Welcome to the 8th Post Combustion Capture Conference – PCCC-8

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Marseille , France

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Technology Collaboration Programme

by IEA

Who are we?

Our internationally recognised name is the IEA Greenhouse Gas R&D Programme (IEAGHG). We are a Technology Collaboration Programme (TCP) and are a part of the International Energy Agency's (IEA's) Energy Technology Network.

Disclaimer

IEAGHG

Fire & Safety information

- No planned fire drills
- Exits indicated with green arrows
- Meeting point: in front of the main entrance across the street
- All World Trade Centre staff are trained to assist in case of an emergency, please follow their instructions

- **IEAGHG**
- **PCC Conference**
- **Post Combustion Capture**

IEAGHG Membership

Baker Hughes
TotalEnergies
Chevron
ecoPetrol
ENERGÍA PARA EL FUTURO
INSTITUTO DE INVESTIGACIONES ELECTRICAS
Southern Company
equinor
drax
ExxonMobil
CIAB
SOTACARBO
SUSTAINABLE ENERGY RESEARCH CENTRE
J-POWER
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Forschungszentrum
شركة تنمية نفط عمان
Petroleum Development Oman
RWE
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INSTITUT TEKNOLOGI BANDUNG · 1920 ·
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PETROLEUM
COMPANY LIMITED
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RESEARCH INSTITUTE

IEA Greenhouse Gas R&D Programme

International Energy Agency

Part of the IEA's Energy Technology Network since 1991

What IEAGHG is:

39 Members

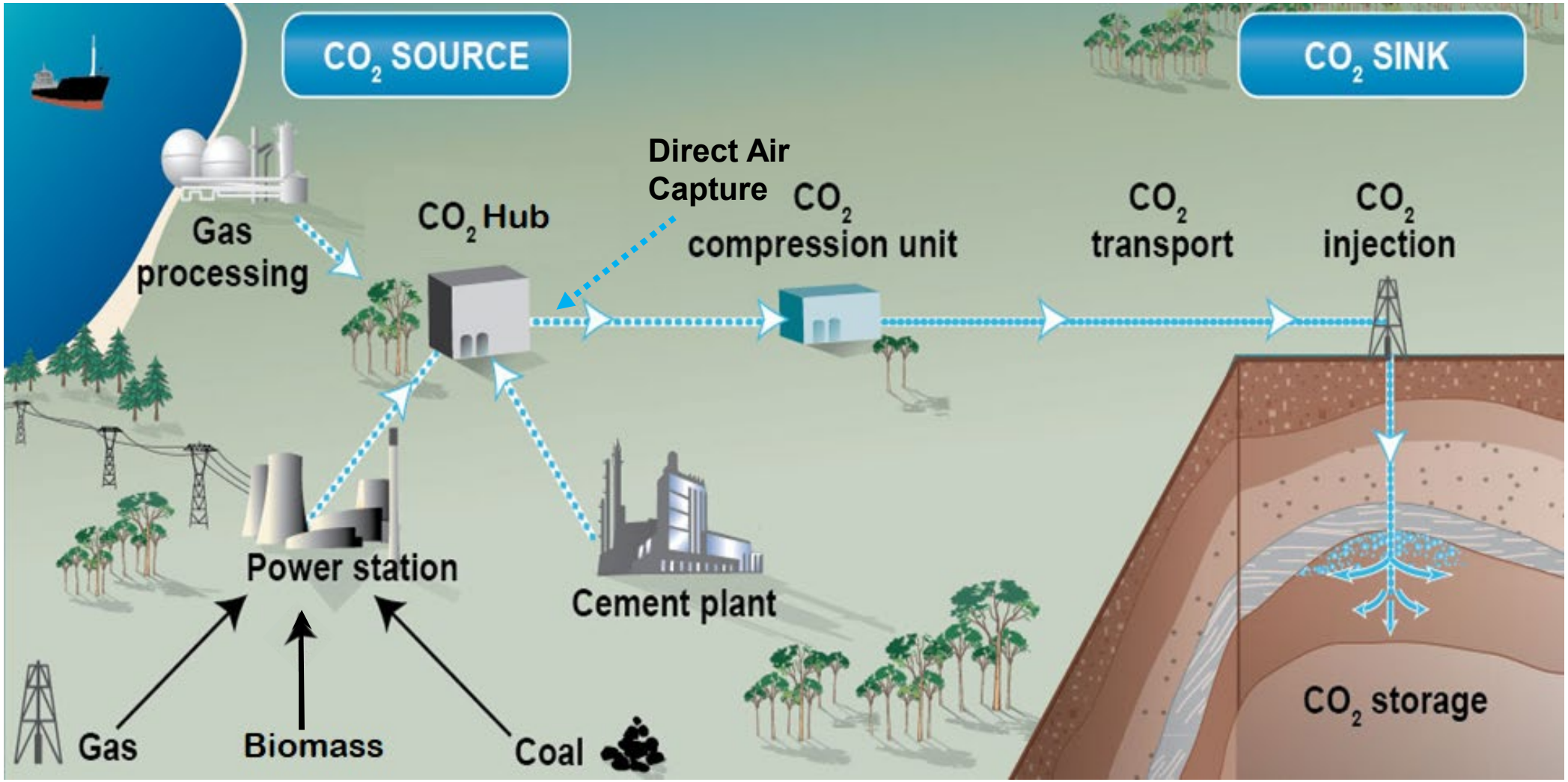
- Representation from 20+ countries

IEAGHG Members set its strategic direction and technical programme

Independent technical organisation

- IEAGHG informs policy, not generate it

Carbon capture & storage value chain



(Source: CO2CRC with IEAGHG additions of Biomass and DAC)

IEAGHG flagship activities

- Technical studies
  - More than 360 reports published on all aspects of CCUS value chain
- International research networks

CCS Costs	**Solid Looping**
Risk Management	**Monitoring**
Modelling	**Offshore Storage**

