CCSA response to the Scottish Climate Change Plan

Thursday 29th January 2026

The Carbon Capture and Storage Association (CCSA) is pleased to provide a response to the Scottish Climate Change Plan. The CCSA brings together a wide range of specialist companies across the spectrum of Carbon Capture, Utilisation and Storage (CCUS) technology, as well as a variety of support services to the energy sector. The CCSA exists to represent the interests of its members in accelerating the commercial deployment of CCUS in the UK, EU and internationally through advocacy and collaboration to achieve net zero emissions by 2050.

Summary

The CCSA welcome the consultation on the Scottish Climate Change Plan. We are supportive of the inclusion of CCUS in the five key opportunity areas for Scotland, and note that CCUS will have an enabling and key role for three of the other areas by:

- enabling low-carbon hydrogen production from methane
- supporting decarbonisation of energy-intensive industries – either through the direct use of carbon capture, or by enabling carbon utilisation (CCU) with low-carbon hydrogen to produce a range of e-fuels and dispatchable low-carbon power, and
- supporting the deployment of renewable energy - Power CCS and hydrogen-to-power generation will complement a renewables-led energy system, helping to meet demand during extended periods when these technologies cannot satisfy demand with intermittent generation. Deployment of renewable energy will also create an opportunity to increase energy security by creating location-based solutions which utilise renewable power locally to produce a range of e-fuels – this is critical for protecting the highly skilled oil and gas workforces.

We also welcome the discussion of the role of the Scottish National Investment Bank (SNIB) in funding projects and highlight that it should consider taking a similar role in developing CCUS infrastructure as the National Wealth Fund (NWF) has in the Peak Cluster. Investments already made by the NWF included £28.6 million for the Peak Cluster for the development of the CO_2 pipeline connecting capture projects in the Peak District to Morecambe Net Zero's geological storage.

The CCSA note that Scotland has a significant advantage regarding CCUS deployment, given the development of the Scottish Cluster and the non-pipeline transportation (NPT) CO_2 storage project at the Sullom Voe Terminal (SVT). These projects both build upon the existing network of oil and gas pipelines, some of which link Scotland's industrial clusters to

transportation for CO_2 storage sites and utilise the existing highly skilled workforces within the Scottish Cluster and at SVT.

The UK Government has already recognised CCUS as a critical driver for growth, identifying it as one of six 'Frontier Clean Energy Industries' in the Government's Industrial Strategy. Therefore, we would suggest a stronger emphasis on the role of CCUS in the Net-Zero transition, and details on how to accelerate the CCUS development in the Scottish Climate Change Plan, including CCU to produce e-fuels.

CCUS projects in Scotland

The Scottish Cluster brings together Acorn, National Gas Transmission's SCO_2T Connect Project (a pipeline repurposing project which links the Central Belt with North-East Scotland) and a variety of industrial, power, hydrogen, bioenergy and energy-from-waste businesses.

The projects in the Scottish Cluster have the potential to abate up to 10 million tonnes of CO_2 per year, by 2030 – that is up to one third of the UK Government's total CO_2 emissions reduction target for that year, as stated in the CCUS vision published under the previous government[1]. These existing pipelines could transport up to 20 Mtpa of CO_2 to the Acorn Project stores during peak operations.

In addition to the Scottish Cluster, Veri Energy is developing an NPT CO_2 storage project at the Sullom Voe Terminal (SVT) in Shetland. Based on carbon storage licenses, issued May 2023 by the North Sea Transition Authority (NSTA) in the regulator's first UK offshore carbon storage licensing round, Veri has signed a number of Memorandum of Understandings (MoUs), including one with the Severnside Carbon Capture and Shipping Hub (7CO2) to explore transporting CO2 from Avonmouth Cluster emitters to SVT.

As such, Scotland is able to provide hubs for both onshore pipeline (Scottish Cluster and Acorn) and offshore NPT (SVT) based CO2 storage for the UK and also for imports from Europe.

Sectoral detail

The CCSA provide our comments on key sectors in the plan as follows.

