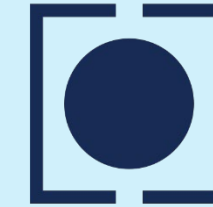
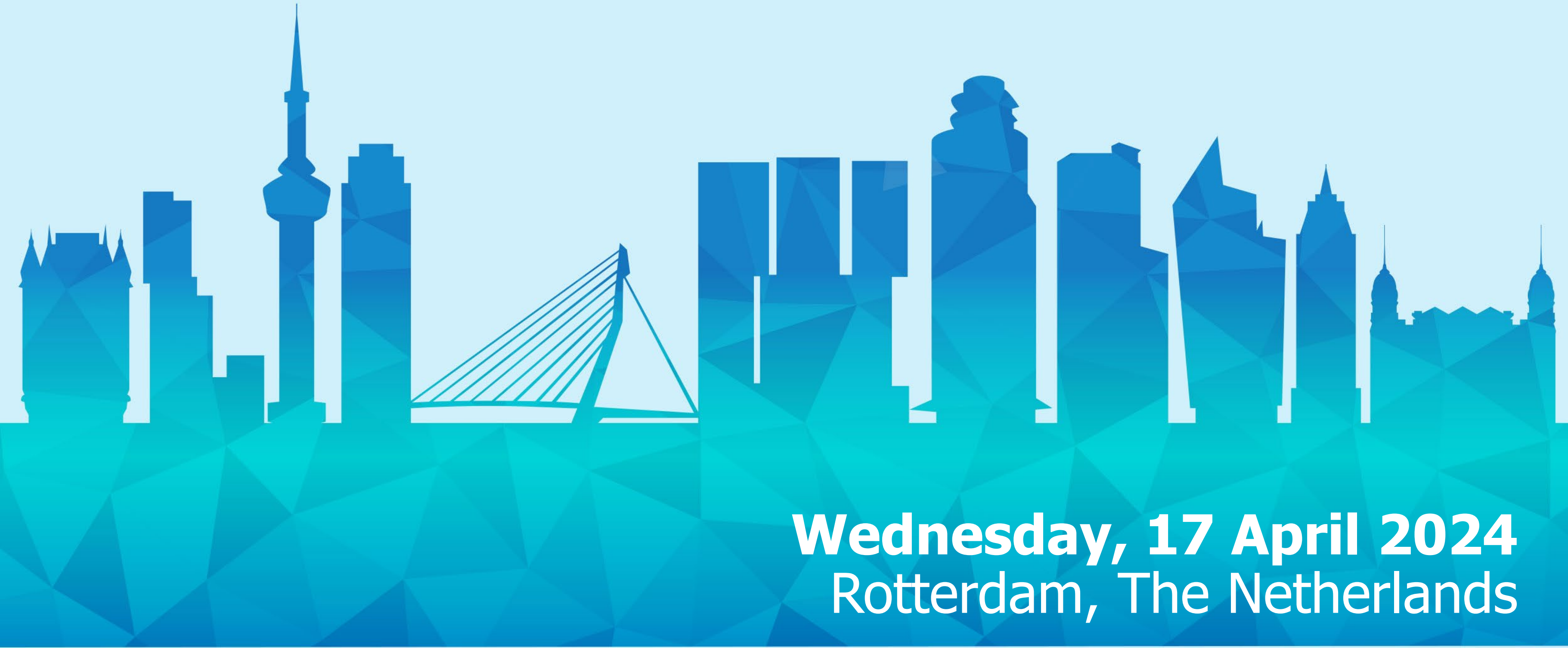


**2024 EUROPE FORUM**



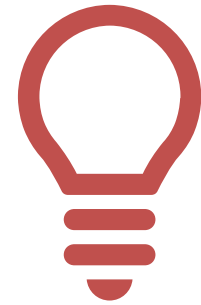
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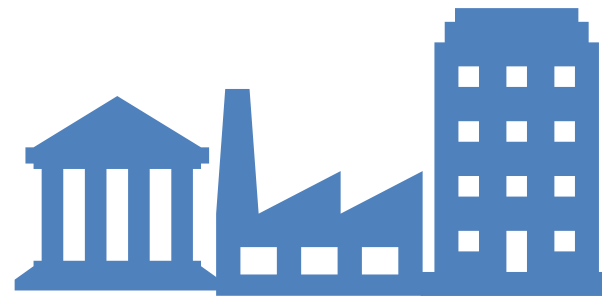
**Wednesday, 17 April 2024**  
Rotterdam, The Netherlands

# The Global CCS Institute

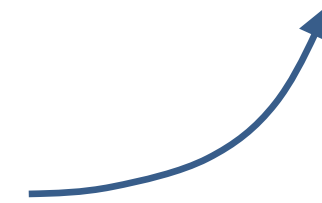


International  
think tank

Backed by governments,  
businesses and NGOs



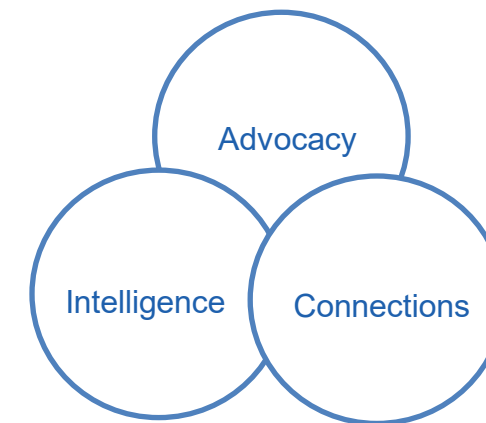
8 locations



**Mission:** To accelerate  
deployment of CCS

**200+**

MEMBERS



# 2024 EUROPE FORUM ON CARBON CAPTURE & STORAGE



THE AGENDA | 17 APRIL 2024

TIME (CEST)	SESSION	SPEAKER
8:30 - 9:30	Registration	Sign in, grab coffee and network with attendees
9:30 - 9:35	Welcome and Housekeeping	Global CCS Institute – Guloren Turan, Chief Impact Officer
9:35 - 10:00	Institute Presentation: An overview of CCS Progress in Europe and Globally	Global CCS Institute – Jarad Daniels, CEO
10:00 - 11:00	Panel 1: Supportive CCS Policies and Climate Strategies in Europe and Beyond	<ul style="list-style-type: none"> <li>UK Government – Matthew Taylor, Deputy Director for Transport and Storage has, Department of Energy Security and Net Zero</li> <li>US Department of Energy – Matt Antes Management &amp; Program Analyst, Office of Fossil Energy and Carbon Management</li> <li>Government of Norway– Ane Gjengedal, Advisor, Ministry of Energy</li> <li>Holcim – Pavan Chilukuri, Group Head of CCUS Strategy</li> <li>IEA – Carl Greenfield, Energy Analyst</li> <li>Global CCS Institute – Guloren Turan, Chief Impact Officer (moderator)</li> </ul>
11:00 - 11:30	Opening Keynote Address	Government of the Netherlands – Michel Heijdra, Director-General for Climate and Energy, Ministry of Economic Affairs and Climate
11:30 - 11:35	Breakout Session – Introduction by the Global CCS Institute	
11:35 - 12:00	BREAK AND NETWORKING	
12:00 - 13:00	<p>Four breakout sessions will be held, covering the following topics:</p> <ul style="list-style-type: none"> <li>Session 1: Insights on Funding Mechanisms for CCS in Europe</li> <li>Session 2: CCS and Job Market Readiness</li> <li>Session 3: The Evolution of CO<sub>2</sub> Storage in Europe</li> <li>Session 4: CDR and the Carbon Removal Certification Framework</li> </ul>	<p>Breakout Session Facilitators and Speakers:</p> <ul style="list-style-type: none"> <li>Zero Emissions Platform – Eadbhard Pernot, Policy and Advocacy Director</li> <li>European Roundtable on Climate Change and Sustainable Transition – Elena Bonfiglio, Policy Analyst</li> <li>Clean Air Task Force – Alessia Virone, EU Affairs Director</li> <li>Carbon Capture and Storage Association – Olivia Powis, UK Director</li> <li>TotalEnergies – Pauline Bourguignon, Business Coordinator</li> <li>Imperial College London – Professor Niall Mac Dowell</li> </ul>
13:00 - 14:00	LUNCH	



