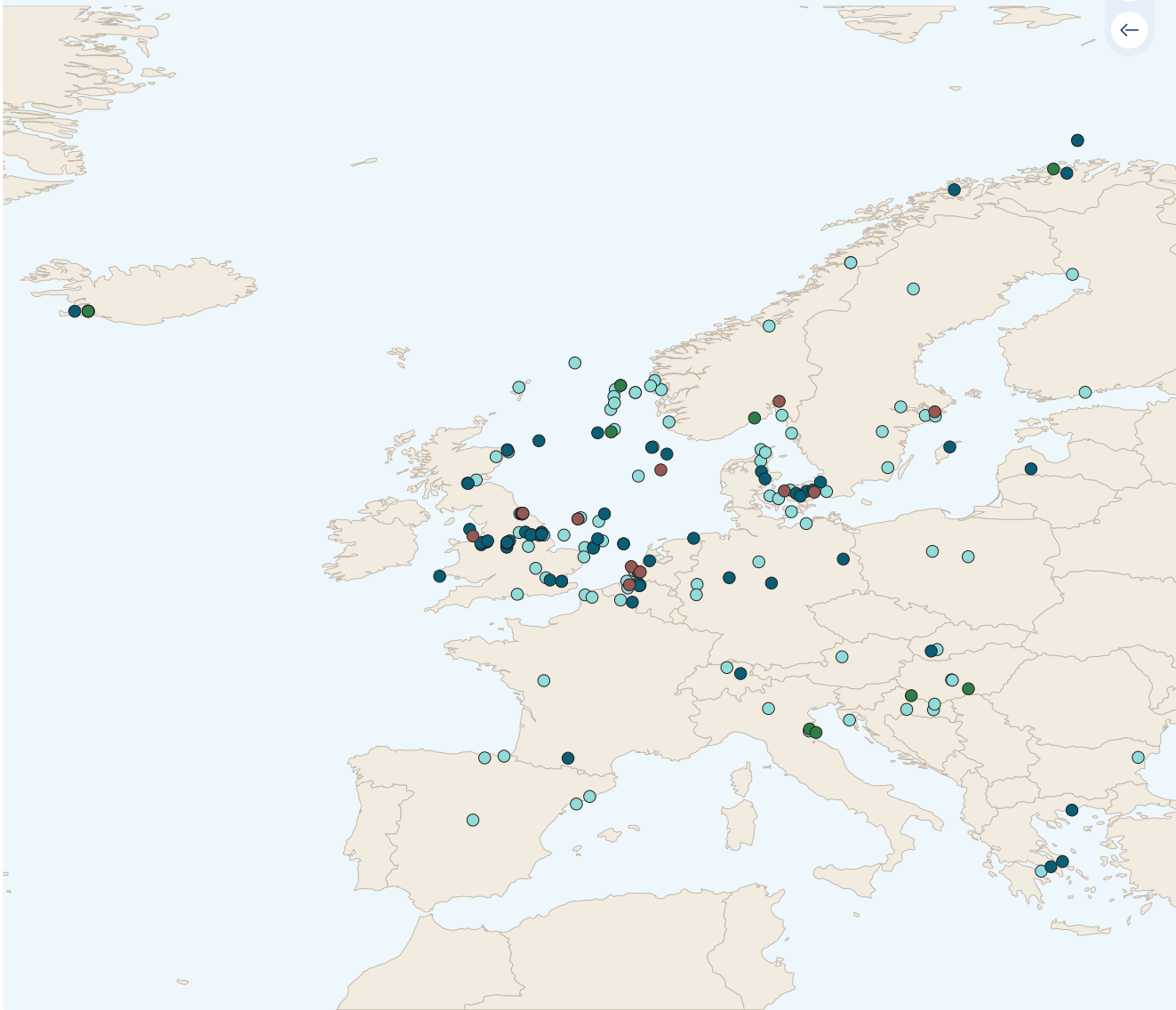
Europe and UK

Pivotal year sees policy alignments, tangible project progress

Europe is advancing industrial carbon management as a key component of its climate and industrial policy agenda. 2025 has emerged as a pivotal year, marked by major policy alignments and tangible project progress. The European Commission's Clean Industrial Deal reinforces the union between climate ambition and industrial competitiveness, while the new agreement to link the European Union (EU) and United Kingdom (UK) Emissions Trading Schemes (ETSs) signals a renewed commitment to regional cooperation.
These developments, combined with the build-out of CO_2 storage infrastructure and growing investor interest, position Europe as a rising leader in carbon management technologies.