Transport

[1] Carbon capture, usage and storage: a vision to establish a competitive market, GOV.UK, 2023, https://www.gov.uk/government/publications/carbon-capture-usage-and-storage-a-vision-to-establish-a-competitive-market

The CCSA welcome the inclusion of Sustainable Aviation Fuel (SAF) & Project Willow in the transport section. We are supportive of the Scottish Government considering options for increasing SAF production and use in Scotland. Analysis suggests that SAF, now critical to the Government's plans for a third Heathrow runway and delivering on the SAF mandate, is projected to grow at a Compound Annual Growth Rate (CAGR) of 26.2% between 2022 levels to 2050[2]. We note that interaction with CCUS & SAF infrastructure, as many SAF production pathways rely on CCUS. An example of this CCUS synergy is shown by Veri, who are also progressing plans to deliver a scalable, repeatable e-fuels concept using renewable power and biogenic CO2. Initially, e-methanol will be produced, which can be used as feedstock for SAF or for direct use as a shipping fuel. The potential also exists to create e-diesel, which can be used as a "drop in" fuel for shipping. CCUS can enable the UK to become a low-carbon product superpower by enabling the development of emerging low-carbon sectors and supporting foundational industries to produce these products. This will unlock significant economic benefits and export opportunities for the UK economy.

We would recommend the Scottish Government consider the role of rail freight, road and shipping in the transportation of CO2 to CCUS stores. The importance of NPT of CO_2 – transporting CO_2 via road, shipping and railways – has been acknowledged through the CCUS Vision by the UK Government, in expanding CCUS across the UK, enabling decarbonisation further beyond critical pipeline clusters and creating opportunities for cross-border CO_2 storage.

<u>Waste</u>

The CCSA note that there is no mention of Energy-from-Waste (EfW) plants in this waste section of the plan (although they are mentioned in Energy Supply) - it is acknowledged that EfW plants have an important role to play in the waste hierarchy, providing a critical sanitation service for residual waste that cannot be economically recycled, as well as providing viable and robust sources of biogenic CO_2 that can be readily captured and sent via pipeline (Acorn), ship (SVT) or utilised for e-fuel production. We would flag that EfW plants with CCUS would also deliver negative emissions, which are a core part of the Climate Change Plan update (CCPu) and an integral part of delivering a clean, resilient energy system required to meet climate targets.

We welcome the analysis in the Scottish Climate Change Plan - if 45% of EfW sites (by emissions) install CCS by 2032, at a 90% capture rate (with 50% of emissions from biogenic sources), this would lead to a significant reduction in emissions from around 0.4MtCO_2e until 2031 to just under 0.1MtCO_2e in 2032. The Scottish Government's modelling suggests that

[2] Transparency Market Research, Sustainable Aviation Fuel Market, 2022

by 2040, 80% of EfW plants have CCS, rising to 100% by 2050. CCS at EfW plants accounts for 25% of waste sector emissions reductions in 2040[3].

The CCSA also support the Scottish Government's vision to develop a policy and funding framework to retrofit existing EfW plants with CCS during the 2030's, and asks for the UK Government to develop a policy and funding framework to retrofit existing EfW plants with CCS from 2030. We note that at least four EfW with CCS projects are in development in Scotland, with an expected total capture capacity of just under 1 Mt CO_2 per year. The commercial model for EfW with CCS is now being proven with Encyclis' Protos Energy Recovery Facility, having reached financial close with Government in 2025. It has a generating capacity of up to 49.9MW and is expected to capture 380,000 tonnes of CO_2 per year (0.38 Mt CO_2pa) – around half of which is biogenic in origin, and so providing greenhouse gas removals (GGRs) as well as electricity.

Scotland's industrial sites will continue on a sustainable growth trajectory, having benefitted from decarbonisation pathways like fuel switching (hydrogen derivative and bioenergy), energy efficiency, carbon capture utilisation and storage (CCUS) – as noted in the Seventh Carbon Budget, CCS will likely be more economically viable for EfW plants located near industrial clusters with access to CO_2 storage locations, which indicates the opportunity for the EfW plants in the Scottish Cluster.

Energy supply

The CCSA welcome the commitment of the Scottish Government to continue to work constructively with the UK Government on the Acorn Project and Scottish Cluster. We would also reinforce the optionality for NPT of CO_2 that Veri and its SVT project can provide when considered alongside Acorn and the Scottish Cluster. We note the importance of low-carbon dispatchable power in strengthening domestic energy security and reducing the costs of energy storage and grid stability provision. It complements high volumes of renewable generation by providing system flexibility and resilience when renewable output is low, while simultaneously reducing reliance on unabated gas. The use of dispatchable low-carbon generation is also recognised as a cost-effective route to a decarbonised electricity system. Veri Energy's e-fuels project can also help address grid bottlenecks by locating power-to-liquid technologies in high wind constrained regions. This reduces the need for grid reinforcement and reduces grid balancing costs.