# 2024 EUROPE FORUM ON CARBON CAPTURE & STORAGE



THE AGENDA | 17 APRIL 2024

14:00 - 14:30	<b>Fireside Chat</b> How to enable CDR adoption through policy	<b>CCS+/South Pole</b> – Oscar Rueda, Senior Managing Consultant
14:30 - 15:30	<b>Panel 2: CCS Project Development: Insights on Transport and Storage Efforts</b>	<ul style="list-style-type: none"> <li>• <b>World Steel</b> – Andrew Purvis, Director, Sustainable Manufacturing</li> <li>• <b>North Sea Transition Authority</b> – Nick Richardson, Exploration &amp; New Ventures</li> <li>• <b>Japan Oil, Gas and Metals National Corporation (JOGMEC)</b> – Sakura Nishioka, Assistant General Manager</li> <li>• <b>Porthos</b> – Dorus Bakker, Director of Finance</li> <li>• <b>Global CCS Institute</b> – Ellina Levina, Head of Public Affairs (moderator)</li> </ul>
15:30 - 16:00	<b>BREAK AND NETWORKING</b>	
16:00 - 16:30	<b>Closing Keynote Address Fireside Chat</b>	<b>European Commission</b> – Daniel Mes, Business Envoy and Member of Cabinet of the European Commissioner for Climate Action
16:30 - 17:00	<b>Breakout Session Findings Presented by:</b> <b>Zero Emissions Platform</b> – Eadbhard Pernot, Policy and Advocacy Director <b>European Roundtable on Climate Change and Sustainable Transition</b> – Elena Bonfiglio, Policy Analyst <b>CCSA</b> – Olivia Powis, UK Director <b>Clean Air Task Force</b> – Alessia Virone, EU Affairs Director <b>Imperial College London</b> – Niall Mac Dowell	
17:00 - 17:15	<b>Closing Remarks</b>	<b>Global CCS Institute</b> – Jarad Daniels, CEO

**CONTACT**  
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**INSTITUTE PRESENTATION: AN OVERVIEW OF  
CCS PROGRESS IN EUROPE AND GLOBALLY**

**JARAD DANIELS**

CEO at the Global CCS Institute

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# CCS: SCALING UP THROUGH 2030

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- The CCS project pipeline has exhibited strong year-on-year growth over the last 6 years, growing at a compound rate of more than **35% per annum** since 2017.
- As of March 2024, there are **564 facilities** in the pipeline. **43 facilities are in operation** with a capacity to capture and store **50 Mtpa**, and 521 facilities are in development.
- Growth has been driven by strong policy, particularly in North America and Europe.
- Whilst the progress is encouraging, achieving global climate targets will require annual CO<sub>2</sub> storage rates of approximately 1 Gtpa by 2030 and multiple Gtpa by 2050.
- As more projects progress from planning and development to execution phase, permitting, public engagement and project management will increasingly become more critical.

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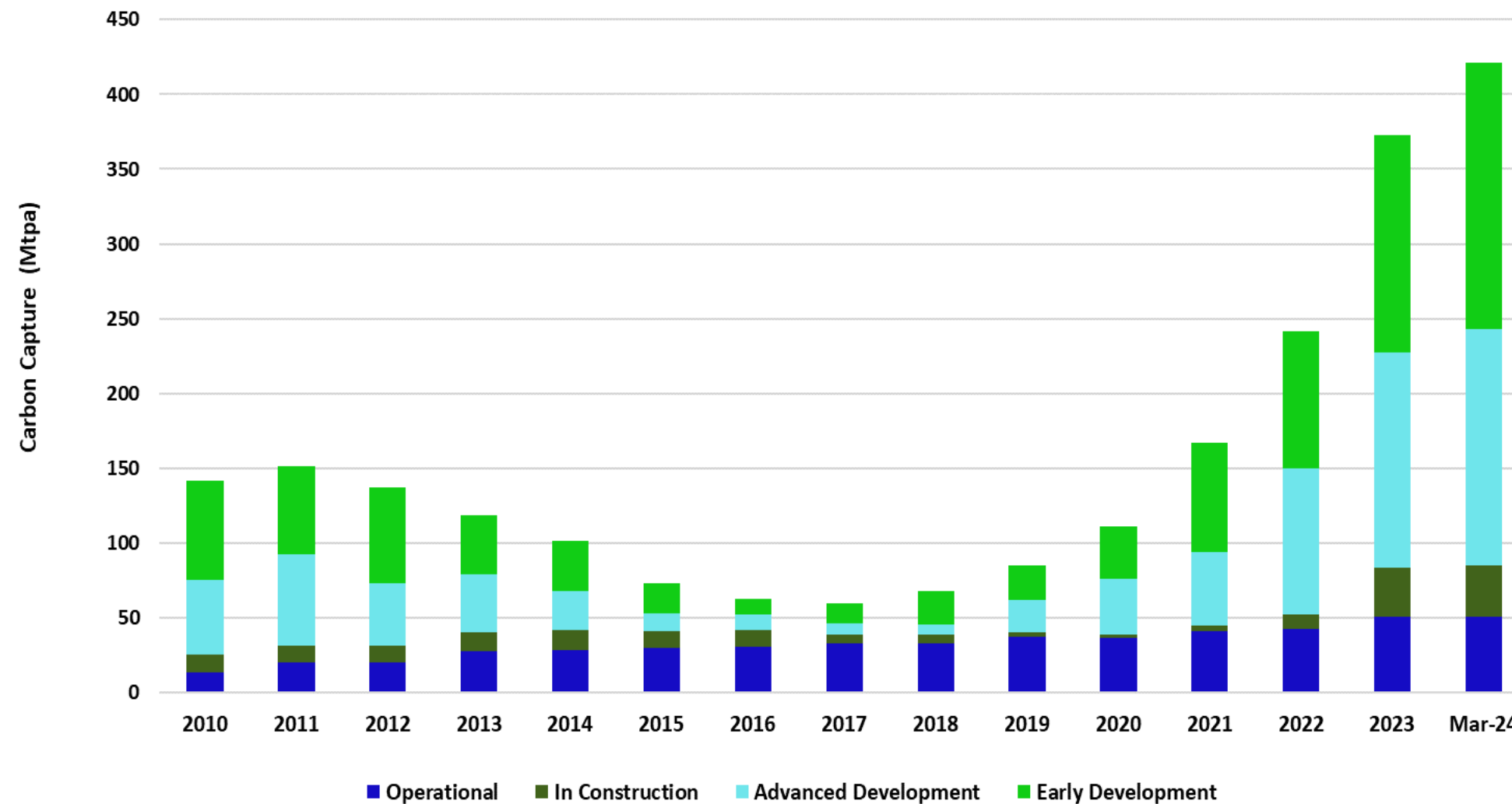
# **STRONG POLICY DRIVES STRONG GROWTH**

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- Greater recognition of role of CCS in NDCs, National Roadmaps, etc.
- Strengthening general climate policy
- Establishment of national CCS targets
- Creation of International CCS ambition: Carbon Management Challenge
- Strengthening fiscal incentives – operational and capital support
- Development of CCS regulations