- **Target** – A Delegated Act and Decision under the Net-Zero Industry Act (NZIA) mandate 44 European oil and gas producers to collectively develop 50 Mtpa of CO_2 storage capacity by 2030.
- **Advancement** – Five CCS projects have become operational and seven have entered construction since mid-2024.
- **Cooperation** – New agreements with countries such as Greece-Egypt, Switzerland, Norway and the UK signal expanding cross-border collaboration.
- **Challenges** – Barriers remain, including restricted access to offshore storage outside the European Economic Area (EEA), social resistance to onshore storage, and regulatory gaps for carbon removals.



Brevik CCS Facility, Norway, image courtesy SLB Capturi and Heidelberg Materials.

Europe's CCS sector is witnessing advancements across investment, transparency and cross-border collaboration in 2025, reflecting growing opportunities in the region and a marked increase in project activity across several sectors.

The number of operational CCS projects has more than doubled since July 2024. In particular, Brevik CCS, the world's largest CCS cement plant, started operations in June 2025 (Heidelberg Materials, 2025). Seven additional projects have reached final investment decision or financial close, indicating increasing commercial viability and government readiness to support deployment.

The UK's long-anticipated policy foundations for CCS have translated into concrete investment outcomes, as demonstrated by the December 2024 financial closes for Net Zero Teesside and the Northern Endurance Partnership (UK Government, 2024). This is a significant milestone after years of strategic development under the Track-2 cluster sequencing programme.

Despite strong progress in CO_2 transport and storage infrastructure, CCS deployment in hydrogen production remains underdeveloped. This gap may narrow following the European Commission's adoption of the Delegated Act on low-carbon fuels in July 2025, which aims to provide much-needed clarity for hydrogen certification pathways (European Commission, 2025b).

Recent EU initiatives aim to turn transparency into a practical tool for unlocking CCS investment. Since December 2024, Member States have been required to submit annual reports to the Commission, detailing ongoing CO_2 capture, transport, and storage projects, as well as future capacity needs. The European Commission has made these reports publicly available (European Commission, 2025e). In May 2025, under the Horizon Europe funding programme, the Commission launched a call for proposals to develop a digital atlas of investable underground CO_2 storage capacity (European Commission, 2025h).

Cross-border

Cross-border collaboration remains a core feature of Europe's carbon management strategy, with increasing attention on international partnerships that extend beyond the EEA. In early 2025, a historic agreement between Greece and Egypt marked the Mediterranean's first MoU on CCUS (HEREMA, 2025).

Momentum is also growing for bilateral and multilateral agreements that support cross-border CO_2 transport. France ratified the 2009 amendment to the London Protocol in June 2025, following Germany's inclusion of ratification in its coalition agreement (CDU et al., 2025; Vie Publique, 2025). Norway and Switzerland signed a landmark Article 6.2 agreement, creating one of the first cooperative frameworks for international carbon removals under the Paris Agreement (Norwegian Government, 2025a).

The number of operational CCS projects in Europe and UK has more than doubled since July 2024. In particular, Brevik CCS, the world's largest CCS cement plant, started operations in June 2025.

The EU-UK summit in May 2025 featured the announcement of a strategic agreement to link the EU and UK ETSs (Council of the EU, 2025). This linkage, based on dynamic alignment, is a breakthrough for regulatory interoperability and could unlock long-awaited pathways for cross-border CO_2 transport and storage. Symbolically, it also signals renewed collaboration between London and Brussels on shared climate goals.

Challenges

Despite this progress, several barriers could slow CCS deployment if left unaddressed:

- **Political volatility:** Germany's government collapse in late 2024 led to delays in the adoption of CCS legislation, and France's initial rejection of the London Protocol amendment showed the fragility of public and parliamentary support (Clean Energy Wire, 2025; Vie Publique, 2025).
- **Cross-chain risks:** Current national Carbon Contracts for Difference (CCfD) designs do not adequately protect emitters if transport and storage infrastructure face delays. This exposes projects to cost volatility, subsidy losses, and decommissioning risks. The UK's model, with provisions for subsidy continuity, cost oversight by Ofgem, and de-risking of T&S components, offers a replicable example for EU policymakers (GCCSI, 2025).
- **Insufficient incentives for BECCS and DACCS:** Despite the adoption of the Carbon Removal Certification Framework (CRCF), these technologies are not yet eligible under the EU or UK ETS, limiting their access to stable revenue streams. The UK has expressed intent to include removals in its ETS and proposed a Greenhouse Gas Removals Business Model (UK Government et al., 2025).