The CCC's Carbon Budget 7 advice projects a scale-up of low-carbon dispatchable capacity to 8 GW by 2035, 15 GW by 2040, and 38 GW by 2050, implying an average deployment rate of 1.8 GW per year from 2030 onward.

[3] The Seventh Carbon Budget, Climate Change Committee, 2025

We would therefore highlight the need to fulfil the plan set in this consultation – this includes, by 2032, the replacement of Peterhead power station by a 910MW CCS-enabled modern gas fired plant (CCGT), and EfW sites installing CCS technology once the Scottish Carbon Capture Usage and Storage (CCUS) Cluster is online. The CCSA support that the Section 36 Planning Application is under consideration by Scottish Ministers for both the new power station and carbon capture plant – the new power station would not be built without the carbon capture plant. We suggest the Scottish Government continue to work with the UK Government and the National Energy Systems Operator on Clean Power 2030, the Strategic Spatial Energy Plan (SSEP), in reducing power sector emissions.

In total, Peterhead power station, plus EfW and biomass power projects aiming to use CCUS will provide over 1 MW of low-carbon generating capacity for Scotland – contributing over 50% of the lower end of the UK Government's Clean Power 2030 targets of between 2 and 7 GW. These projects would also provide 6 MtCO_2pa of negative emissions.

We support the Scottish Government action plan to urge the UK Government to support and enable the commercialisation of negative emissions technologies, CCS and hydrogen in the electricity sector, as well as others, through appropriate business models.

Business and Industrial Processes:

We note that foundational industries will be essential for the transition to net zero, and the implementation of CCUS can help these sectors decarbonise and avoid the risk of deindustrialisation. This includes across clean power, hydrogen, low-carbon products, cement and lime, refining and fuels, chemicals and EfW.

The CCSA welcome recognition of the role of CCUS - we are supportive of the Vision mentioned in this Climate Change Plan that, by 2040, the industrial sector in Scotland will be significantly decarbonised with harder-to-abate emissions being permanently stored through CCUS, including through the Acorn Transport and Storage (T&S) Project. We would like to highlight that CCUS will also enable fuel switching to hydrogen and electricity, which are other elements in this section. For instance, switching to low-carbon hydrogen would require bulk production of hydrogen from natural gas using CCUS; similarly, electrification will require the dispatchable generation that gas power with CCUS, such as Peterhead power station, will provide. We would flag that CCUS provides a lifeline for foundational industries - such as cement, glass, fuels and chemicals - enabling renewed investment in UK industrial communities, delivering decarbonisation and keeping production, jobs, and demand in the UK. This is particularly an issue in the Central Belt, with significant manufacturing capacity needing to decarbonise, either directly or indirectly, using CCUS.

The CCSA strongly recognise that CCUS is a key opportunity area for Scotland due to comparative advantages with existing oil and gas and port infrastructure, along with significant geological storage potential, and a highly skilled workforce in both the oil and gas and chemicals sectors. These factors will help position Scotland at the centre of the European CCUS sector.

We welcome the £2 million made available through the Emerging Energy Technologies Fund to support and accelerate the National Gas SCO2T Connect project to repurpose existing gas pipeline infrastructure for the transportation of captured carbon dioxide from industrial sites in the central belt to the Acorn T&S Project for permanent storage. We agree with the Scottish Government's suggestion to the UK Government, which asks for confirmation of the full funding package and deployment timeline for the Acorn T&S Project and the Scottish Cluster. This is one of the key asks of our 2025 CCUS Delivery Plan update[4], and will be crucial to enable these projects to deploy before the end of this (Westminster) parliament.

Meanwhile, the CCSA highlights that there is CCUS activity in Scotland beyond the Government's track-selected clusters – Veri's SVT Project potentially provides an early route for Scotland to also benefit from import revenues through receiving and storing EU volumes as UK and EU ETS schemes align; and several CCSA members are developing CO_2 capture projects. We therefore ask the Scottish Government to note that financial support for CCUS is needed for both projects from the Scottish Industrial Energy Transformation Fund (SIETF) and Future Industrial Decarbonisation Investment.

We also note that the increased demand for lower-carbon industrial products, including SAF manufacturing, will drive innovation across Scotland's manufacturing sectors. The CCSA are supportive of incentivising a supportive investment policy and regulatory landscape for installations to capture industrial CO_2 emissions, as well as increasing the use of recycled carbon, and supporting industrial symbiosis and the utilisation of captured carbon. Public procurement will be a crucial part of building these low-carbon product markets.