# GLOBAL CCS PROJECT PIPELINE: UNPRECEDENTED LEVELS

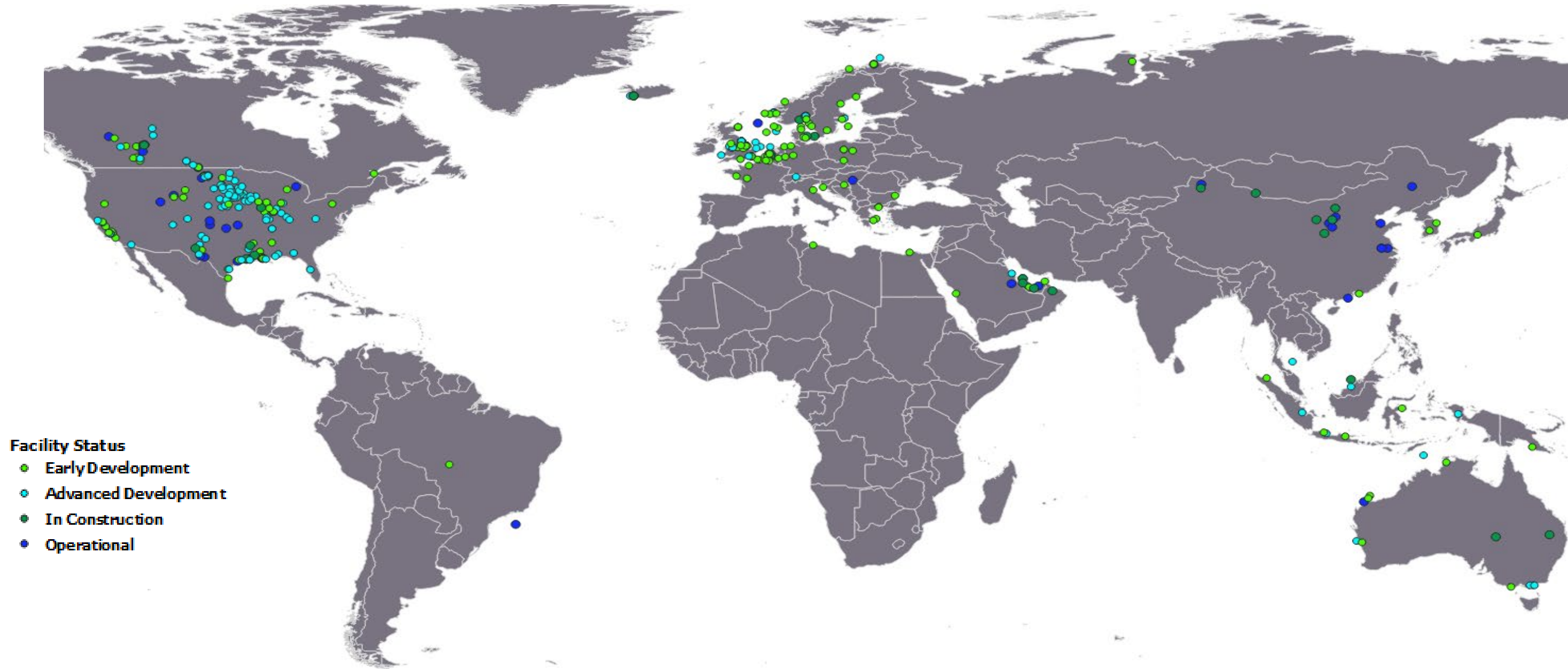
Capacity of Commercial Facilities Pipeline 2010-March 2024



**43** facilities in operation  
**33** facilities under construction  
**158** facilities in advanced development  
**330** facilities in early development



# GLOBAL CCS FACILITIES (MARCH 2024)



This map does not include the following:

- Pilot and Demonstration Facilities
- Announced Facilities
- Approximately 150 facilities where precise location is yet to be confirmed

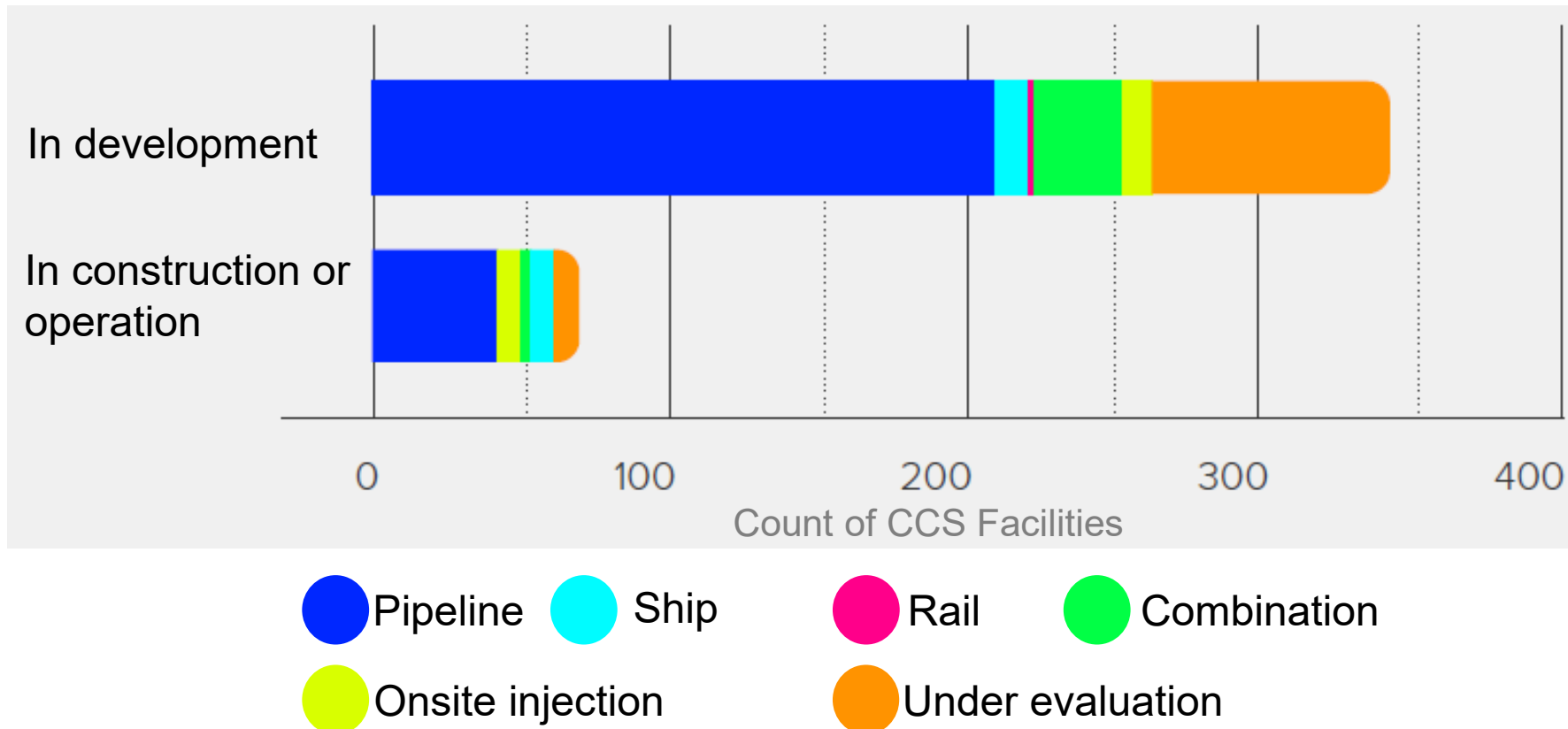
# APPLICATION OF CCS ACROSS INDUSTRIES – GSR '23



# CO<sub>2</sub> TRANSPORT & STORAGE

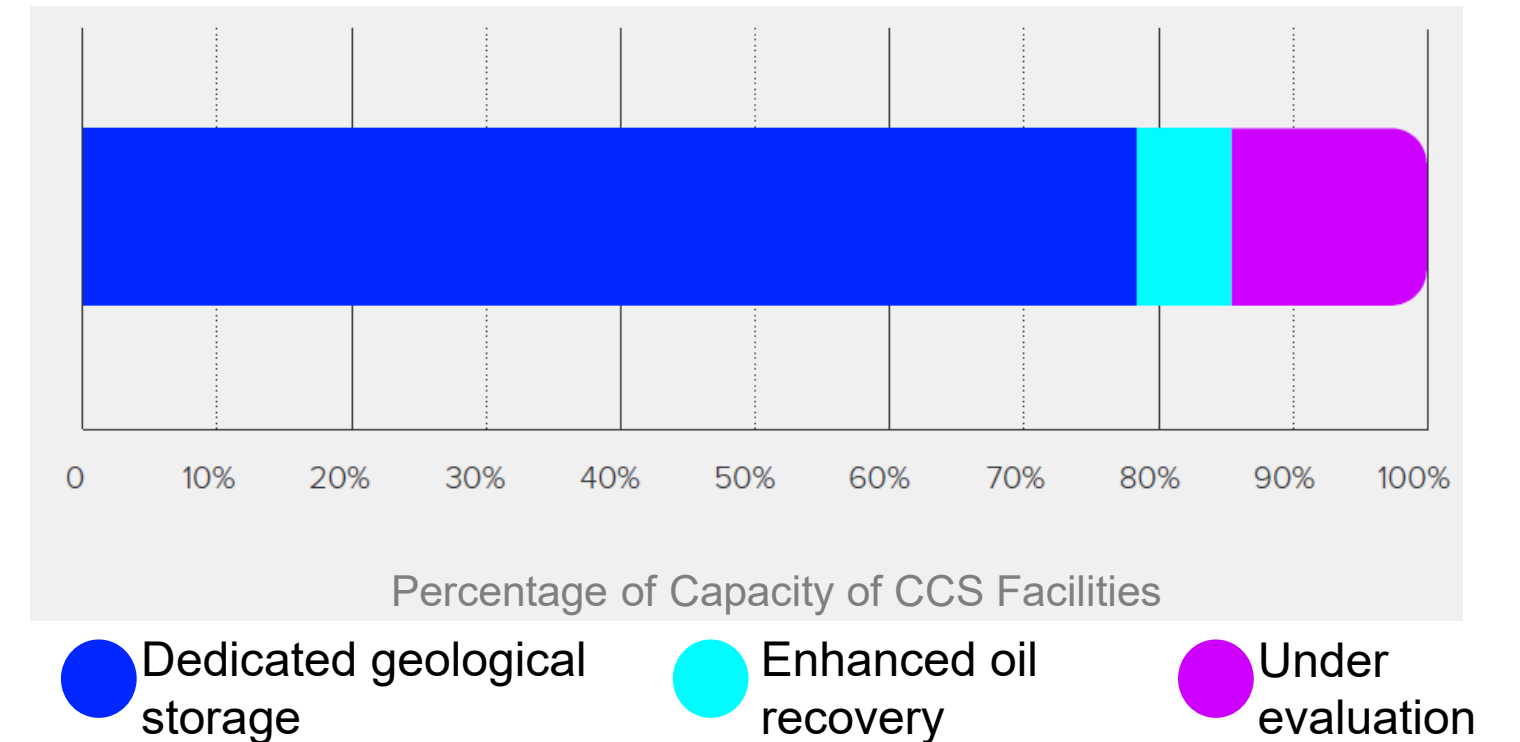
More complex CO<sub>2</sub> transport logistics emerging