Sustainability

Public perception and social concerns about safety and environmental risks continue to pose challenges to the deployment of onshore CO_2 storage across Europe. The suspension of France's Pycasso project in late 2024 due to local opposition illustrates how public resistance can delay initiatives, even those backed by major industrial players (Carbon Herald, 2024).

In contrast, Iceland's Carbfix project received Europe's first onshore CO_2 storage permit under the CCS Directive, demonstrating that with effective stakeholder engagement and transparent communication, social acceptance is achievable (Carbfix, 2025). These different outcomes highlight the importance of early and sustained community involvement.

Policy

The policy environment for CCS in Europe continues to evolve, driven by both continuity from the 2019-2024 European Commission and new initiatives under the 2024-2029 mandate. Among the most transformative policies is the NZIA, which legally mandates oil and gas producers to develop a collective 50 Mtpa of injection capacity by 2030. This represents a shift from voluntary ambition to legal obligation and is a clear signal of the EU's intent to mainstream CCS.

The Clean Industrial Deal, announced in February 2025, reframes industrial competitiveness as a lever for achieving climate neutrality (European Commission, 2025d). Key proposals include the creation of an Industrial Decarbonisation Accelerator Act, potential expansion of the EU ETS to cover CDRs, and the establishment of an Industrial Decarbonisation Bank (European Commission, 2025f, 2025g). These efforts aim to stimulate both supply and demand for low-carbon solutions.

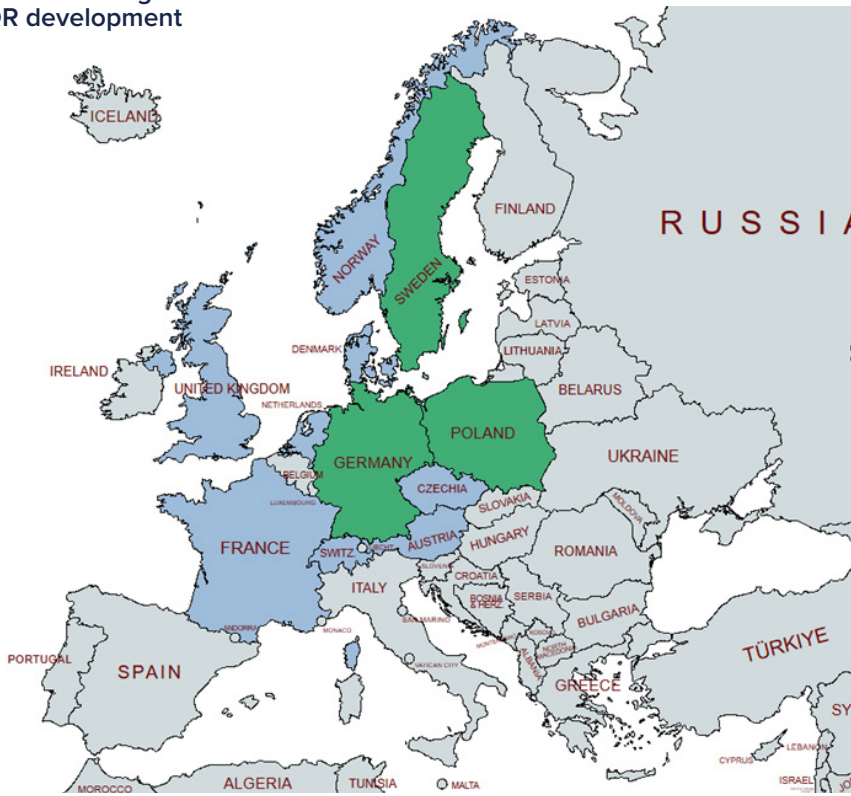
Progress is also being made in removals policy. The EU adopted the CRCF in late 2024, laying the groundwork for voluntary certification of BECCS, DACCS, and other technologies. While full methodologies are still under development, the CRCF sets a precedent for integrating removals into broader policy instruments.

