International Association of Oil & Gas Producers

FACT SHEET | JUNE 2020

Sleipner project

Scaling up CCS in Europe

CCS in a nutshell

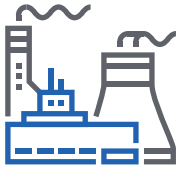
- **CCS is a proven technology** and is essential to meet the Paris Agreement goals[1]: there are 19 commercial projects in operation globally today[2].
- **It is safe: risks of leakage** are extremely low, with an estimated 99% containment over 1000 years[3].
- Europe is well-placed to benefit from CCS thanks to **industrial clusters**, extensive **pipeline infrastructure and geological storage potential**.

Policy recommendations

To scale-up CCS, Europe needs a fit-for purpose regulatory framework:

- Recognise CCS as a **key technology** in **the European Green Deal** and in the **EU Industrial Strategy**;
- Enable **transportation of CO_2** as a commercial or regulated activity as part of **gas market legislation**;
- Ensure that **CCS projects are eligible for EU funding** (CEF, Horizon Europe, Innovation Fund);
- Encourage **Member States** to include strategies for CCS deployment in their **National Energy and Climate Plans (NECPs)**.

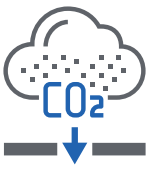
Where can CCS make a difference?



Emission cuts in **industrial processes** where mitigation potential is high, like steel, cement/lime, chemicals, and refining

Low-carbon, flexible **electricity from gas-fired power plants with CCS** to complement an energy system with a growing share of variable renewables

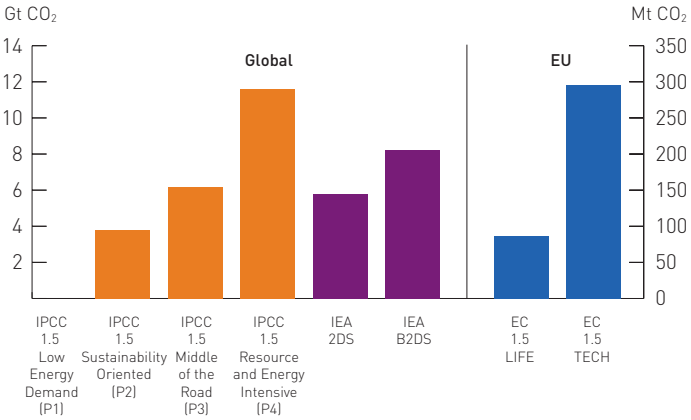
Large-scale production of **hydrogen from natural gas with CCS**, providing clean energy for industry, power, transport and heating



Removal of CO_2 from the atmosphere by combining **CCS with bioenergy (BECCS)**, using **direct air capture (DAC)**, or through **nature based solutions**

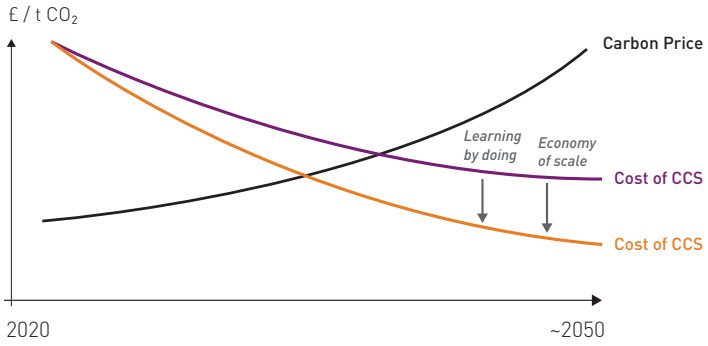
[1] Climate models from the IPCC, IEA and European Commission.
[2] Global CCS Institute database here.
[3] IPCC (2005) Special Report on Carbon Dioxide Capture and Storage, p.14.

The role of CCS in global and EU 2°C and 1.5°C scenarios CO_2 stored in 2050



Source: data from IPCC (2018), IEA (2017), GCCSI (2018).

Why are support schemes still necessary?



Pathways in the **IPCC Special Report** on Global Warming of 1.5°C, the **IEA World Energy Outlook** and the European Commission's **2050 long-term strategy** all show that CCS is essential to meet the 1.5°C target.