CCS Facility by CO<sub>2</sub> Transport Mode



78% of CCS facilities in construction or development by capacity expected to use dedicated geological storage

CCS Facility Capacity by Storage Type





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# CCS DEVELOPMENTS IN EUROPE

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- There are now more than 150 facilities in development in Europe.
  - Hydrogen, ammonia and fertilizer, power generation and heat, cement and biomass to power/heat are the top applications for carbon management in Europe.
  - Net-Zero Industry Act aims to have 50 Mtpa storage developed by 2030 and seeks to shorten regulatory timelines.
  - EU Industrial Carbon Management Strategy foresees 280 Mtpa capture capacity by 2040 and 450 Mtpa by 2050. It sets out a comprehensive policy approach to deliver on these targets and establish an EU wide single market for carbon management.
  - The EU through the Innovation Fund, is to invest in 22 CCS and CCU projects (and counting).
  - A number of bilateral agreements and declarations are being signed across Europe to facilitate cross-border collaboration and transportation of CO<sub>2</sub>.
  - North Sea sites dominates for CO<sub>2</sub> storage in Europe, but other offshore storage opportunities are also emerging. Denmark, and Poland are also considering onshore storage.
-

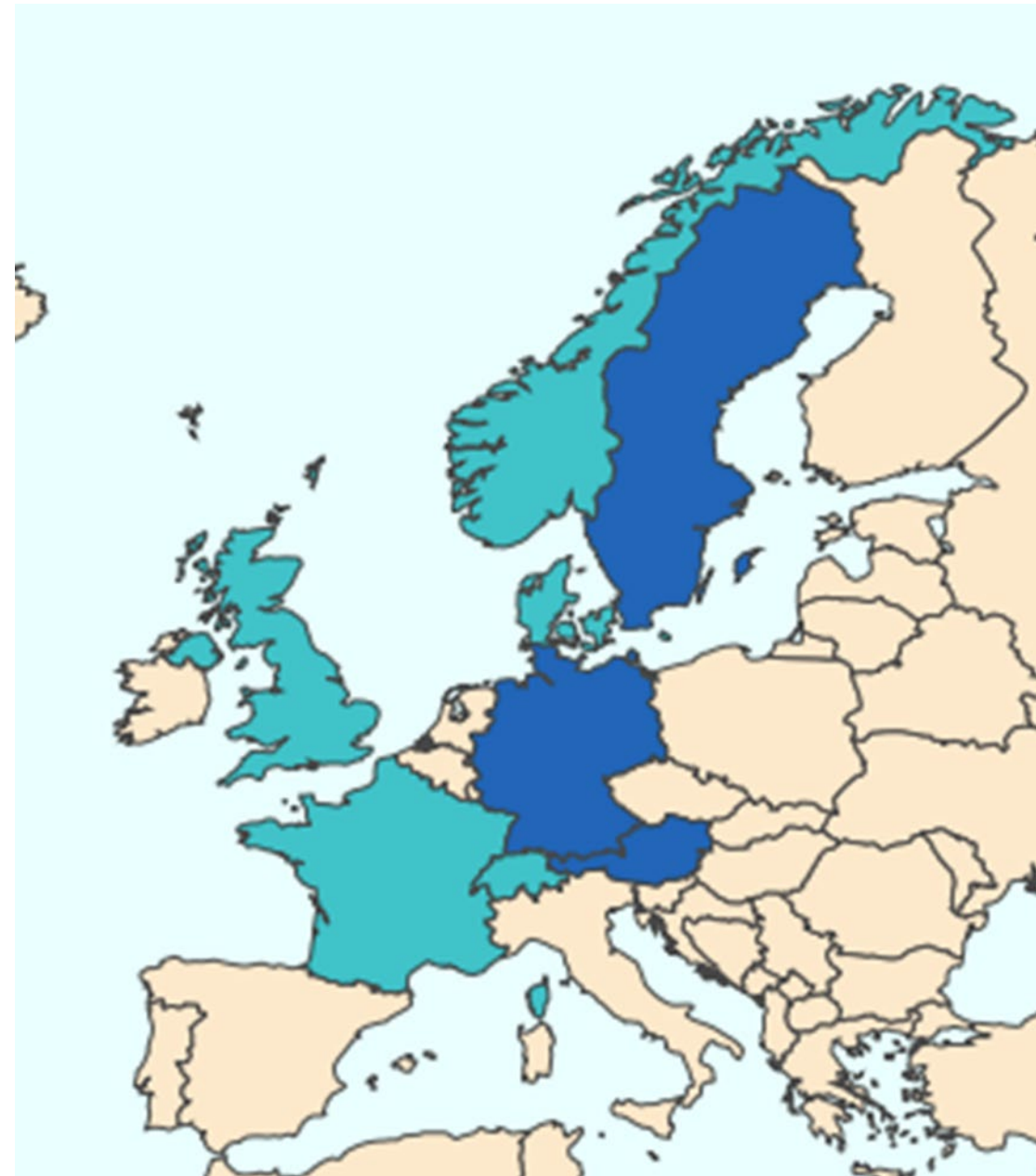
# CCS DEVELOPMENTS IN EUROPE - 2

## European Union

- European Commission adopted its recommended 2040 emissions reduction target and EU Industrial Carbon Management Strategy in February 2024.
- Hydrogen Package, Net-Zero Industry Act and Carbon Removal Certification Framework in final stage of approval before publication in the Official Journal by June 2024.

## France

- Draft CCUS strategy submitted for consultation with industry in June 2023.



## Germany

- Key considerations for national industrial carbon management strategy and draft revised Carbon Dioxide Storage Act published in February 2024.

## Flanders (Belgium)

- Draft CO<sub>2</sub> transport regulation submitted to the Flemish Parliament for adoption in February 2024.

## Austria

- Preparation of a national industrial carbon management strategy to be released in 2024.

\*Including recent updates // On the map, countries which released their own CCS strategy in green, those which announced it in blue

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# CCS DEVELOPMENTS IN THE USA

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- US leads the facility scoreboard, enabled by the strong policy support including the Inflation Reduction Act (2022), CHIPS & Science Act (2022) and Bipartisan Infrastructure Law (2021).
  - BIL includes over USD 12 billion in investments in carbon management.
  - IRA increases the dollar value of tax credits, lowers carbon capture thresholds, and adds provisions for direct pay and tax credit transferability.
- The Department of Interior is developing regulations for offshore storage and the Pipeline & Hazardous Material Safety Administration is updating CO<sub>2</sub> pipeline standards.
- The US EPA has received an unprecedented number of Class VI permit applications. North Dakota and Wyoming issued new Class IV permits, Louisiana received primacy, and the EPA awarded the first draft Class VI permit in California.
- Regulatory and permitting uncertainty or delays, as well as lack of community support in some areas, pose risks to CCS deployment in the US.



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# CCS DEVELOPMENTS IN CANADA AND BRAZIL

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## Canada

- Federal Government released its carbon management strategy and announced investment tax credit covering up to 50% of the capital cost of CO<sub>2</sub> capture projects until 2030.
- There is also a proposal to introduce carbon contracts for difference (CCfDs).
- Alberta awarded 19 additional CCS hubs under the Technology Innovation & Emissions Reduction Regulations.