However, critical gaps persist, chief among them the lack of a dedicated EU-wide regulatory framework for CO_2 transport infrastructure. The European Commission plans to release a regulatory proposal to address this in the third quarter of 2026.

CCS projects reaching FID or financial close in Europe (July 2024-July 2025)

Project name	Country	Project type	FID /Financial close date
Net Zero Teesside Power	United Kingdom	Natural Gas Power Generation and Heat	Dec-24
Northern Endurance	United Kingdom	CO_2 Transport / Storage	Dec-24
Project Greensand	Denmark	CO_2 Transport / Storage	Dec-24
Hafslund Oslo Celsio	Norway	Waste-to-Energy	Jan-25
Beccs Stockholm	Sweden	Bioenergy Power Generation and Heat	Mar-25
Eni Hynet North West	United Kingdom	CO_2 Transport / Storage	Apr-25
Fluxys c-grid Antwerp Pipeline	Belgium	CO_2 Transport / Storage	May-25

National carbon management strategies and roadmaps for CCS or CDR development



CO_2 injection well at Carbfix's Hellisheiði site, Iceland image courtesy of Thomas Ratouis. At this site, Carbfix injects CO_2 underground, where it mineralises into stable minerals.

EU Member States

National governments are complementing EU efforts:

Czech Republic: Released a national CCUS action plan (Czech Ministry of the Environment, 2025).

Denmark: Progressed its €1.1 billion CCS fund, shortlisting 10 projects (Danish Energy Agency, 2025).

France: Ratified the London Protocol amendment and signed a bilateral CO_2 transport and storage deal with Norway (Norwegian Government, 2025b).

Germany: Approved a second round of climate protection agreements that include CCS and published a draft revision of the national transposition of the EU CCS Directive (European Commission, 2025a).

Greece: Signed a Mediterranean CCUS MoU with Egypt.

Netherlands: Published a CDR roadmap in March 2025 and signed an MoU with the UK including CCUS cooperation (Dutch Government, 2025; Kingdom of the Netherlands, 2025).

Romania: Revised its transposition of the CCS Directive to accelerate infrastructure development (Romanian Government, 2025).

UK developments

The UK has continued to advance industrial carbon management through:

First CCS Financial Closes (Dec 2024): Follows policy development under the Track-1 cluster process.

UK ETS Reforms (Nov 2024-Jan 2025): Consultations on expanding scope to maritime emissions and non-pipeline CO_2 transport (UK Government et al., 2024).

UK-EU ETS Future Linkage (May 2025): Promotes regulatory alignment and cross-border infrastructure.

CCS Network Code (Jan 2025): Establishes third-party access and operational standards for CO_2 transport (UK Department for Energy Security and Net Zero, 2025).

Updated Licensing Guidance (Feb-Apr 2025): By North Sea Transition Authority for CO_2 storage permits (North Sea Transition Authority, 2025).

GHG Removals (Aug 2025): Released the GHG removals business model.

Finance

Public funding continues to underpin much of Europe's CCS development. In the UK, long-awaited financial backing for the Acorn and Viking projects was confirmed in June 2025 (UK Government, 2025).

At the EU level, the Innovation Fund (€2.4 billion call) and Connecting Europe Facility for Energy (€600 million) remain central instruments for accelerating deployment (CINEA, 2025; European Commission, 2024). These funds are now reinforced by the Clean Industrial State Aid Framework (CISAF), which offers more flexibility to Member States to support industrial decarbonisation (European Commission, 2025c). The CISAF builds on and complements the existing guidelines on State aid for climate, environmental protection and energy (CEEAGs), already used by many countries to support CCS (European Commission, 2022).

However, a major shortfall remains: only a handful of countries offer CCfDs or equivalent instruments. Without long-term revenue guarantees, private investment in carbon capture remains limited in many EU Member States.

Encouragingly, private capital is entering the space. Eni's partnership with Global Infrastructure Partners in May 2025, involving assets in the UK, Netherlands and Italy, reflects growing investor confidence (Eni, 2025).