Today, there are two large-scale CCS facilities operating in Europe, capturing a total of 1.55 Mtpa CO_2 for storage.

To be on track for 1.5°C, one CCS facility capturing 1.5 Mt CO_2 would need to be added every week from now until 2050.

As an emission reduction technology with significant potential, **CCS needs public support to be scaled up.**

This can be done by:

- **Bridging the gap between the current carbon price and the cost of CCS**. Public support can enable the early development of infrastructure for CO_2 capture, transport and storage.
- **Accrediting low-carbon products and channeling investments** into CCS activities.
- The **need for public support will decrease** as the carbon price increases, infrastructure is put in place, and economies of scale are achieved.

Towards new business models?

Past CCS project – **Project-based**

- Responsibility for capture, transport and storage borne by **one actor**
- **High costs** for one emitting installation
- **Limited incentive** to build infrastructure
- Public **support schemes not targeted** to specific segments

New CCS projects – **Systemic approach**

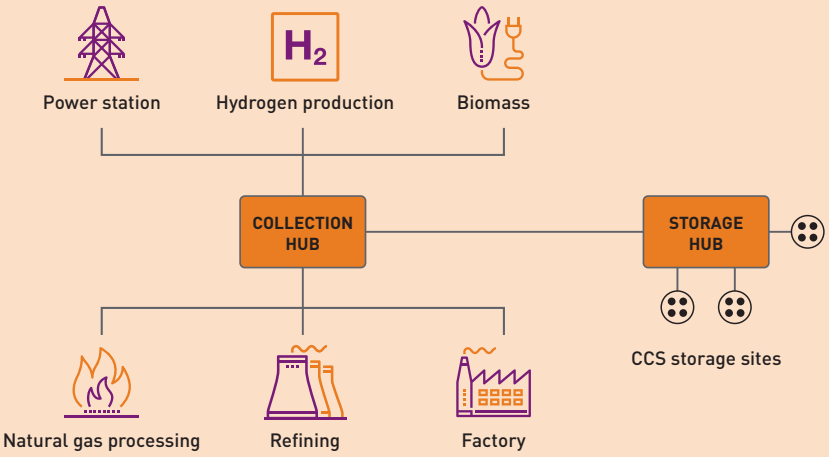
- **Shared responsibility** through separate business models for capture, transport, and storage
- Focus on **emission clusters** and achieving economies of scale
- **Additional incentive** to build infrastructure as infrastructure can be shared
- More **focused public support** schemes following lessons learned

FOCUS ON

Industrial emission clusters in Europe for CCS

Establishing **shared CO_2 transportation and storage infrastructure** with third party access will allow for **cost-efficient use of this infrastructure** by multiple parties.

Potential emission clusters is Europe are in Rotterdam, Yorkshire, Marseille, Teesside, Antwerp, La Havre, Skagerrak, Firth of Forth, Ruhr.



Which Regulatory Solutions for the EU?

National Energy and Climate Plans (NECPs)

Ensure Member States consider concrete deployment strategies and supportive policies for CCS in their final NECPs.

Why? Under the Regulation on the Governance of the Energy Union, Member States are required to develop NECPs outlining energy and climate policies to 2030 and 2050. In the draft NECPs submitted at the end of 2018, eleven EU Member States refer to CCS technologies, although many more have projects in the pipeline.

Gas market legislation

Enable gas infrastructure or other companies to transport CO_2 as a commercial or regulated activity overseen by National Regulatory Authorities (NRAs) with appropriate mandates.

Why? Restrictions on TSOs and DSOs to transport CO_2 hamper an optimal European network, necessary for Member States without sufficient storage capacity.

EU Emission Trading System (ETS)

Rewarding the transport of CO_2 by ship, train and truck in the EU ETS would help bring optionality and flexibility to CCS business models across Europe.

Why? The EU ETS currently only credit installations that transport their CO_2 to storage locations through CO_2 pipelines[5]. However, it is also possible to transport CO_2 by **ship**, **train** and **truck** for installations that do not have access to a pipeline.

Low-carbon product accreditation

Promote a market framework for low-carbon products and services produced with CCS, including Guarantees of Origin and/or other accreditation schemes, to incentivise new business models and support market uptake.