## Brazil

- Petrobras CCS project in the Santos Basin injected 10.6 Mt CO<sub>2</sub> in 2022 and aims to inject cumulative total of 80 Mt CO<sub>2</sub> (since start of operations) by 2025.
- CO<sub>2</sub> storage regulations bill passed by the Brazilian Senate – yet to pass the Chamber of Deputies.

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# CCS DEVELOPMENTS IN MIDDLE EAST AND AFRICA

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- Regional operational CCS capacity currently accounts for 8% of global total capacity.
- Net-zero targets and a strong emphasis on industrial diversification in the region are driving CCS deployment.
- In November 2023, **Oman's** Ministry of Energy and Minerals launched an initiative to establish a CCUS and blue hydrogen regulatory framework.
  - The Institute supports Oman's work programme on CO<sub>2</sub> storage.
- In the **UAE**, ADNOC took FID on the Habshan facility.
- The Al Jubail CCUS industrial hub in **Saudi Arabia** targets capturing 9 Mtpa by 2027 and 44 Mtpa by 2035.
- Hosting COP28 turned spotlight on region's commitment to sustainability – making adoption of CCS even more pressing and attractive.

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# CCS DEVELOPMENTS IN ASIA PACIFIC

---

- In **China**, 3 projects became operational in 2023 – Asia’s largest coal-power plant CCS facility, the first offshore CO<sub>2</sub> storage facility, and carbon capture at an oil refinery. China now hosts 11 operating facilities, including its first commercial-scale, 109 km long CO<sub>2</sub> transport pipeline.
  - **Japan** progressed its CCS roadmap and announced support for seven CCS networks that will capture CO<sub>2</sub> in Japan for storage in the offshore waters off Japan and in the wider Asia-Pacific region.
  - **Malaysia, Indonesia, Thailand, Brunei** and **Timor-Leste** are all moving forward to develop opportunities to receive CO<sub>2</sub> from other countries.
    - **Indonesia** issued a presidential regulation on CCS in January 2024, which will allow CCS operators to set aside 30% of their storage capacity for imported CO<sub>2</sub>.
  - In November 2023, **Singapore** announced its objective to realise at least 2 Mt of carbon capture potential by 2030.
  - In **Australia**, the Federal Government passed a bill to incorporate the 2009 and 2013 amendments to the London Protocol into domestic legislation, to allow transboundary transport of CO<sub>2</sub> for geological storage. Instruments to ratify the amendments will now be developed.
-



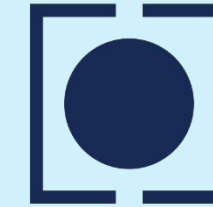
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# REALIZING CCS AT SCALE GLOBALLY

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- Reaching the required scale for CCS will require us all to work together.
- Existing climate change policy commitments and pledges, if delivered, can get us to hundreds of million tonnes per annum scale.
- To reach gigatonne per annum scale globally, deployment in emerging markets and developing economies should increase significantly.
- Scaling up CCS to the levels needed to achieve net zero, the highest levels of safety, environmental stewardship, accountability, community engagement, and societal benefits need to be incorporated into projects.
- Project lead times must decrease to achieve the level of global deployment that is needed by 2030.
- There is a large role for governments to play in developing policy to drive investment.

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## PANEL SESSION: SUPPORTIVE CCS POLICIES & CLIMATE STRATEGIES IN EUROPE & BEYOND



**GULOREN TURAN**

Global CCS Institute,  
Chief Impact Officer

**MODERATOR**



**MATTHEW  
TAYLOR**

UK Government,  
Department of Energy  
Security and Net Zero,  
Deputy Director for  
Transport Storage



**ANE GJENGEDAL**

Government of  
Norway, Ministry of  
Energy, Advisor



**PAVAN  
CHILUKURI**

Holcim  
Group Head of CCS  
Strategy



**MATT ANTES**

US Department of  
Energy, Office of Fossil  
Energy and Carbon  
Management

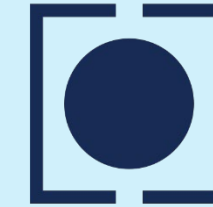


**CARL GREENFIELD**

IEA, Energy Analyst



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OPENING KEYNOTE ADDRESS

**MICHEL HEIJDRA**

Government of The Netherlands

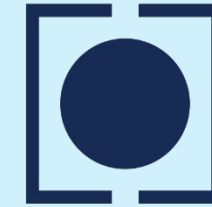
Director General for Climate and Energy

Ministry of Economic Affairs and Climate





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## FOUR BREAKOUT SESSIONS



**EADBHARD PERNOT**  
Zero Emissions Platform

**MATHILDE BLANCHARD**  
Global CCS Institute



**OLIVIA POWIS**  
CCSA

**ELENA BONFIGLIO**  
European Roundtable on Climate  
Change and Sustainable Transition



**ALESSIA VIRONE**  
Clean Air Task Force

**PAULINE BOURGUIGNON**  
TotalEnergies



**NIALL MAC DOWELL**  
Imperial College London

**DOMINIC RASSOOL**  
Global CCS Institute

**Session 1: Insights  
on CCS Funding  
Mechanisms**

**Room: Rotterdam Suite**

**Session 2: CCS and Job  
Market Readiness**

**Room: Conrad Suite**

**Session 3: The Evolution  
of CO<sub>2</sub> Storage in Europe**

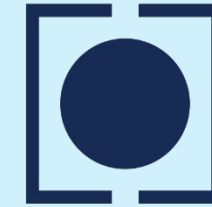
**Room: Coolsingel Suite**

**Session 4: CDR and  
the Carbon Removal  
Certification Framework**

**Room: Maaskant**



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**FIRESIDE CHAT** HOW TO ENABLE  
CDR ADOPTION THROUGH POLICY

**OSCAR RUEDA**

CCS+/South Pole

Senior Managing Consultant



# How to enable responsible CDR adoption through policy

2024 EUROPE FORUM ON CARBON CAPTURE & STORAGE

Oscar Rueda, Senior Managing Consultant, South Pole

17 April 2024



## Outline

1. **The role of CCS-based CDR**

Defining CDR, the need for CDR, and the role of BECCS and DACCS

1. **Key considerations for safe BECCS and DACCS**

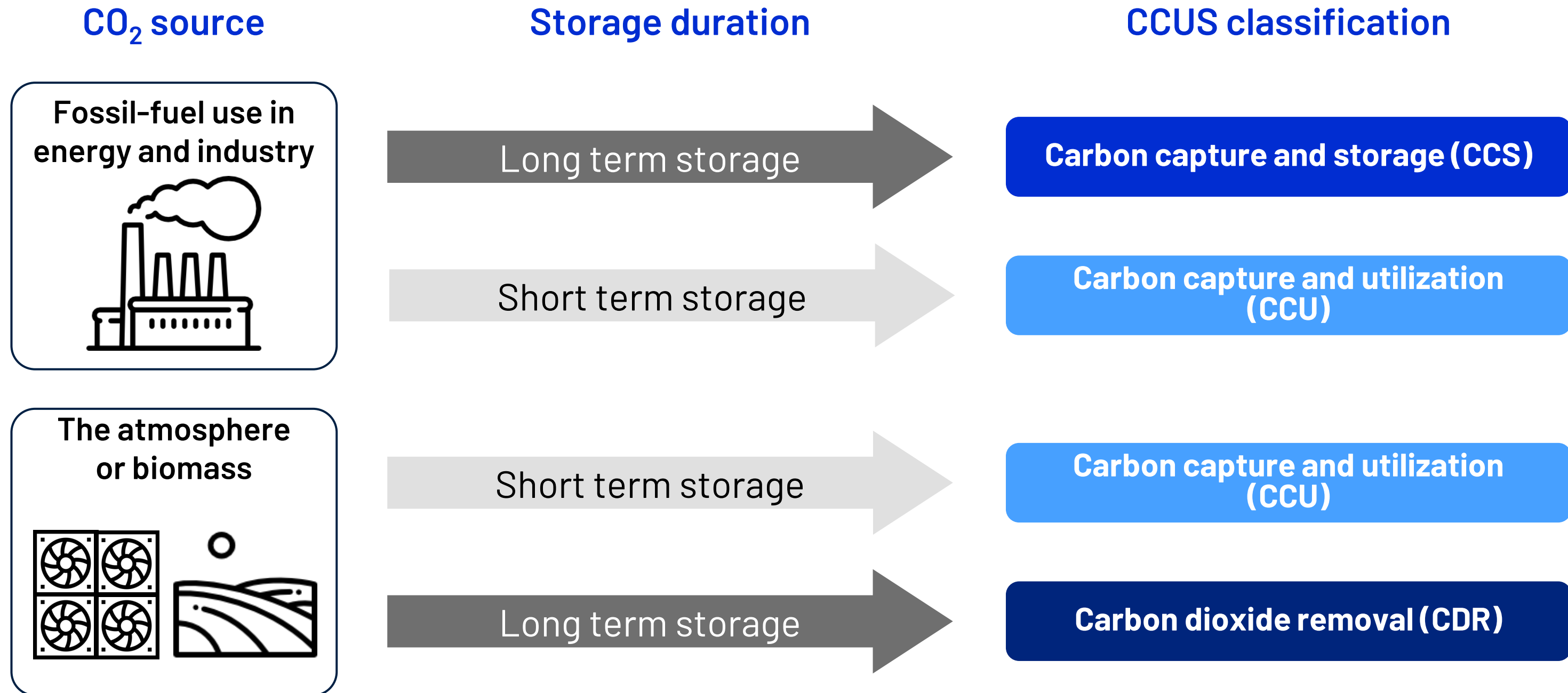
Sustainable biomass, energy use, and permanent storage