In parallel, the voluntary carbon market is diversifying, with Microsoft increasing its BECCS offtake from Stockholm Exergi to over 5 Mt (BECCS Stockholm, 2025). The European Commission is now exploring an EU-level CDR purchasing programme to catalyse further demand (European Commission, 2025i). Europe is also making technological strides:

- **CO_2 Shipping**: The continent's first domestic CO_2 carrier was launched in May 2025 to serve Denmark's Greensand project (Ineos, 2025).
- **CCS in Power Generation**: The UK reached the world's first financial close for a CCS-equipped gas power plant (Dec 2024).

State aid schemes supporting CCS developed by EU Member States

EU Member State	Legal framework	Type of projects	Aid instrument	Amount	Scheme duration	Commission decision
The Netherlands	Energy and Environmental Aid Guidelines (EEAGs)	Renewable electricity, gas and heat, use of industrial waste heat and heat pumps, electrification, waste incineration, CCS, and hydrogen	Direct grant	€30 billion	Until 31 December 2025	Dec-20
Denmark	CEEAGs	CCS	Direct grant	€1.1 billion	January-April 2023	Jan-23
Denmark	CEEAGs	BECCS	Direct grant	€350 million	Until 31 December 2024	Dec-23
Sweden	CEEAGs	BECCS	Direct grant	€3 billion	July 2024-December 2028	Jul-24
Greece	CEEAGs	Onshore and offshore infrastructure part of the Prinos project	Direct grant	€150 million	From October 2024	Oct-24
France	CEEAGs	Electrification, CCS, CCU and energy efficiency	CCfD	€3 billion	15-year contract	Dec-24
Germany	CEEAGs	Electrification, CCS, CCU, energy efficiency and hydrogen	Other, direct grant	€5 billion	Until 31 December 2026	Mar-25

Encouragingly, private capital is entering the space. Eni's partnership with Global Infrastructure Partners in May 2025, involving assets in the UK, Netherlands and Italy, reflects growing investor confidence.

UK CCS projects secure landmark private financing

Two of the UK's flagship CCS projects, Net Zero Teesside (NZT) and the Northern Endurance Partnership (NEP), reached financial close following a combined £8 billion in debt financing. These are the largest project financings in the UK in several decades, as well as being the first project financing of a full-chain CCS project. The deals, backed by bp, Equinor, and TotalEnergies, will support carbon transport, storage, and power generation infrastructure in Teesside and the Humber region.

NEP's package will fund a CO_2 pipeline network linking carbon-intensive industries to the Endurance storage site in the Southern North Sea. NZT has secured funding for a 742 MW gas power plant with carbon capture. Both projects share lenders and risk structures, reflecting their integrated nature.

These transactions mark a major milestone in mobilising private capital for UK CCS deployment and complement the government's funding pledge. Additional projects in HyNet, Viking, and Acorn clusters are also progressing toward financial close with institutional backing.

Kalundborg Hub, Denmark, image courtesy of SLB Capturi.

Case study: NZIA Injection Capacity Obligation

The NZIA, adopted in June 2024, represents a strategic signal from the EU in support of CCS (EU Official Journal, 2024). It mandates oil and gas producers to develop at least 50 Mtpa of CO_2 injection capacity within the EU by 2030. In May 2025, the European Commission adopted a Delegated Regulation and an accompanying Decision identifying 44 obligated entities and determining the scale of their respective contributions (EU Official Journal, 2025).

The 44 entities, whose contributions have been calculated pro-rata based on their share of EU oil and natural gas production from 2020 to 2023, are located in 11 EU Member States – the Netherlands, Romania, Italy, Germany, Poland, Denmark, Hungary, Ireland, Croatia, Austria and France.

While this could help address the current geographical imbalance in CO_2 storage development – most of which is still concentrated around the North Sea – the NZIA does not require companies to fulfil their obligations in the country of registration of their hydrocarbon licence. Instead, compliance is permitted anywhere within the EU, offering several possibilities:

- Direct investment in CO_2 storage projects.
- Agreements with other obligated entities to share or transfer responsibilities.
- Partnerships with third-party project developers or investors.

This flexibility benefits countries lacking viable geological storage, but could also intensify competition for the most attractive storage sites. Penalties for non-compliance will be set by EU Member States by mid-2026 and are expected to be a key topic of EU-level debate in 2026.

Obligated entities' CO_2 injection capacity by 2030