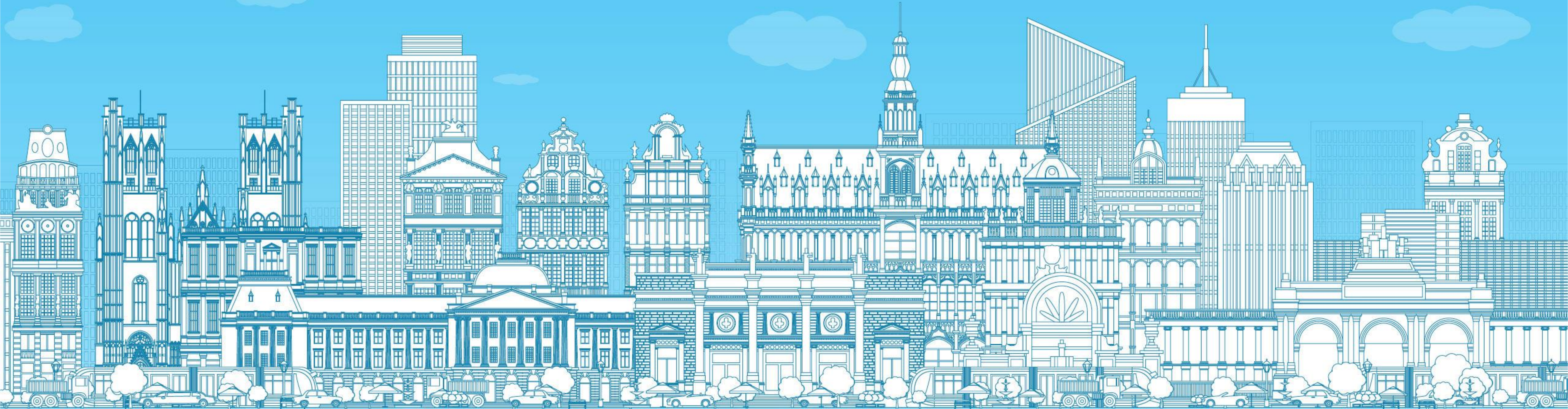
2025 EUROPE FORUM ON CARBON CAPTURE AND STORAGE

GLOBAL CCS INSTITUTE



2025 EUROPE FORUM ON CARBON CAPTURE AND STORAGE

GLOBAL CCS INSTITUTE

Welcome & Housekeeping

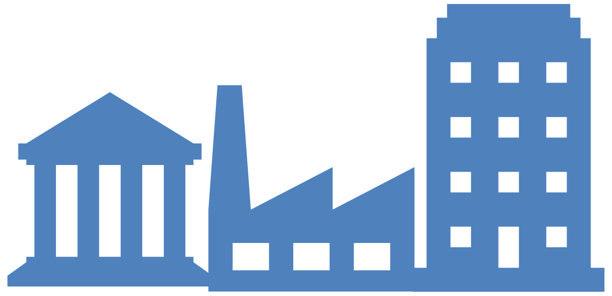
Guloren Turan
Chief Impact Officer

Global CCS Institute

The Global CCS Institute

International think tank

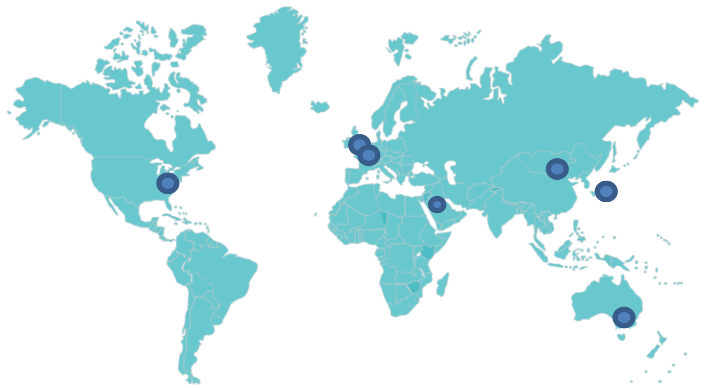
Backed by governments, businesses and NGOs

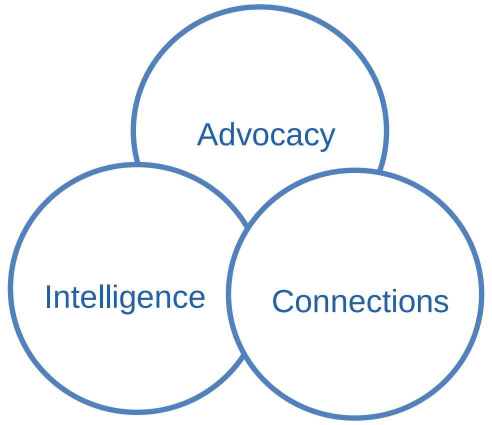


Mission: To accelerate deployment of CCS

8 locations

200+ MEMBERS





2025 EUROPE FORUM ON CARBON CAPTURE AND STORGE

GLOBAL CCS INSTITUTE

AGENDA		
TIME	**SESSION**	**SPEAKERS**
9:00 – 9:05	Welcome and housekeeping	**Global CCS Institute** – Guloren Turan, Chief Impact Officer
9:05 – 9:30	**Institute Presentation:** An Overview of CCS Progress in Europe and Globally	**Global CCS Institute** – David Kearns, Principal, Carbon Capture Technologies
9:30 – 10:30	**Panel Discussion:** CCS Development in the EU and Beyond	• **Global CCS Institute** – Guloren Turan, Chief Impact Officer • **European Commission** – Christian Holzleitner. Head of Unit for Land Economy and Carbon Removals • **Zero Emissions Platform** – Eve Tamme, Chair • **Heidelberg Materials** –Fredericq Peigneux, Head of Public Affairs • **CONCITO** – Tobias Johan Sørensen, Senior Analyst
10:30 – 11:00	**BREAK AND NETWORKING**	
11:00 – 12:00	**Panel Discussion**: Financing CCS Projects	• **Global CCS Institute** – Christina Staib, Global Finance Impact Lead • **Government of the Netherlands** – Pim van Loon, Program Manager - Carbon Capture and Storage, Ministry of Climate Policy and Green Growth • **Santander** - Urbano Troncoso, Executive Director • **Société Générale** – Andrew Lee, Managing Director • **UK Government** – Michael Brown, Head of CCUS Strategy and Funding, Department for Energy Security and Net Zero (DESNZ)
12:00 – 1:00	**Panel Discussion:** CO_2 Storage Development in Europe	• **Global CCS Institute** – Poh Boon Ung, General Manager, Business Development and Engagement • **Danish Energy Agency** – Jesper Brandrup, Team Lead • **SINTEF** – Ane Elisabet Lothe, Research Manager • **Clean Air Task Force** – Toby Lockwood, Technology and Markets Director, Carbon Capture (Europe) • **HEREMA** (Greece) – Efthimios Tartaras, Head of Geoscience