1. **Policy implications of responsible removals principles**

Minimize the need for CDR, proactively plan CDR adoption, and ensure safe CDR

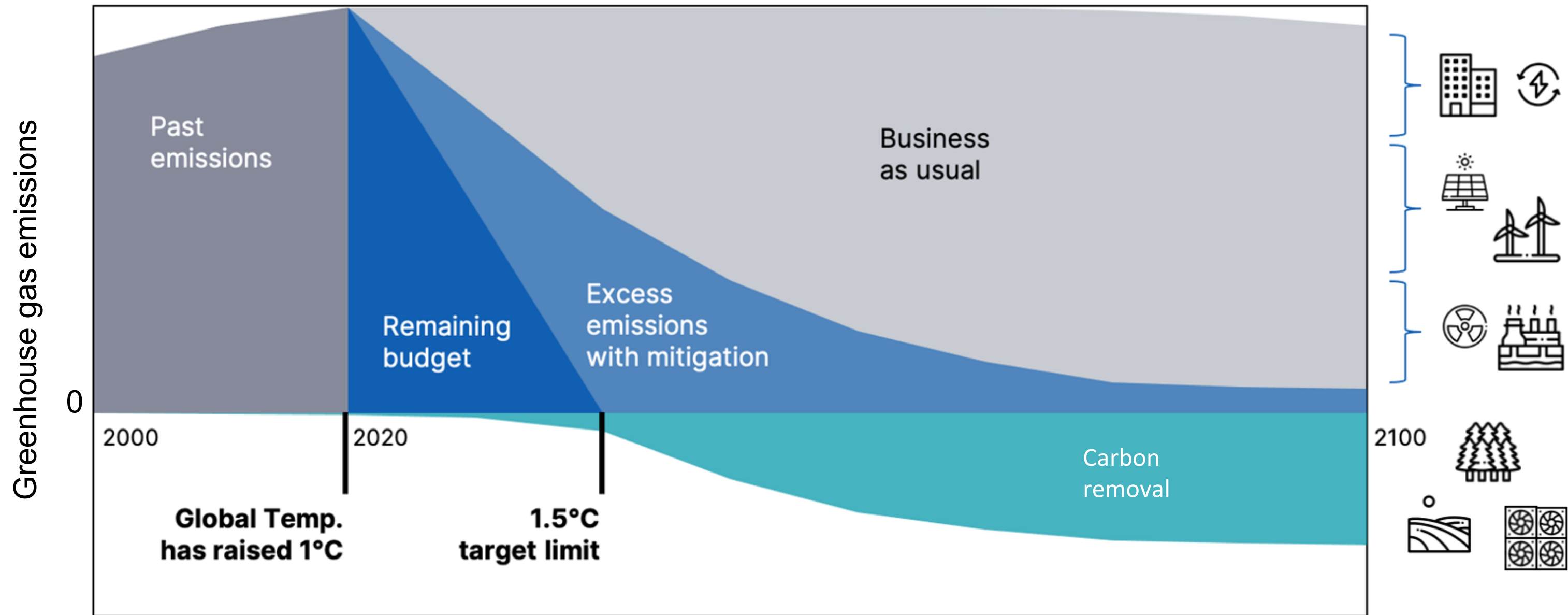
## Defining CCS-based CDR

CCUS involve a range of technologies with differentiated mitigation roles



# We need CDR to stabilize the climate

## Net-zero plans imply CDR adoption to neutralize residual emissions



The graph shows a plausible scenario without accurate values (Sustainability Priorities Research, 2021)  
The icons were made by Freepik from flaticon.com.

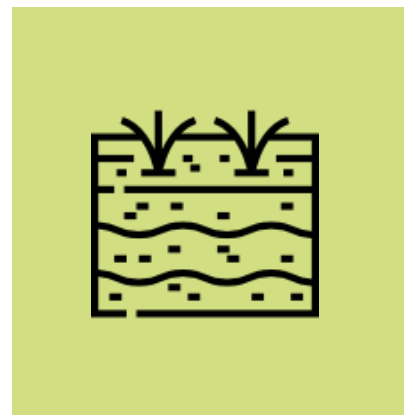
# CDR methods can be widely diverse

They differ in their side benefits and effectiveness to mitigate climate change

## Conventional methods on land



Afforestation and reforestation



Soil carbon sequestration

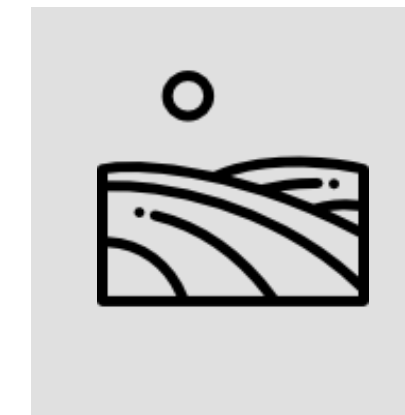
## Novel methods



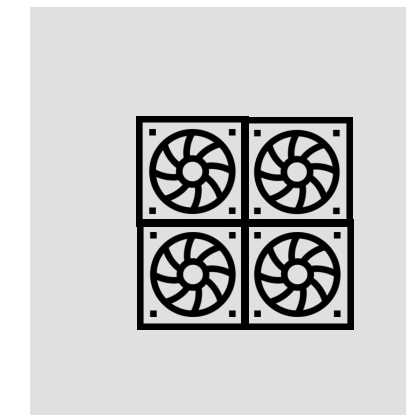
Biochar



Enhanced weathering



Bioenergy with carbon capture and storage



Direct air carbon capture and storage

CCS-based CDR

The icons were made by Freepik from flaticon.com.



## BECCS could provide substantial energy supplies while durably removing CO<sub>2</sub> from the atmosphere.

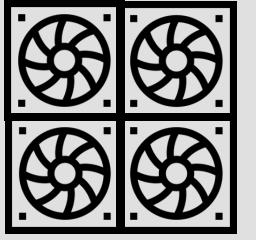


- BECCS for **electricity or hydrogen** production can achieve **substantial net carbon removals**.
- Biomass and land availability could limit **BECCS sustainable potential**.
- BECCS with agricultural expansion **can compromise biodiversity** and **food security**.
- **Sustainable biomass sourcing is essential** to avoid negative environmental impacts.





## Direct air capture: Upon reaching maturity, it can be a highly effective CDR method to mitigate climate change.



- DAC has seemingly **unlimited potential** but **scaling it up is challenging**.
- Its **accountability** and **controllability** are the highest among CDR methods.
- Despite its high costs, **it will likely help reduce the costs of net-zero strategies** by mitigating even costlier residual emissions.