Why? CCS can drastically reduce the carbon footprint of products such as steel, cement/lime, chemicals, and hydrogen, but a market framework to differentiate between high-carbon and low-carbon products is missing.

Sustainable Finance

Ensure CCS is recognised as economic activities contributing to climate change mitigation in the taxonomy developed in the context of the action plan on sustainable finance.

Why? There is a need to scale up CCS in the EU in order to deliver on long-term energy and climate objectives, and sustainable public and private investments should be channelled towards this activity.

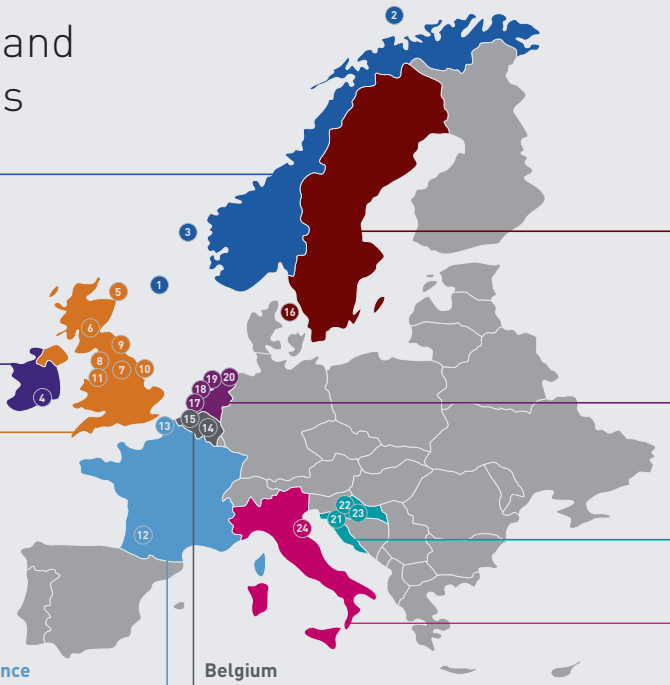
Policy Report

Full list of recommendations can be found in *'The potential for CCS and CCU in Europe'* report developed by a Task Force of CCS stakeholders coordinated by IOGP for the 32nd meeting of the European Gas regulatory Forum (so-called Madrid Forum), June 2019[6].

[5] Article 49 of Commission Regulation 601/2012 on Monitoring and Reporting (MRR).

[6] The Potential for CCS and CCU in Europe: Report to the thirty-second meeting of the European Gas Regulatory Forum 5-6 June 2019

Overview of **existing** and planned CCS facilities



Norway
1. Sleipner CO_2 Storage*
2. Snøhvit CO_2 Storage*
3. Northern Lights*

Republic of Ireland
4. ERVIA

UK
5. Acorn*
6. Caledonia Clean Energy
7. H21 North of England*
8. Liverpool-Manchester Hydrogen Cluster
9. Net Zero Teesside*
10. Humber Zero Carbon Cluster*
11. Liverpool Bay Area CCS Project*

France
12. Lacq*
13. DMX Demonstration in Dunkirk*

Belgium
14. Leilac
15. Port of Antwerp*

Sweden
16. Preem CCS*

The Netherlands
17. Porthos (Port of Rotterdam)*
18. Athos (Ijmond)
19. Aramis (Den Helder)
20. Magnum (Eemshaven)*

Croatia
21. iCORD*
22. CO_2 EOR Project Croatia*
23. Bio-Refinery Project*

Italy
24. CCS Ravenna Hub*

* Project where IOGP members are involved
Projects listed in **bold** are in operation

About IOGP

The International Association of Oil & Gas Producers (IOGP) is the voice of the global upstream industry. Oil and gas continue to provide a significant proportion of the world's energy to meet growing demands for heat, light and transport.

Our Members produce 40% of the world's oil and gas. They operate in all producing regions: The Americas, Africa, Europe, the Middle East, the Caspian, Asia and Australia.

We serve industry regulators as a global partner for improving safety, environmental and social performance. We also act as a uniquely upstream forum in which our members identify and share knowledge and good practices to achieve improvements in health, safety, the environment, security and social responsibility.

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