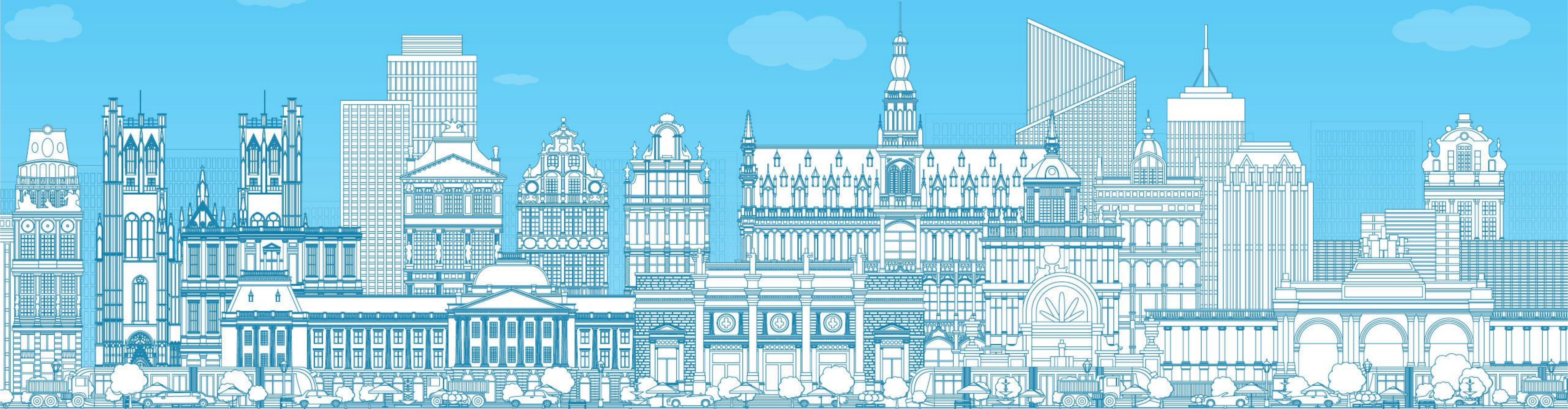
2025 EUROPE FORUM ON CARBON CAPTURE AND STORGE

GLOBAL CCS INSTITUTE

AGENDA		
TIME	**SESSION**	**SPEAKER**
1:00 PM	**Breakout Session introductions** Mathilde Blanchard, Senior Policy Lead, Global CCS Institute	
1:00 – 2:00	**LUNCH**	
2:00 – 3:00	**BREAKOUT SESSIONS BEGIN**	
3:00 – 3:30	**BREAK AND NETWORKING**	
3:30 – 4:15	Breakout Session Report Back	The Global CCS Institute and breakout session facilitators
4:15 – 4:30	Closing Remarks	Guloren Turan, Chief Impact Officer, Global CCS Institute