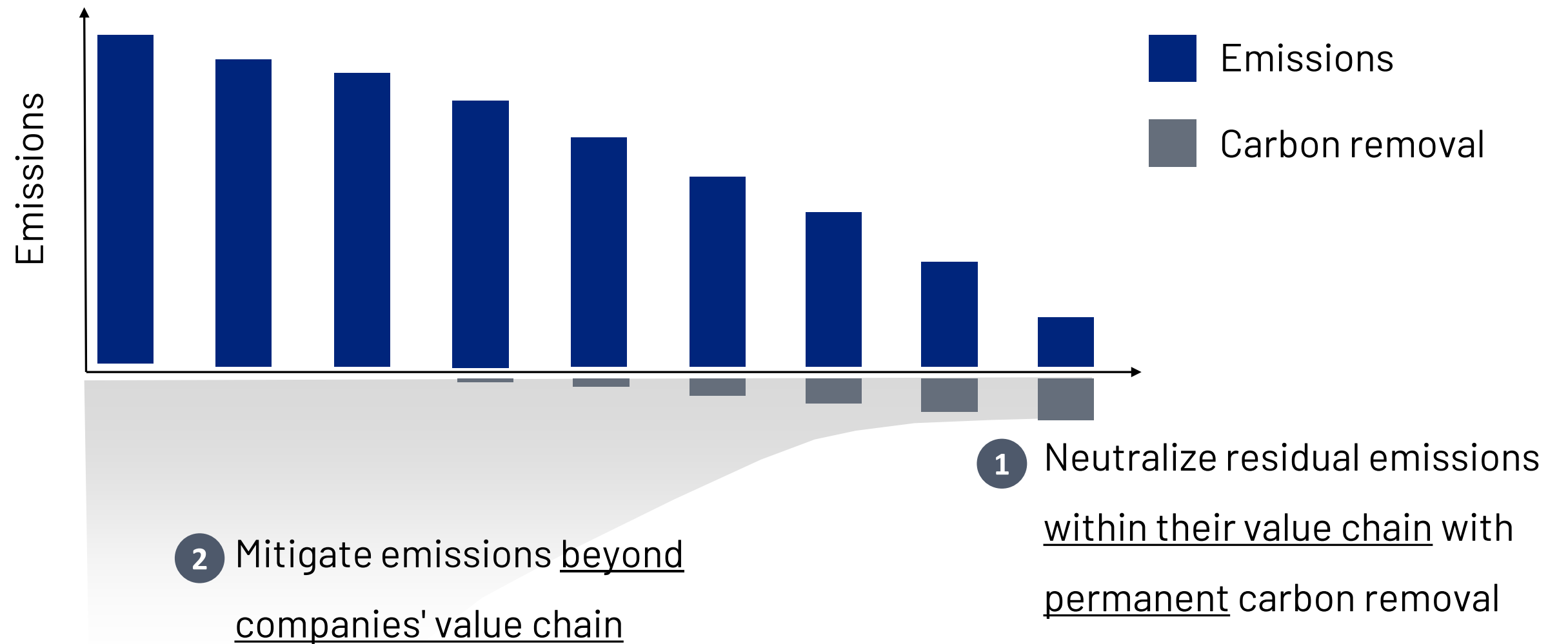


Photo by Carbon Engineering

# Permanent CDR will help neutralize residual emissions

## Reach net-zero and mitigate emissions beyond companies' value chain

Net zero roughly by 2050 at the latest





# Illustrative timing and scale of CDR incentives

## State support

Entrepreneurial policies provide early support (e.g., innovation incentives).

## Voluntary carbon markets (VCMs)

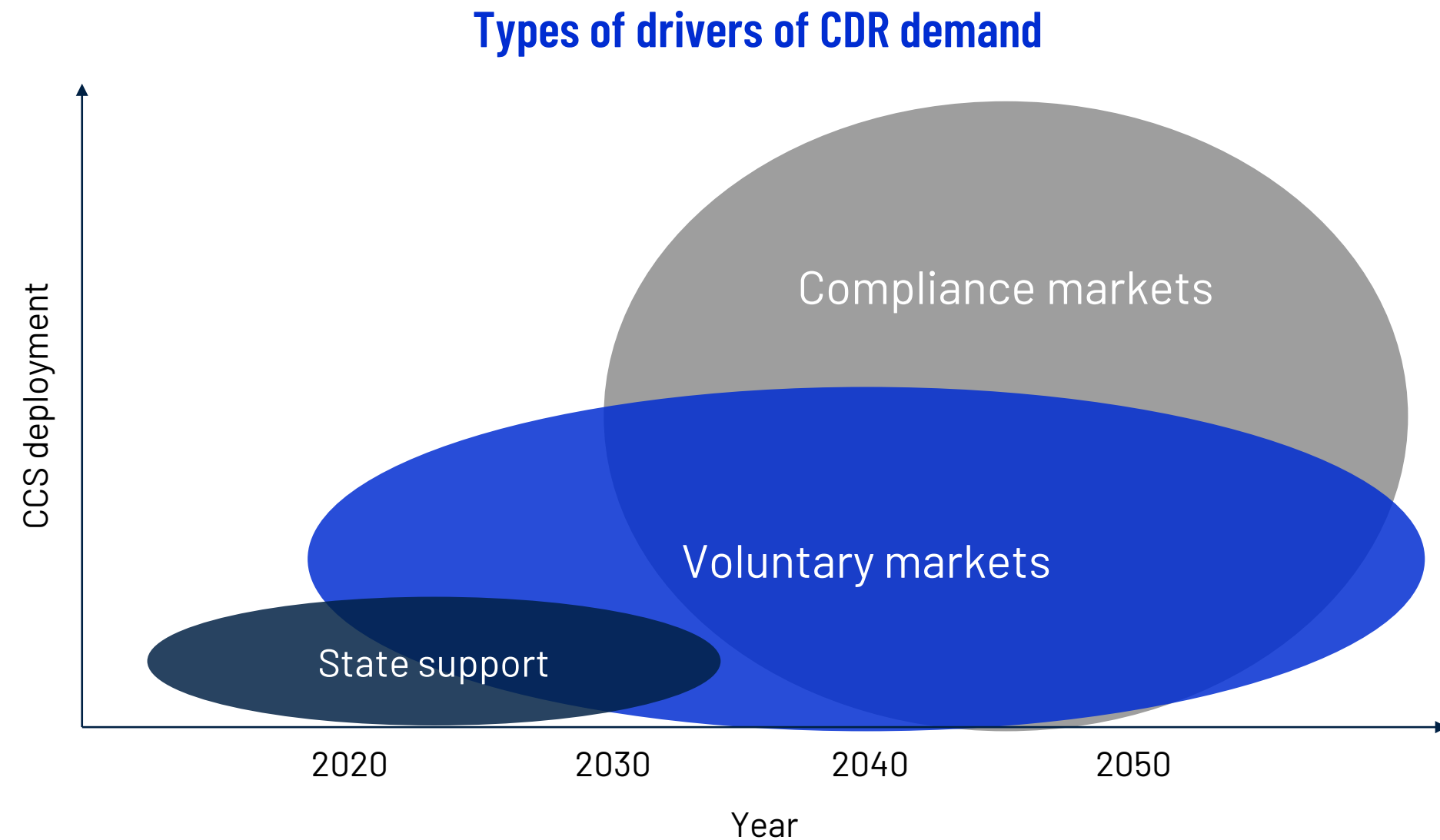
VCM may drive adoption at scale sooner than compliance markets.

## Compliance markets

Compliance may represent the largest potential in the long term.

## International carbon markets

E.g., Article 6.2, can integrate diverse markets to help unlock CDR at scale, but they face technical barriers.



Based on Fig. 1 from Zetterberg et al., 2021

## Principles for responsible CDR policy

# Minimizing the need for CDR while proactively planning high-quality CDR adoption

### 1. **Prioritize steep emission reductions over removals**

Emission removals should not substitute emission reductions (in progress)

Challenge the definition of residual emissions (more efforts needed)

### 1. **Proactively plan and develop a diversified portfolio of removals**

Ensure timely deployment to neutralize residual emissions when needed

Supply: Tackle bottlenecks such as storage (in progress / more efforts needed)

Demand: Foster demand across market types (more efforts needed)

### 1. **Ensure high quality and environmental integrity of CDR**

Identify and account for the critical implications:


Ensure that 1 tCO<sub>2</sub> is 1 tCO<sub>2</sub>: Methodologies under development (in progress)

Ensure permanent storage: CCS Directive and other regulations (regulations in place)


Minimize side impacts: Energy use (DACCS) and biomass (BECCS) (more efforts needed)



# Main references: responsible CDR portfolios & meths. in the EU



Global Environmental Change  
Volume 67, March 2021, 102238



## Negative-emissions technology portfolios to meet the 1.5 °C target

O. Rueda <sup>a</sup>, J.M. Mogollón <sup>a</sup>, A. Tukker <sup>a,b</sup>, L. Scherer <sup>a</sup>

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<https://doi.org/10.1016/j.gloenvcha.2021.102238> [Get rights and content](#)

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### Highlights


- Framework integrates critical aspects of feasibility, effectiveness, & side impacts.
- Portfolios show the optimal **NET** mix to reach the 1.5 °C target under three scenarios.
- Portfolios result in major trade-offs between effectiveness and side impacts.
- When looking beyond costs, **DACCS** emerges as an essential technology.
- When considering sustainability more broadly, BECCS's role nullifies.