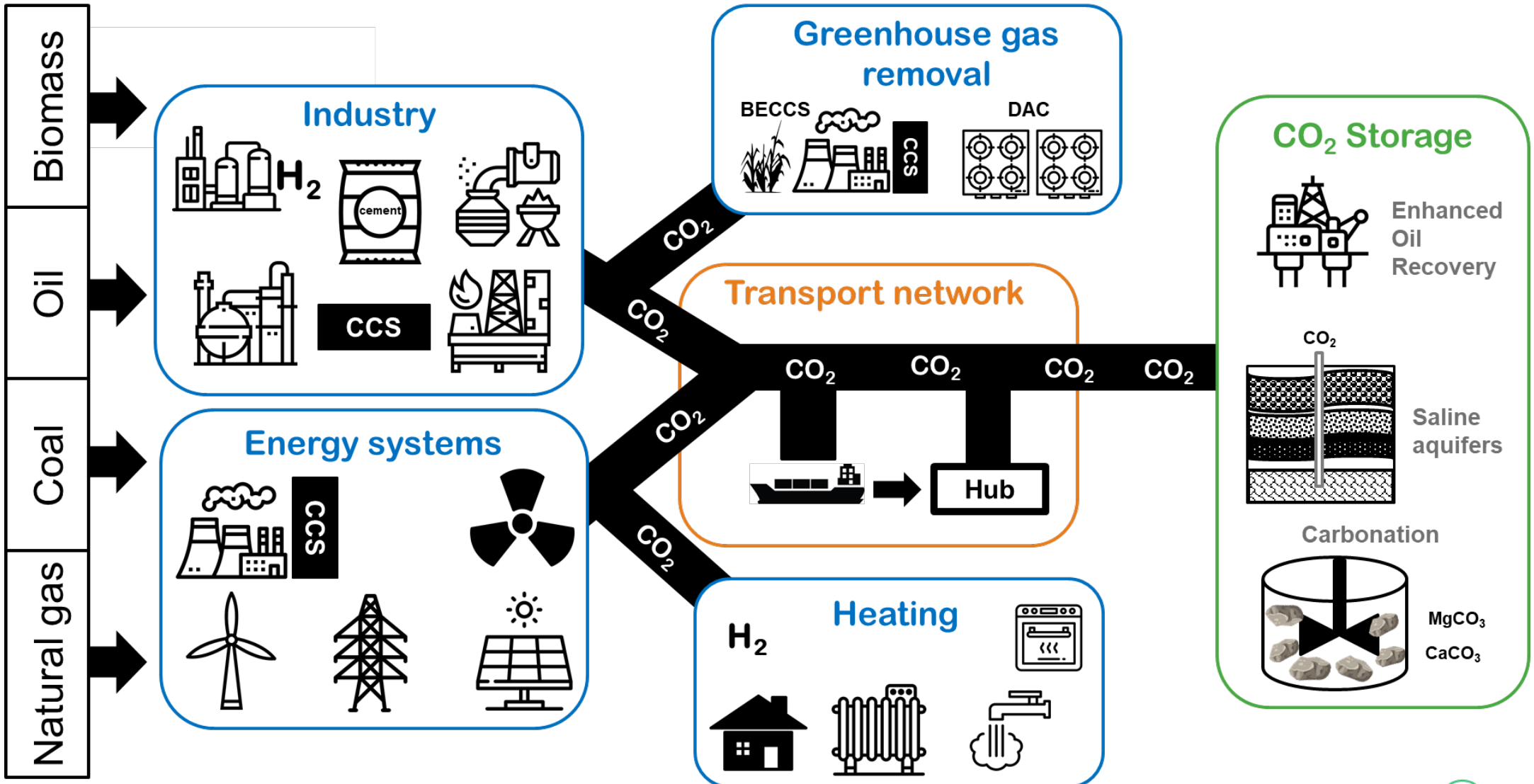
- International conferences

GHGT Conference series	**PCC Conference series**

- International CCS Summer School (750 alumni from 64 countries)
- Substantive engagement with the IEA, CEM CCUS, MI CDR, GCCSI, CCSA, EU ZEP and others
- Active in international regulatory developments – UNFCCC, IPCC, London Convention, OSPAR, IMO and international standards for CCS (ISO)

- IEAGHG
- **PCC Conference**
- Post Combustion Capture

CO_2 capture is one element of the CCS system



Source: Niall Mac Dowell, Imperial College London

PCC Conference Series

- An IEAGHG network prior to 2011
- Now a biennial conference

- Each conference is co-hosted by a local organisation
  - PCCC-8 is co-hosted by TotalEnergies
- Each conference is organised as a non-profit event
  - We are very grateful to our sponsors as this enables us to keep registration fees at a minimum
  - PCCC-8 Sponsors: MHI, Shell – Technip Energies, ION Clean Energy, Axens and Honeywell

PCCC-8 in numbers

240+ delegates	120+ presentations	120+ speakers	20+ countries represented
❑ Professionals	❑ Oral presentations	❑ CCUS leaders	❑ Europe
❑ Governments	❑ Keynote presentations	❑ RD&D experts	❑ Middle East
❑ Academics	❑ Posters	❑ Executives	❑ North America
❑ Students		❑ Policymakers	❑ South America
			❑ Australia
			❑ Asia

Our largest PCC conference to-date in all respects

PCCC-7	→	PCCC-8
188 delegates	→	242 delegates
80 technical presentations	→	117 technical presentations
2 parallel sessions	→	3 parallel sessions
17 posters	→	24 posters
4 sponsors	→	6 sponsors
17 countries represented	→	23 countries represented