2025 EUROPE FORUM ON CARBON CAPTURE AND STORAGE

GLOBAL CCS INSTITUTE



2025 EUROPE FORUM ON CARBON CAPTURE AND STORAGE

GLOBAL CCS INSTITUTE

Institute Presentation:
An overview of CCS progress in Europe and Globally

David Kearns

Principal,
Carbon Capture Technologies

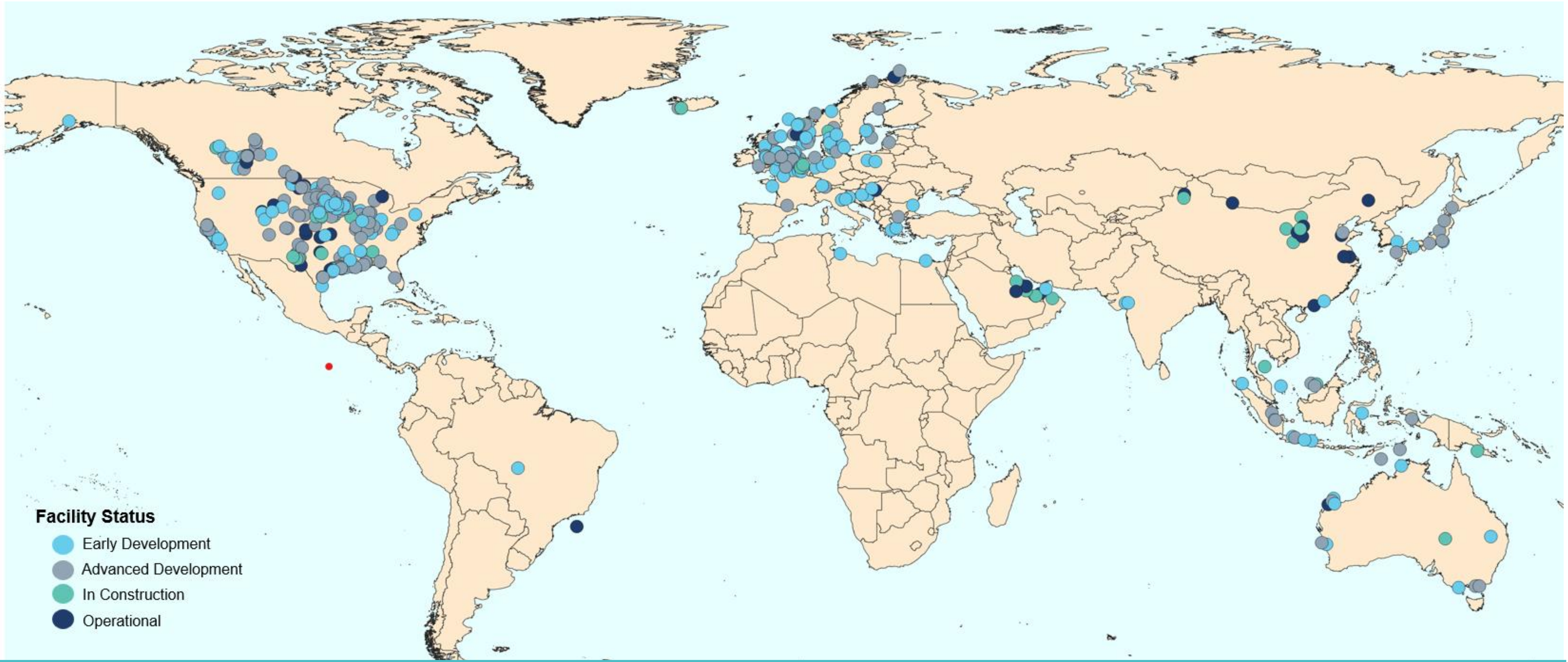
Global CCS Institute

GLOBAL STATUS OF CCS 2024

COLLABORATING FOR A NET-ZERO FUTURE

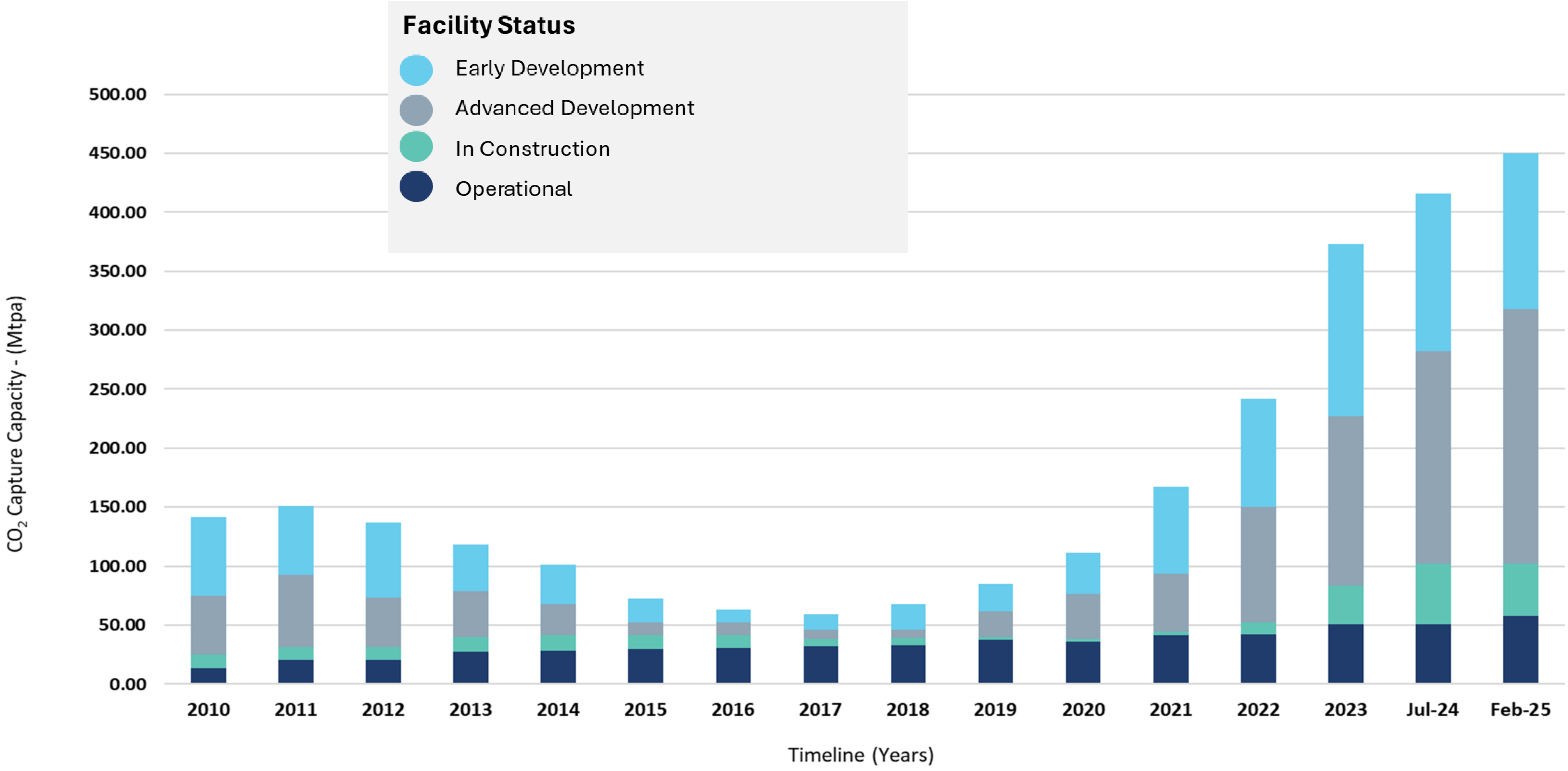
GLOBAL CCS INSTITUTE

Global Commercial CCS Facilities



Global CCS Facility Pipeline (Feb 2025)	Number	Capture Capacity (Mtpa)
Operational	65	57
Under construction	42	44

Capture Facility Pipeline Continues to Grow

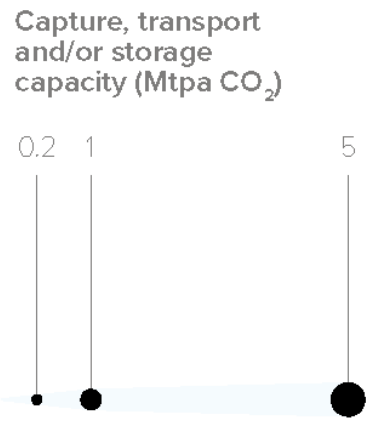


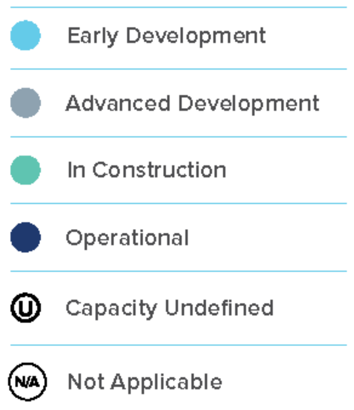
Only commercial projects are included; projects in the announced, canceled, or completed stages are excluded.

Source: GCCSI CO_2RE Database CCS Facilities as of February 2025.

CCS project pipeline

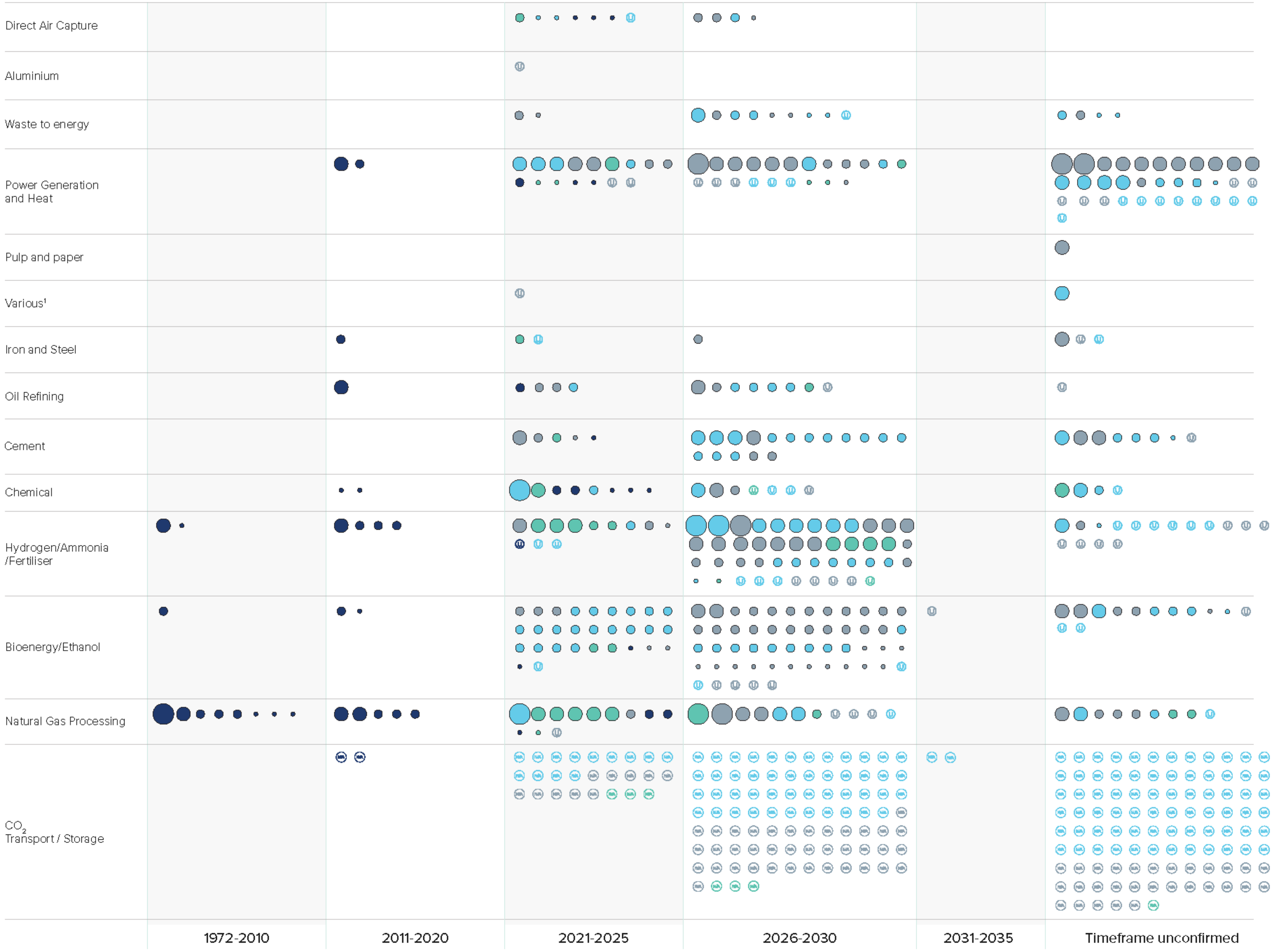
CO_2 capture capacity of operating facilities on track to double to >100 Mtpa once projects under construction come online.





[1] CO_2 captured from more than one industry within the project boundary.

