions
WECCS:	Waste-to-Energy Carbon Capture and Storage

Disclaimers

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The views and recommendations in this position paper are those of the CCSA and are not expressly the views of the contributors to the work.

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About the CCSA

The CCSA is the lead European association accelerating the commercial deployment of carbon capture, utilisation and storage through advocacy and collaboration.

We work with members, governments and other organisations to ensure CCUS is developed and deployed at the pace and scale necessary to meet net zero goals and deliver sustainable growth across regions and nations.

The CCSA currently has over 120 member companies who are active in exploring and developing different applications of carbon capture, from diverse point sources and directly from air, CO_2 transportation by pipeline and ship, utilisation, geological storage, and other permanent storage solutions, as well as members from management, legal and financial consulting sectors.

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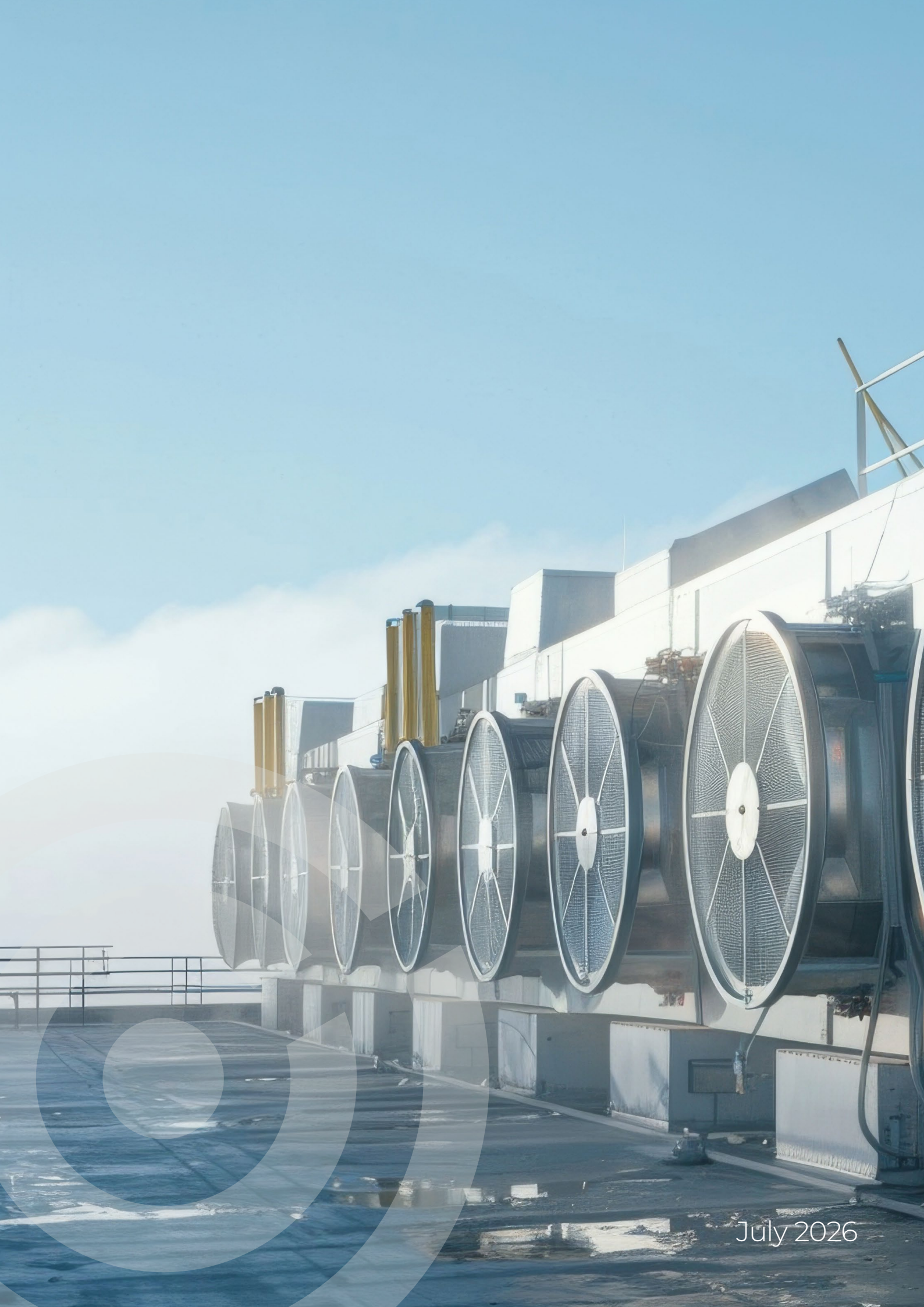

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