Investment

The CCSA would suggest that the Scottish National Investment Bank (SNIB) plays a key role, in line with the National Wealth Fund (NWF), to support the development of CCUS infrastructure in Scotland. The National Wealth Funds' £28.6 million equity investment in the Peak Cluster demonstrates the role public finance can play in driving the sector forward.

We note that having CO_2 T&S infrastructure in place could act as an enabler to foreign direct investment, attracting industries abroad to the UK where they can be certain that they can operate in a way that is aligned with net zero goals. Additional deployment of clusters will attract further interest from companies wanting to connect to the CO_2 infrastructure. We therefore flag that the SNIB's role could continue to be expanded with further development

[4] CCUS Delivery Plan Update, CCSA, 2025, https://www.ccsassociation.org/all-news/ccsa-news/ccsa-research-reveals-uk-carbon-capture-sector-at-a-critical-juncture-as-project-pipeline-grows-but-policy-uncertainty-slows-progress/

investment (Devex) in clusters that are yet to receive support from the government and lack a route to market. In many cases, Devex is harder to secure than Capex funding at FID. SNIB can play a critical role in pushing forward merchant model projects, if it can support more of the earlier Devex role.

Employment in Net-Zero transition

The CCSA would note that Scotland has a significant advantage in regard to CCUS deployment, resulting from the existing network of oil and gas operations and pipelines which link Scotland's industrial clusters in North-East and Central Scotland for the transportation of carbon dioxide to storage sites, and a highly skilled workforce.

As the UK transitions from North Sea oil and gas production towards a renewable-led energy system, the decades of expertise that have been developed in the workforce in and around key hubs such as Aberdeen and Shetland (SVT) need to be retained in the UK. Oil and gas is a sector that has traditionally been one in which the workforce is used to seeking and taking up international opportunities. It is, therefore, important that this Scottish workforce has the opportunity to transition into new industries, such as CCUS in Scotland or the skills built up over decades, will likely move away from Scotland. Once this happens, it will be difficult to bring those back.

The Scottish Cluster alone will create an average of 10,800 development and construction jobs across the UK, of which 4,700 could be in Scotland[5]. It will also create an additional estimated 4,700 operational jobs, with 2,300 expected in Scotland. Overall, this safeguards 18,800 jobs that would otherwise be lost across the UK, including 12,100 across Scotland, and highlights the need for urgent clarity on the deployment of Track-2 clusters. We note that Scotland has strong capabilities in key areas of the CCUS supply chain, namely in control and instrumentation, pumps and valves, subsea engineering and operations and maintenance, as well as in professional services to support CCUS developments[6]. The same arguments apply equally to the employment opportunities the SVT CCUS projects will bring to Scotland.

The CCSA highlight that the industry-led 'Energy Skills Passport', which supports worker transitions from carbon-intensive industries to clean energy sectors, is a crucial initiative to ensure Scotland retains its world-leading expertise in clean energy technologies, and protects communities that rely on existing energy-intensive jobs. It is an important facilitator of the smooth transition of workers between projects, enabling them to move from oil and gas to offshore wind. While the CCSA welcomes the launch of the 'passport', it needs to be expanded to include CCUS and hydrogen. We also note that a clear publication and

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[5] https://theacornproject.uk/scottish-cluster/economic-impact-assessment

[6] Assessment of the CCUS Supply Chain in Scotland, Scottish Enterprise, 2025, https://www.scottish-enterprise.com/insights-and-events/research-evaluation-and-insight/2025/assessment-of-the-ccus-supply-chain-in-scotland

advocacy of apprenticeship opportunities will help young people into low-carbon jobs and grow the workforce needed for CCUS. Education and training are within the remit of the Scottish Parliament, so it is crucial that the Scottish Government uses the powers available to it to ensure that training and skills opportunities are available to workers to facilitate a just transition.

In terms of the Scottish Government's economic development remit, CCSA research has identified the key opportunities for building a domestic supply chain for CCUS. High-value opportunities already present in the UK include column vessel manufacturing, heat exchangers, process controls, modular CCS technology, and offshore network services. Scotland's ports and fabrication yards will have an important role to play, both in building the infrastructure and enabling CO_2 transport by ship. We suggest the Scottish Government could follow Net Zero Industry Wales' lead in exploring the opportunities for regulatory creativity in the Green Freeport.

Negative emissions technologies

We welcome the Scottish Government's commitment to create a route map for the deployment of NETs at scale by the end of 2026 and to encourage, promote and facilitate NET developments through planning and consenting policy. As with all CCUS deployment, working constructively with the UK Government while using the policy levers available to the Scottish Government will maximise the benefits of CCUS deployment in Scotland.