CCS project pipeline by industry & year operational



Global policy, legal & regulatory trends

Sustained and strengthened policy support continues to drive global CCS deployment

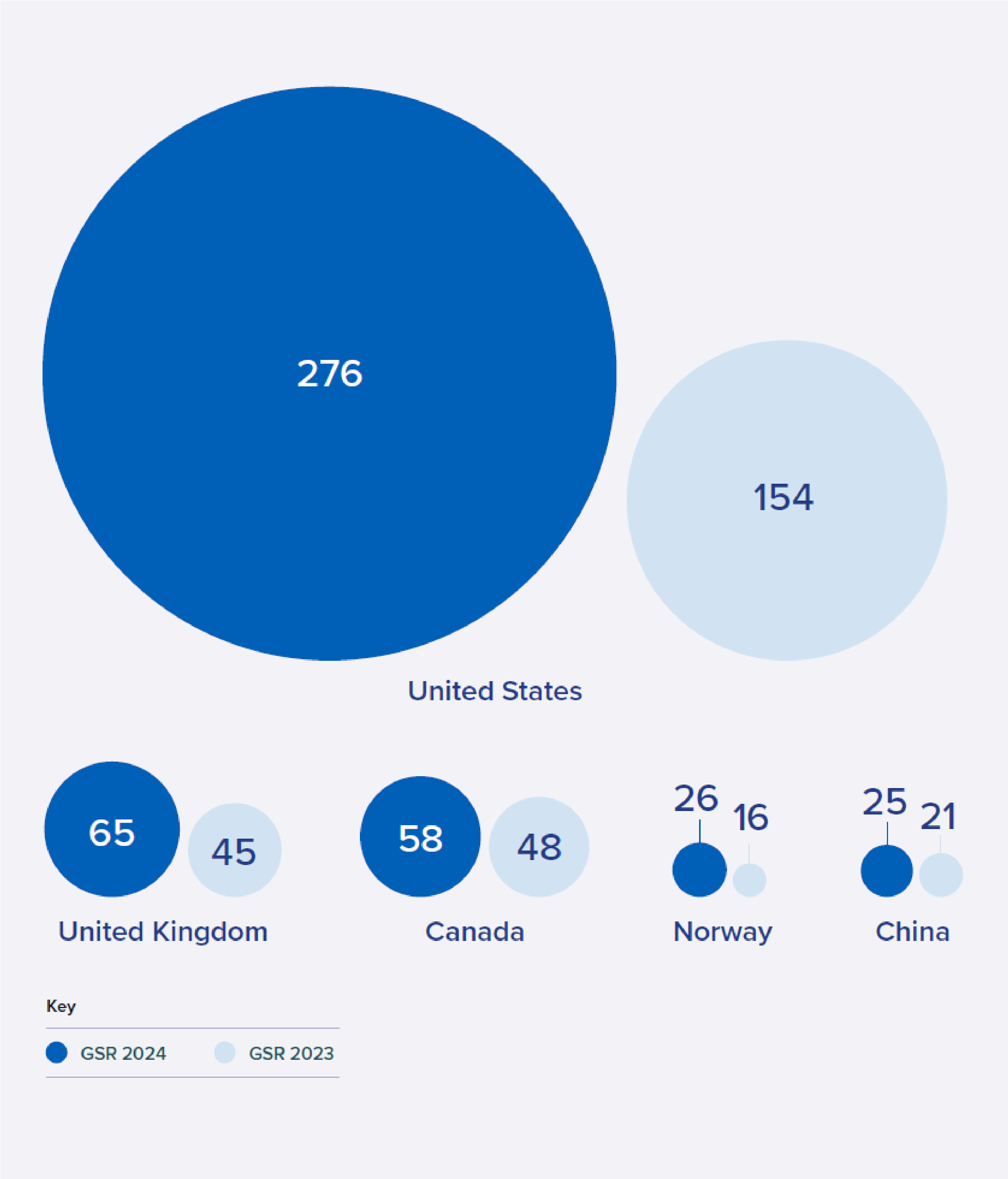
Multilateral initiatives

- CCS in the **Global Stocktake**
- Upcoming **NDCs 3.0** expected to include CCS investment plans (February 2025)

New & strengthening CCS legal frameworks

- **US**
  Expanding & refining existing regimes
- **Europe, UK, Australia**
  Building-on & refining existing regimes to allow transboundary movement of CO_2
- **Middle East, Southeast Asia, Brazil**
  Developing CCS legislation for deployment

Top 5 countries with CCS projects in 2024 v 2023
(by number of projects)



CCS business models & financing

Project derisking remains key to CCS investment

- Long-term direct or indirect government support needed – financial support, public-private partnerships, clear/efficient permitting and approval, long-term liability assurances

Policy-improved financing prospects partially offset by multiple factors

- Cost inflation
- High interest rates
- Permitting challenges
- Political uncertainty

Potential tailwinds for CCS

- Need for reliable baseload power
- Demand for high-quality carbon credits including removal credits – started with DACCS & evolved to include BECCS
- Increasing Multilateral Development Bank support for CCS – could fund critical activities
- Momentum in equity investments and M&As – could be a positive for debt financing of CCS projects

CCS Progress: the United States

US continues to lead global CCS facility count

26 Operational projects in the US

11 In construction in the US

Federal and state policy incentives are sustaining CCS investment

45Q, 45V federal tax credits remain in place

Bipartisan Infrastructure law and Inflation Reduction Act

- >US$12 billion investment for carbon management & hydrogen hubs **(funding under review)**
- IRA increased 45Q tax credit for geologic storage of CO_2, lowered capture thresholds to qualify for tax credits, and added provisions for direct pay & tax credit transferability

Various state tax incentives, loans, offtake agreements, carbon markets, and standards (e.g. LCFS) are still in effect

Emerging data center business model includes CCS

- ExxonMobil, Baker Hughes with Frontier, and Chevron have announced plans to invest in power facilities powered by natural gas with CCS, or the flexibility to integrate CCS in power generation to supply to data centers

Queue of Class VI applications growing

- 57 projects with 165 applications under review across 14 US states*
- Additional 37 projects with 96 applications under review in states with Class VI primacy (WY, LA, ND)

*WV primacy approved, but permit applications still sit w/EPA as of 12Mar2025

CCS Progress: Canada & Brazil

Combination of mandates & policies drive development in Canada

7 Operational CCS facilities in Canada	**6** Facilities in construction in Canada

Federal carbon price increased

- CA$80 per tonne in 2024, rising CA$15 per tonne annually to CA$170 per tonne in 2030

Investment tax credit for CCUS projects released

- Covers up to 50% of capital costs for projects (60% for DAC) until 2030

Growth Fund allocation for Carbon Contracts for Difference announced

- Up to CA$7 billion allocated

In January Canada released its preliminary Draft Federal Offset Protocol for DACCS

CCS legislation in Brazil a milestone for South America

- **Fuels of the Future Bill signed into law on 8 October** provides foundation for CCS regulations in Brazil

Brazil continues successful CCS operations at its Santos Basin pre-salt reservoirs

- 13 Mt CO_2 injected in 2023

CCS Progress: Asia Pacific & India

Storage hubs & cross-border CCS projects a major focus & dominant trend

3 Operational CCS facility in Asia Pacific

2 Facilities in construction in Asia Pacific

Standalone CCS legislation released

- Indonesia
- Japan
- Malaysia
- South Korea
- Western Australia (Australia)

Transboundary transport & storage of CO_2 in discussion

Australia → Timor-Leste

Japan, Singapore, South Korea → Australia, Indonesia, Malaysia

CCS potential remains strong in India

Four interministerial CCUS taskforces collectively working on range of issues including development of technical standards

Gorgon LNG facility incorporating CCS system, Western Australia. Image courtesy of Chevron.