## Removing carbon responsibly

A guide for business on carbon removal adoption



Drafted by South Pole and WBCSD  
September 2023



## CCS+ initiative

### EU guide to an integrated carbon accounting infrastructure for the industrial carbon management market


Leading authors:  
Oscar Rueda (South Pole)  
Paula Cousy (IFPEN)  
Laura Camarut (South Pole)  
Christiaan Gevers Deynoot (South Pole)

September 2023





# Thank you

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 [@southpoleglobal](#)

 [@southpoleglobal](#)

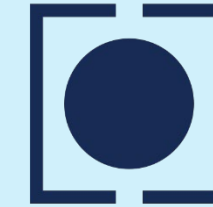
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 **south pole** The Climate Company



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# 2024 EUROPE FORUM ON CARBON CAPTURE & STORAGE



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## PANEL SESSION: CCS PROJECT DEVELOPMENT: INSIGHTS ON TRANSPORT & STORAGE EFFORTS



**ELLINA LEVINA**  
Global CCS Institute  
Head of Public Affairs



**NICK RICHARDSON**  
North Sea Transition  
Authority  
Head of Exploration and New  
Ventures



**DORUS BAKKER**  
Porthos  
Director of Finance



**ANDREW PURVIS**  
World Steel  
Director of Sustainable  
Manufacturing



**SAKURA NISHIOKA**  
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– Head of Energy



**2024 EUROPE FORUM ON**

**CARBON CAPTURE & STORAGE**



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**CLOSING KEYNOTE ADDRESS**

**DANIEL MES**

European Commission

Business Envoy and Member of Cabinet of the  
Commissioner for Climate Action



# 2024 EUROPE FORUM ON CARBON CAPTURE & STORAGE



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## FOUR BREAKOUT SESSIONS



**EADBHARD PERNOT**  
Zero Emissions Platform



**OLIVIA POWIS**  
CCSA



**ALESSIA VIRONE**  
Clean Air Task Force



**NIALL MAC DOWELL**  
Imperial College London

**MATHILDE BLANCHARD**  
Global CCS Institute

**ELENA BONFIGLIO**  
European Roundtable on Climate  
Change and Sustainable Transition

**PAULINE BOURGUIGNON**  
TotalEnergies

**DOMINIC RASSOOL**  
Global CCS Institute

**Session 1: Insights  
on CCS Funding  
Mechanisms**

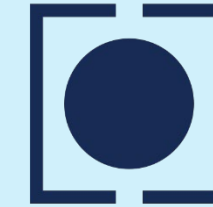
**Session 2: CCS and Job  
Market Readiness**

**Session 3: The Evolution  
of CO<sub>2</sub> Storage in Europe**

**Session 4: CDR and  
the Carbon Removal  
Certification Framework**



**2024 EUROPE FORUM ON CCS**



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**BREAKOUT SESSION: INSIGHTS ON CCS FUNDING MECHANISMS FOR CCS**



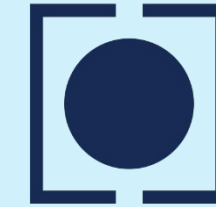
**Wednesday, 17 April 2024**  
**Rotterdam, The Netherlands**

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# INSIGHTS ON CCS FUNDING MECHANISMS FOR CCS – KEY TAKEAWAYS

- 1. Market Phases:** De-risk investment in the short, medium and long term
- 2. Geography:** CCS must be an option for different areas in Europe
- 3. Resiliency of revenues and costs:** EU ETS price, State-aid
- 4. Mandates:** Balance to be found between regulated and more market-based approaches
  - CCS image and public funding: Industry can't rely on subsidies and political regimes with diverging views and coverage at COP
  - Integrated approach and streamlining different sources of public funding
  - Lessons can be learned on revenue generation from EOR and other country experiences

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**Breakout Session: The Evolution of CO<sub>2</sub> Storage in Europe**



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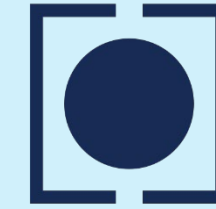


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# THE EVOLUTION OF CO<sub>2</sub> STORAGE IN EUROPE – KEY TAKEAWAYS

- Lack of storage development in Southern Europe -> in part driven by low data collection on storage capacity. In addition, the absence of the oil/gas industry, increases infrastructure costs and drive bottlenecks on storage delivery.
  - *Is Europe open to other countries for storage e.g. north Africa would be cost effective for south European countries.*
- Move away from theoretical storage to actual deliverable targets. More is required to determine the risks and uncertainties of storage capacity e.g. understanding sites that will be viable and their risk of underperformance.
- How can we better manage the risk of storage capacity;
  - Building a diverse portfolio of sites, to mitigate risk of failure.
  - The importance of collaboration to build a network of storage sites, so in the event of T&S outage, there are alternative options available.
- Who is willing to finance the appraising of sites / developing infrastructure? Carbon market prices are not high enough to make CCS investable. Requires other policy incentives such as CCfDs or mandatory storage obligations.
- Specific sector concerns -> chemical industry not protected by CBAM/ETS. What is being done to keep the industry in the EU?
- Who should set up CO<sub>2</sub> specification requirements / classification of CO<sub>2</sub>?
- Variance in government views over legal / regulatory barriers to cross boundary transport of CO<sub>2</sub>.

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**BREAKOUT SESSION: CDR AND THE CARBON REMOVAL CERTIFICATION FRAMEWORK**



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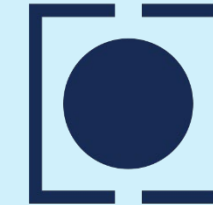
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## KEY TAKEAWAYS – CDR AND CRCF

- Offsets are not removals
  - Net zero is integral to climate stabilisation, and CDR is integral to net zero
  - Avoided deforestation/ecosystem protection is not a license for continued fossil carbon emission
- Removals do not deter mitigation
  - High quality, additional removals will be more costly than the majority of mitigation
  - The share of Scope 1, 2, or 3 emissions will vary across industries, and thus so too will the role CDR
- What is your view on the proposal for the CDR certification?
  - We need understanding and agreement on what good looks like.
  - Additionality, durability, and verifiability are key
  - BECCS and DACCS, the technology is available, removals are real-time, measurable and durable.
  - LCA is vital and methodologies are increasingly well understood.
- How will CDR scale?
  - There will be role for taxpayers, consumers, and investors in delivering CDR
  - We need to be sure we don't become overly proscriptive and constrain development
  - The portfolio of CDR deployed will vary by location and will evolve over time
  - Mechanisms for scale-up will not be uniform around the world
  - The role of the public sector is important, and will evolve with time



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**BREAKOUT SESSION: CCS AND JOB MARKET READINESS**



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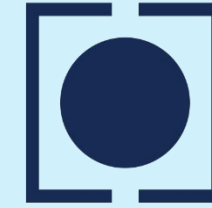
# CCS AND JOB MARKET READINESS

## KEY INSIGHTS AND FINDINGS:

- CCS can be applied across a range of sectors which are going to be crucial for the foreseeable future, further keeping industries in the region competitive
- There is a need to better communicate the importance of CCS and the necessity to build on the generic construction skills for sectors which are not always perceived as attractive
- Apprenticeship and training programmes need to be coordinated and give a direct access to the CCS job market
- The European Commission, the EU Member States and the UK government need to provide guidance on the job roles needed across the green energy transition
- An essential qualification for the future workforce, particularly involving skilled engineers/geoscientists, is to be aware of the types of risks they need to manage and be responsible for across the value chain to ensure successful projects
- Whilst domestic workforces and supply chains are preferred, international labour mobility is a key factor as we will be competing on international scale
- We need the certainty from governments on future CCS projects and rollout so that private entities have the confidence of investing in future workforces



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CLOSING REMARKS

**JARAD DANIELS**

CEO at the Global CCS Institute





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**Thank you for attending the 2024 Europe Forum on CCS**



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

 Questions? Reach out to [info@globalccsinstitute.com](mailto:info@globalccsinstitute.com)