CCS Progress: Europe & the UK

Decarbonisation policies & robust CCS market anticipation drive new projects

9 Operational CCS facilities in Europe	**13** Facilities in construction in Europe

CCS a key focus in climate & industrial policy agendas

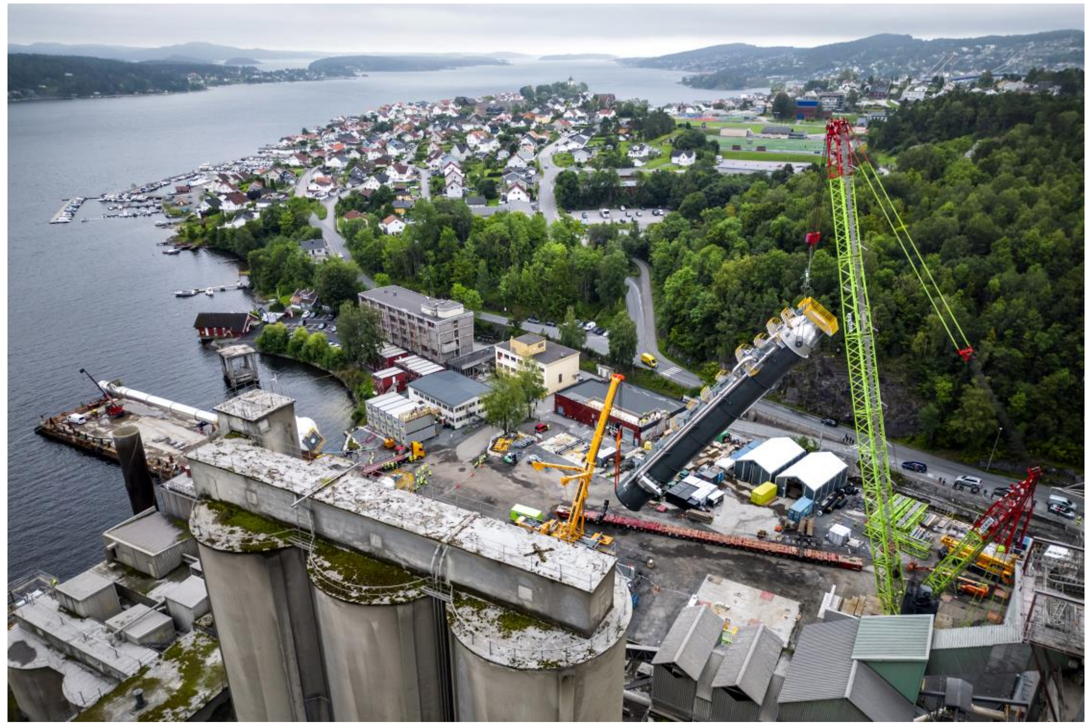
- Net-Zero Industry Act
- EU Industrial Carbon Management Strategy
- EU Clean Industrial Deal
- £21.7 billion support for UK East Coast (Teesside) and West Coast (Merseyside) clusters

Roadmaps for CCS deployment make significant progress

- **10 countries**, in addition to the EU, introduced or announced industrial carbon management strategies or roadmaps for CCS deployment

CO_2 transport & storage facility development surged

- Across Europe, the number of transport & storage facilities in development reached 84 – **doubling** in a year



Brevik CCS facility in Brevik, Norway. Image courtesy of SLB Capturi.

CCS Progress: China

CCUS forging ahead in China

CCUS prominent in climate policies

- **Implementation Plan for Green and Low-Carbon Technology Demonstration Program**
  - selected 6 CCUS projects for grants & low-cost financing

Plan released to reduce emissions from coal-fired power plants – includes 3 main strategies

- CCS
- Co-firing with low carbon ammonia
- Co-firing with biomass

Central Government leading international collaboration

- Sunnylands Statement with the US
  5 large scale CCUS projects each by 2030
- Research exchange with France

Projects scaling-up and setting records

World's largest oxy-fuel project in cement sector now operational

- 200,000 ktpa capacity

Huaneng coal power on track for completion

- 1.5 Mtpa capacity – world's largest

Phase 1 of Xinjiang Oilfield coal power project under construction

- 1 Mtpa capacity - Phase 2 will add another 1Mtpa

Huaneng Longdong CCUS project under construction. Image source: China Energy Engineering Corporation.

CCS Progress: Middle East & Africa

Decarbonisation & low-carbon fuel development shift focus for CCS in MEA

3 Operational CCS facilities in MEA

6 Facilities in construction in MEA

CCS policy in region advancing quickly

- **UAE** Industrial Decarbonisation Roadmap includes CCS
- **Saudi Arabia** outlining ambitious targets

Carbon markets being established to support deployment

- **UAE**'s Air Carbon Exchange
- **Saudi Arabia**'s carbon crediting scheme

Collaboration at fore of development

- Advancing technology & DAC projects
- Establishing cross-border projects & CCS hubs

Notable developments move CCS forward in Africa

- Identification of storage sites progressing in **Egypt**
- CCUS pilot well drilled in **South Africa**
- Small-scale DAC project launched in **Kenya**

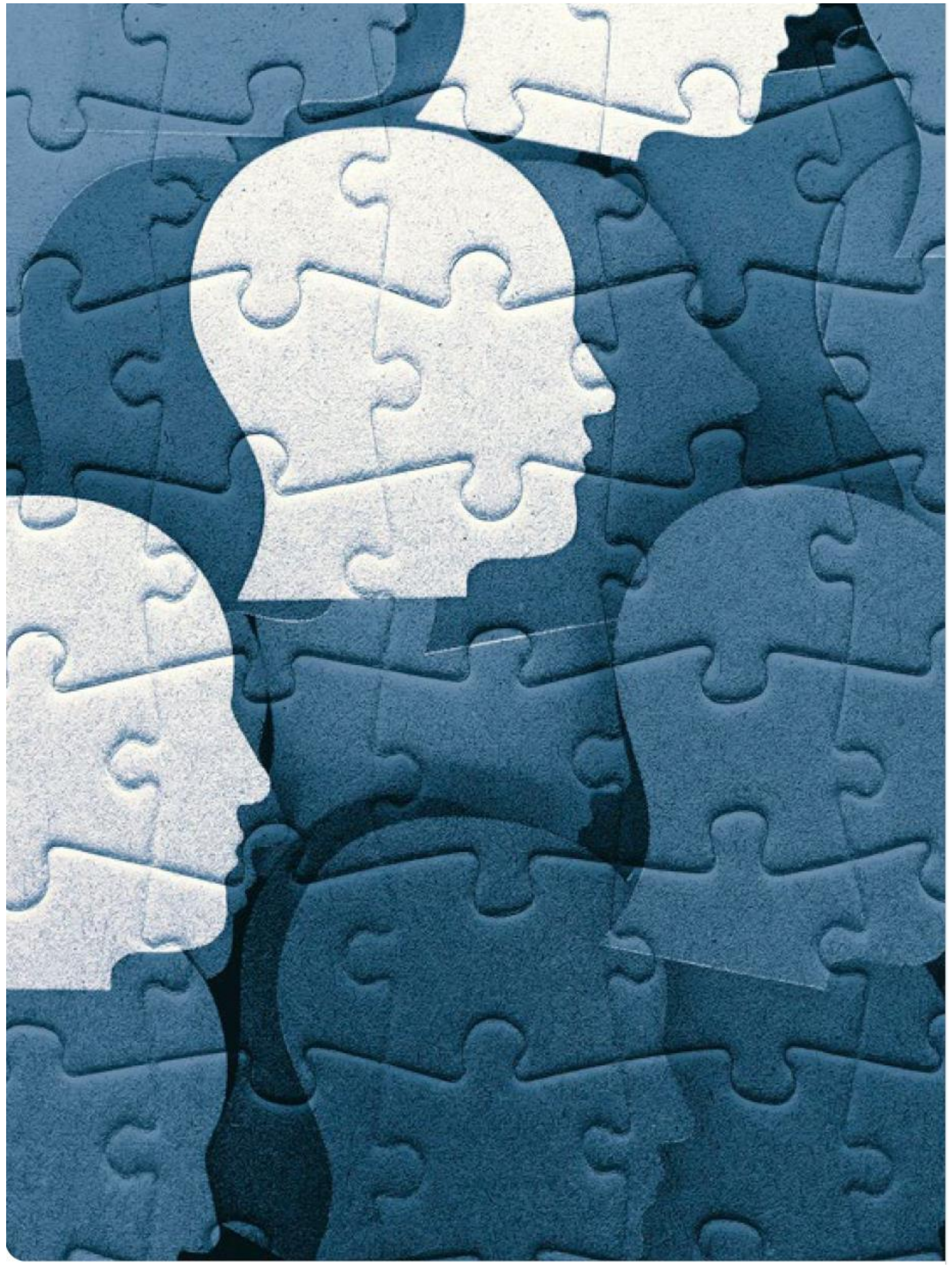
CycloneCC Industrial Demonstration Unit in the UAE. Image courtesy of Carbon Clean.

Technology Compendium

The Technology Compendium is a platform for CCS technology providers and owners to share information about their technology to an audience of designers, developers, and advocates.

Next edition – Mid-year 2025; submissions will close on 31 March 2025.

Global CCS needs global collaboration



Outlook is positive for CCS

Increasing policy support, new investments, & project deployments worldwide

Challenges still to overcome

Difficult investment settings, community concerns, regulatory barriers

Collaboration is key to global CCS deployment

Governments, industry, and research community
must work together to remove barriers,
lower costs and drive investment

Thank you

www.globalccsinstitute.com/global-status-report/

2025 EUROPE FORUM ON CARBON CAPTURE AND STORAGE

GLOBAL CCS INSTITUTE

Panel Session: CCS Development in the EU and Beyond

Guloren Turan
Chief Impact Officer

Global CCS Institute

Christian Holzleitner
Head of Unit for Land Economy removals

European Commission

Fredericq Peigneux
Head of Public Affairs

Heidelberg Materials

Tobias Johan Sørensen
Senior Analyst

CONCITO

Eve Tamme
Chair

Zero Emissions Platform

30 MINUTE BREAK

WE WILL RESUME SHORTLY

2025 EUROPE FORUM ON CARBON CAPTURE AND STORAGE

GLOBAL CCS INSTITUTE

Panel Session: Financing CCS Projects

Christina Staib
Global Finance Impact Lead

Global CCS Institute

Andrew Lee
Managing Director – Engineering

Societe Generale

Urbano Troncoso
Executive Director, Structured Finance

Santander

Michael Brown
Head of Funding and Strategy - Department for Energy Security and Net Zero

UK Government

Pim Van Loon
Program Lead

Ministry of Economic Affairs

2025 EUROPE FORUM ON CARBON CAPTURE AND STORAGE

GLOBAL CCS INSTITUTE

Panel Session: CO_2 Storage Development in Europe

Poh Boon Ung
General Manager Business Development and Engagement

Global CCS Institute

Toby Lockwood
Technology and Markets Director

Clean Air Taskforce

Efthimios Tartaras
Geoscientist

HEREMA

Ane Lothe
Research Manager

SINTEF

Jesper Brandrup
Team Lead

Danish Energy Agency

2025 EUROPE FORUM ON CARBON CAPTURE AND STORAGE

GLOBAL CCS INSTITUTE

Breakout Session Overview

Mathilde Blanchard

Senior Policy Lead

Global CCS Institute

2025 EUROPE FORUM ON CARBON CAPTURE AND STORAGE

GLOBAL CCS INSTITUTE

Breakout Sessions

Carbon Removals

Location: Floor 3, Risio Room 5

Speakers: The Institute, Elimini

Onshore Storage

Location: Floor 3, Risio Room 1

Speakers: The Institute, DNV, The Danish Energy Agency

CMC and International Policy

Location: Floor 3, Risio Room 4

Speakers: CMC, IEAGHG, The UK Government

CO2 Transportation

Location: Floor 2, Ballroom

Speakers: The Institute, CCSA

CCS Finance

Location: Floor 3, Risio Room 2&3

Speakers: The Institute, Heidelberg Materials, Equinor, Arcelormittal

1-HOUR LUNCH BREAK

WE WILL RESUME SHORTLY

2025 EUROPE FORUM ON CARBON CAPTURE AND STORAGE

GLOBAL CCS INSTITUTE

Breakout Sessions

Carbon Removals

Location: Floor 3, Risio Room 5

Speakers: The Institute, Elimini

Onshore Storage

Location: Floor 3, Risio Room 1

Speakers: The Institute, DNV, The Danish Energy Agency

CMC and International Policy

Location: Floor 3, Risio Room 4

Speakers: CMC, IEAGHG, The UK Government

CO2 Transportation

Location: Floor 2, Ballroom

Speakers: The Institute, CCSA

CCS Finance

Location: Floor 3, Risio Room 2&3

Speakers: The Institute, Heidelberg Materials, Equinor, Arcelormittal

30 MINUTE BREAK

WE WILL RESUME SHORTLY

2025 EUROPE FORUM ON CARBON CAPTURE AND STORAGE

GLOBAL CCS INSTITUTE

Breakout Session Report Back

Carbon Removals

Location: Floor 3, Risio Room 5

Speakers: The Institute, Elimini

Onshore Storage

Location: Floor 3, Risio Room 1

Speakers: The Institute, DNV, The Danish Energy Agency

CMC and International Policy

Location: Floor 3., Risio Room 4

Speakers: CMC, IEAGHG, The UK Government

CO2 Transportation

Location: Floor 2, Ballroom

Speakers: The Institute, CCSA

CCS Finance

Insert Title

Location: Floor 3, Risio Room 2&3

Speakers: The Institute, Heidelberg Materials, Equinor, Arcelormittal

GLOBAL CCS INSTITUTE

Facilitated breakout session: CMC and international policy

Facilitators

Noora Al Amer
Global CCS Institute

Tim Dixon
IEAGHG

Louise MacMorran
UK Government, Department for Energy Security and Net Zero

About

The Carbon Management Challenge (CMC) is a global call to action aimed to drive the adoption of carbon management technologies, advancing a pipeline of projects by 2030, that when fully operational, will reach 1 gigaton of CO_2 captured and stored annually.

First, high-level and visible global carbon management initiative aligned with the Paris Agreement.

Builds on the existing strong collaboration through the MI Carbon Dioxide Removal Mission and CEM Carbon Capture Utilization and Storage Initiative, among other international initiatives.

Promotes collaboration and knowledge sharing between governments, as well as from industry and NGOs.

Advancing projects by 2030 to manage

1 gigaton of CO_2 annually

CMC Participants

22 countries, plus the European Commission

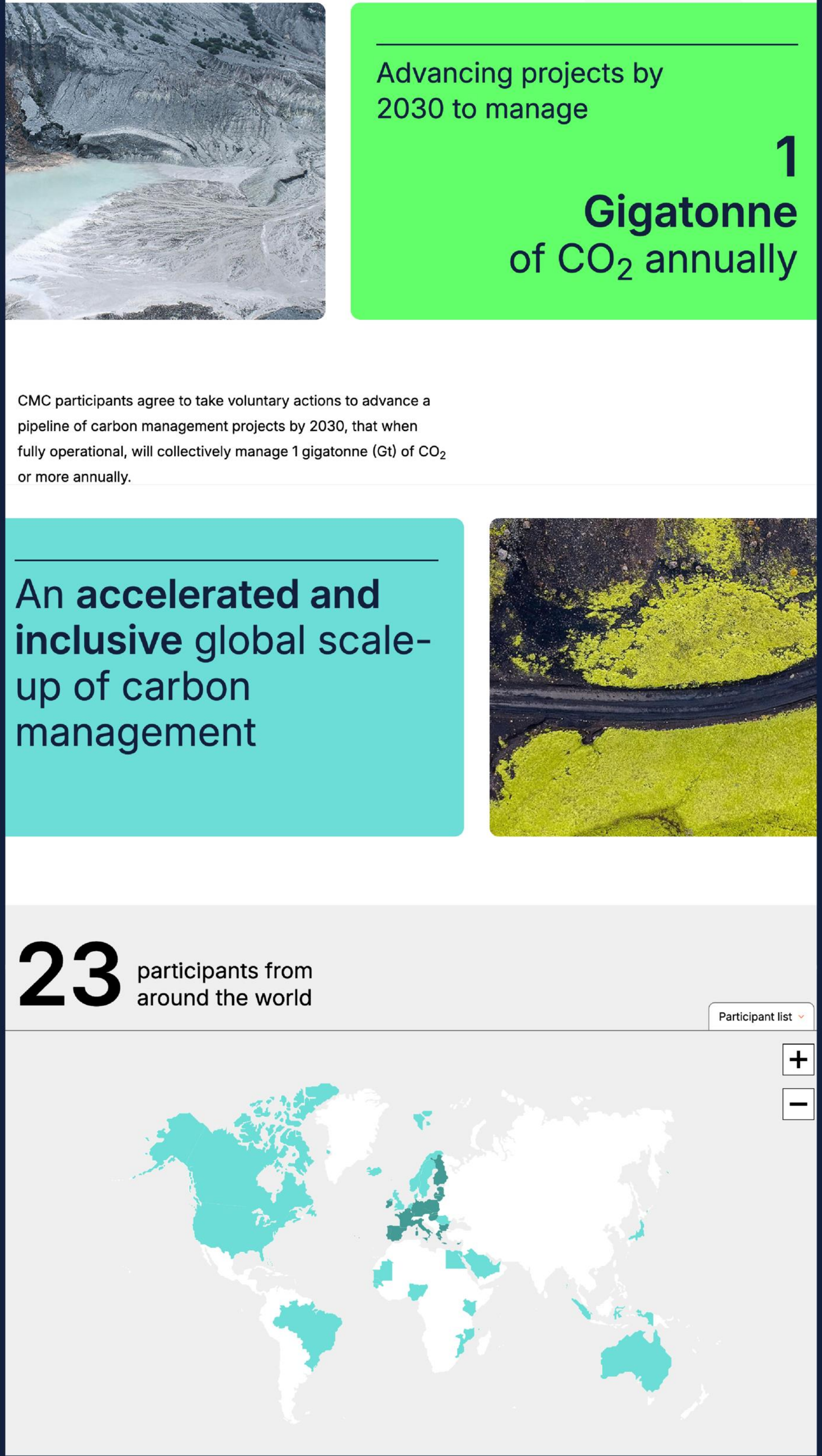
Facilitated breakout session:
CMC and international policy

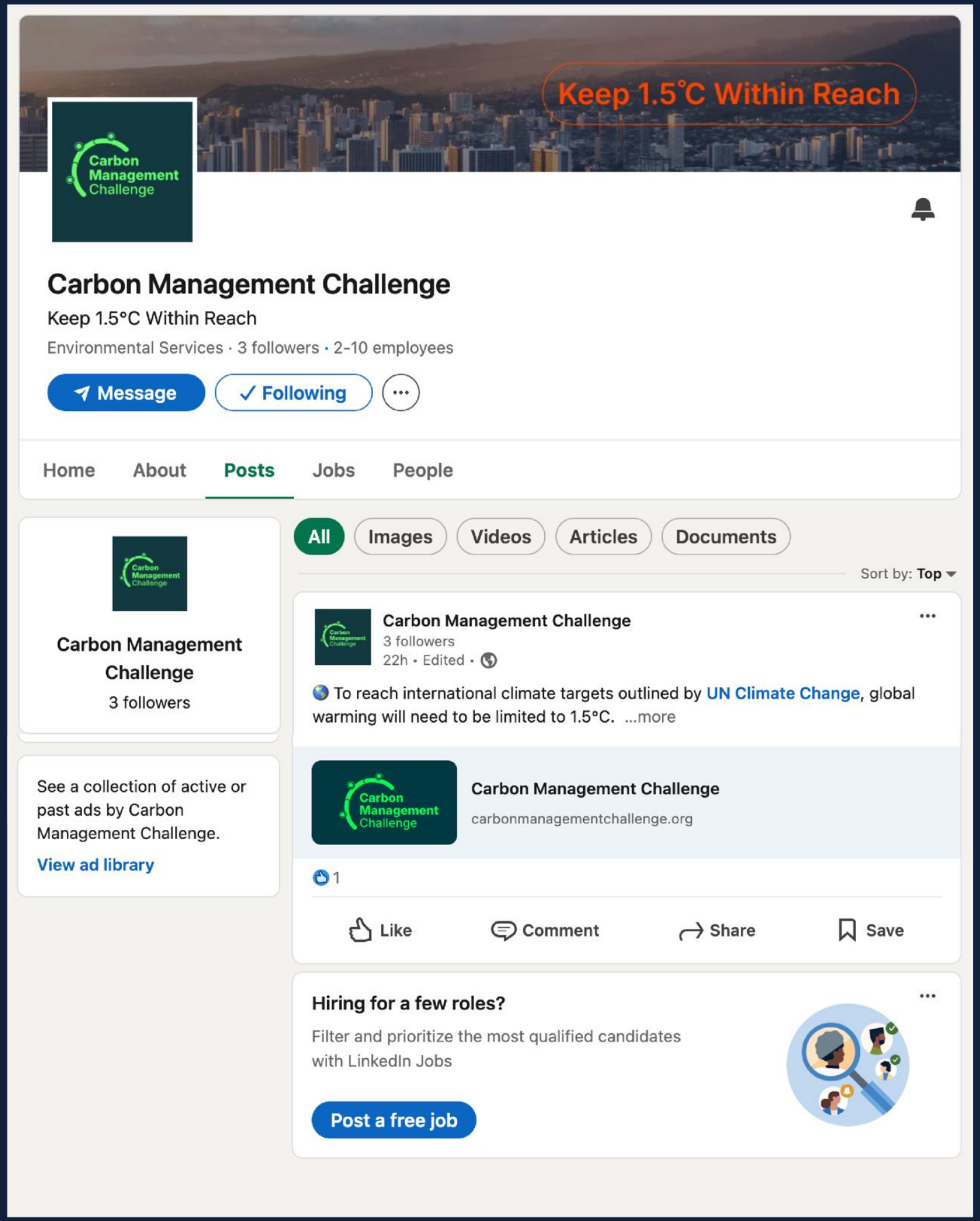
GLOBAL CCS INSTITUTE

Stakeholder Engagement Session: 50% industry, with the rest being academia, NGOs, private sector and finance

- ✓ Need increased promotion of CMC.
- ✓ Importance of boosting knowledge sharing on risk, bringing together technical and finance experiences at early-stage of project development.
- ✓ Define the scope of what counts as carbon management towards the goal.
- ✓ Encouragement of Workstream 2 one-stop-shop access to policy and regulation.
- ✓ Suggestion to create an independent measurement of policy success.
- ✓ Encouragement of common standards through policy-sharing.
- ✓ Encourage policy-certainty in the long-term.
- ✓ Support for finance for developing countries.
- ✓ <u>To achieve the gigatonne goal, we need to work together</u>


carbonmanagementchallenge.org
Carbon Management Challenge
About
Why Carbon Management
Resources
Contact us
Keep 1.5°C Within Reach
To reach international climate targets outlined by the United Nations Framework Convention on Climate Change (UNFCCC), global warming will need to be limited to 1.5°C.
Reaching this goal will require a dramatic increase in the number carbon management projects than what currently exists today. The Carbon Management Challenge (CMC) seeks to drive carbon management projects and infrastructure development to achieve this.
Accelerating climate solutions together
Highlighted resources
View all resources
y highlights role of carbon
eeping 1.5°C within reach
icy has convened a roundtable of
evel officials from over 20 nations
al role of carbon management in
reach.
Briefing
Launch of the Carbon Management Challenge
Global leaders gathered to launch the Carbon Management Challenge as part of new efforts aimed at accelerating progress for keeping 1.5C limit on warming within reach.
Read more
Briefing
"Gigatonne by 2030" C
The CEM CCUS Initiative a
helping drive action for the
Read more


Advancing projects by 2030 to manage
1 Gigatonne of CO_2 annually
CMC participants agree to take voluntary actions to advance a pipeline of carbon management projects by 2030, that when fully operational, will collectively manage 1 gigatonne (Gt) of CO_2 or more annually.
An accelerated and inclusive global scale-up of carbon management
23 participants from around the world
Participant list
+
−


Keep 1.5°C Within Reach
Carbon Management Challenge
Carbon Management Challenge
Keep 1.5°C Within Reach
Environmental Services · 3 followers · 2-10 employees
Message
Following
Home
About
Posts
Jobs
People
Carbon Management Challenge
3 followers
See a collection of active or past ads by Carbon Management Challenge.
View ad library
All
Images
Videos
Articles
Documents
Sort by: Top
Carbon Management Challenge
3 followers
22h • Edited •
To reach international climate targets outlined by UN Climate Change, global warming will need to be limited to 1.5°C. ...more
Carbon Management Challenge
carbonmanagementchallenge.org
1
Like
Comment
Share
Save
Hiring for a few roles?
Filter and prioritize the most qualified candidates with LinkedIn Jobs
Post a free job

GLOBAL CCS INSTITUTE

Facilitated breakout session:
Onshore storage

Facilitators

Daniela Peta
Global CCS Institute

Johnathan Osmand
DNV

Facilitated workshop:
Onshore storage

GLOBAL CCS INSTITUTE

Topics and themes for discussion:

1. Policy/regulatory developments across Europe enabling onshore storage and lessons learned by front-runners of onshore CO_2 storage in Europe
2. Differences between onshore and offshore CO2 storage
3. Main benefits and challenges linked to onshore CO_2 storage project development in Europe
4. Public stakeholders in European onshore CO_2 storage development and their concerns

THANK YOU

GLOBAL CCS INSTITUTE

Facilitated breakout session:

Carbon removals

Facilitators

Dominic Rassool
Global CCS Institute

Nick Davis
Elimini

Facilitated workshop: Carbon removals

GLOBAL CCS INSTITUTE

Topics and themes for discussion:

- A little bit of MRV (points of clarification)
- EU ETS – CRCF: Uncertainty and fragmentation
- EU ETS – CRCF: Debate over whether we take gross or net removals; must keep price of removals higher than allowances, perhaps have a bank that regulates the 'currency'.
- EU ETS: Gradual integration of removals in ETS – uncertainty
- HUNGARY: low to no demand for free, green CO2
- BECCS: USD 300-600; if demand increases, price could come down. Currently unstimulated market.
- Global North vs Global South – opportunities for collaboration
- CORSEA as compliance market – there is a need for incentivising removals as opposed to other types of offsets. Currently there's price parity.

THANK YOU

Facilitated breakout session:
CCS financing

GLOBAL CCS INSTITUTE

Facilitators

Christina Staib
Global CCS Institute

Frida Monstad
Equinor

Fredericq Peigneux
Heidelberg Materials

Marianne Viart
ArcelorMittal

Facilitated workshop:
CCS financing

1. What approaches can help optimize CCS project and value chain costs?

2. What are current challenges with risk allocation along the CCS value chain and potential solutions?

3. What is missing from the current policy and incentive landscape that could support sufficient business models for CCS deployment?

4. What are the lead markets for low carbon products and how can the demand for low carbon products support business models for CCS?

THANK YOU

Facilitated breakout session:

CO2 Transport

Facilitators

Bruno Gerrits
Global CCS Institute

Stefano Miriello
CCSA

Facilitated workshop:

CO2 Transport

Unlocking CO_2 transport access: Level of regulation required at this stage of the CO_2 transport network development:

- Commercial principle vs equality principle ; Third-party access flexibility arrangement
- What is needed for complementarity of transport modes?
- Is the shipping industry ready to invest? What do we need to provide investment certainty?

CO_2 Standards and the role of standardisation bodies

- Do we need a minimum set of standards
- Standards: are they enabler or barrier? Does market drive the standards?
- Who should be setting the standards: storage operators, transport providers or regulators, standardisation bodies?

Cross-border cooperation

- How to address cross-border cooperation within the EU
- Challenges with regards to cross-border cooperation outside the EEA

CO_2 ecosystem: Funding strategies

- How to deal with funding and investments at the initial stage of building infrastructure?

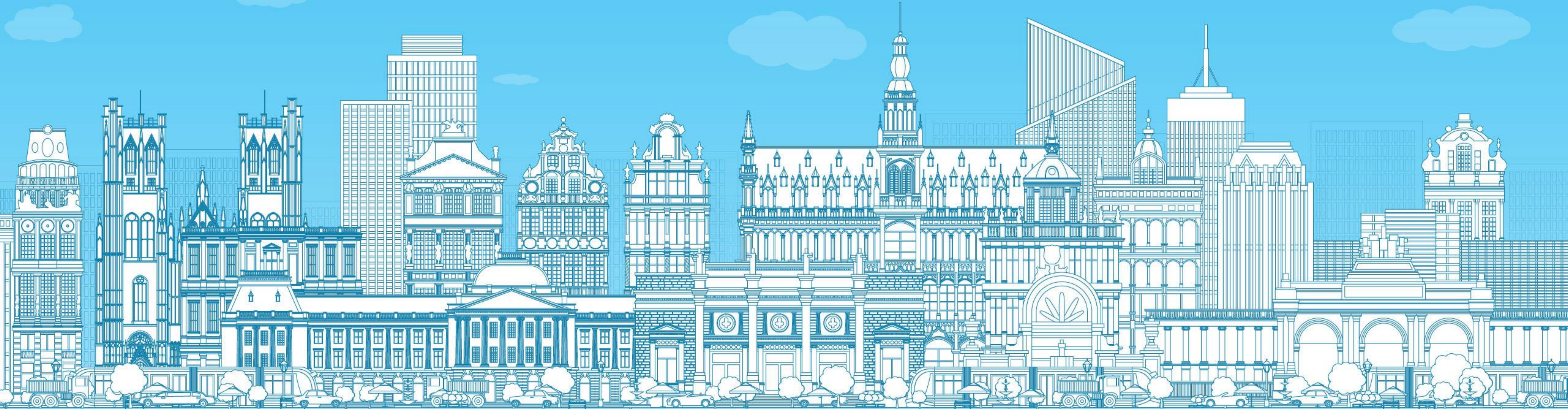
How can market based instruments e.g. CCfDs help with FIDs for infrastructure

- Public-private collaboration / investment needed for shipping, rail, onshore temp storage (like for pipelines)

THANK YOU

2025 EUROPE FORUM ON CARBON CAPTURE AND STORAGE

GLOBAL CCS INSTITUTE



2025 EUROPE FORUM ON CARBON CAPTURE AND STORAGE

GLOBAL CCS INSTITUTE

Closing Remarks

Guloren Turan

Chief Impact Officer

Global CCS Institute

Thank you for attending the 2025 Europe Forum on CCS

Scan the QR code above and take a moment to share your feedback

Questions? Reach out to info@globalccsinstitute.com