PCCC-8

Co-organisers

IEAGHG

TotalEnergies

Sponsors

MITSUBISHI HEAVY INDUSTRIES

ION CLEAN ENERGY

Honeywell

TECHNIP ENERGIES

Axens
Powering integrated solutions

Carbon Capture Alliance

- IEAGHG
- PCC Conference
- **Post Combustion Capture**

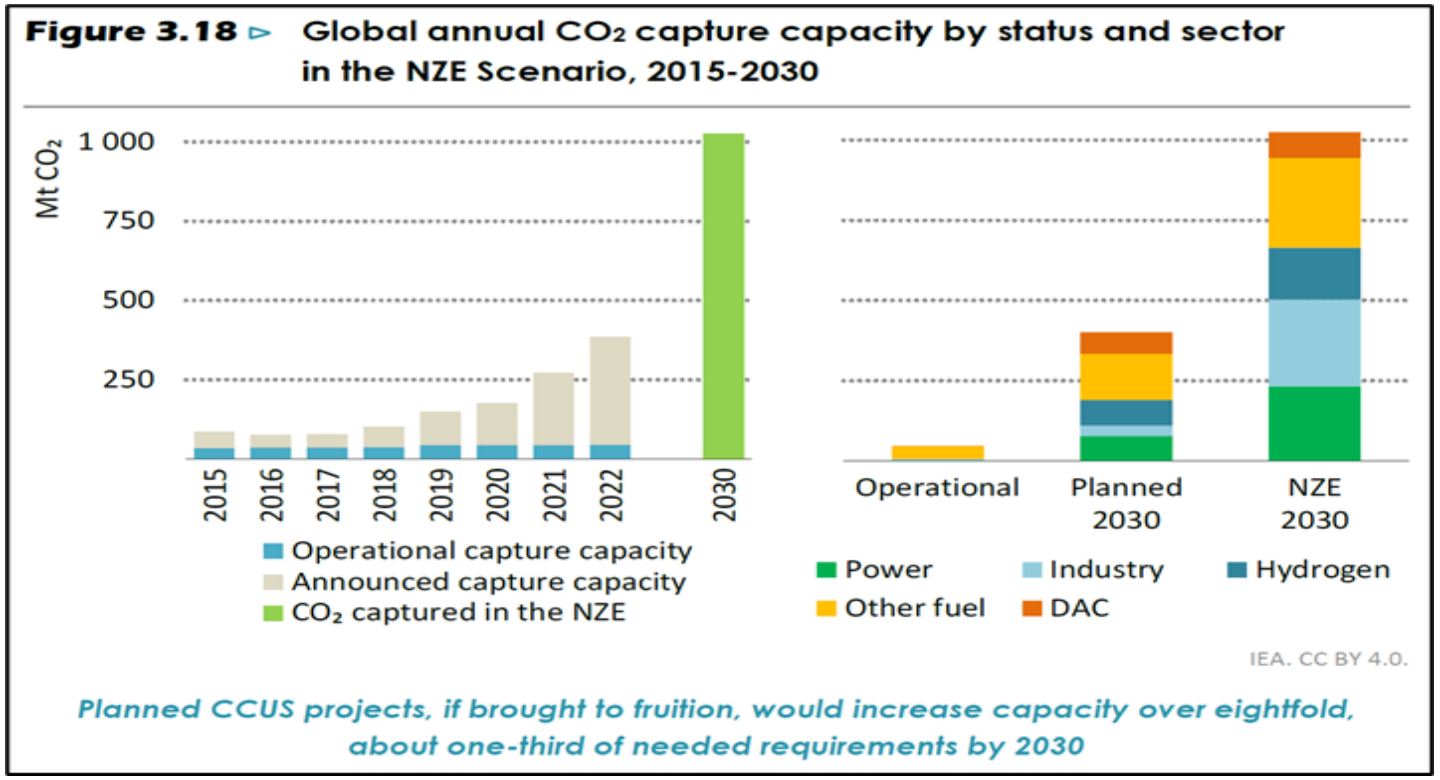
Technology readiness levels

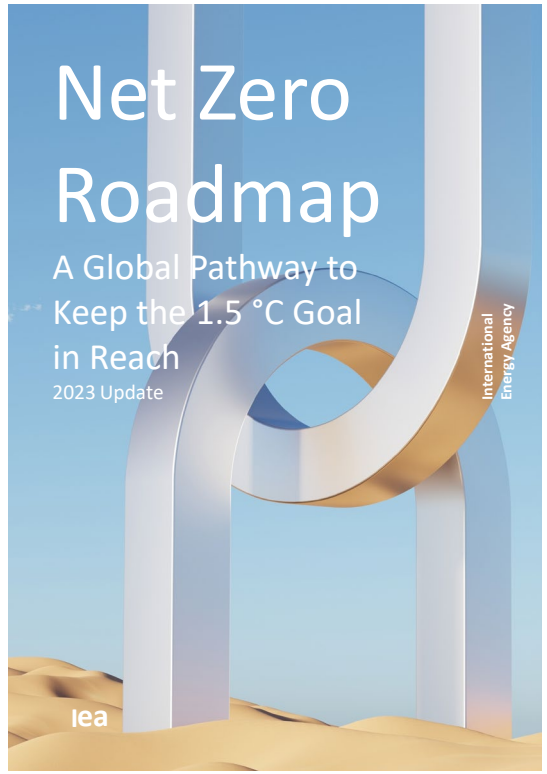
TRL	Status
Applied and strategic research	
1	Basic principles observed and reported
2	Technology concept and/or application formulated
3	Analytical and experimental proof of concept
Technology validation/development	
4	Technology or part thereof validated in a laboratory environment
5	Technology or part thereof validated in an operational environment
6	Technology demonstrated in an operational environment
Demonstration	
7	Full-scale prototype demonstrated in an operational environment
8	Technology completed and ready for deployment
9	Technology demonstrated in operational environment at scale

International Test Centre Network

Co-founded in 2012 by TCM and NCCC, ITCN is a global coalition of 16 facilities working to accelerate the R&D of carbon capture technologies

IEA Net Zero by 2050 Roadmap - 2023 update





"The Fierce Urgency of Now"

"The energy sector is changing faster than many people think, but more needs to be done and time is short" (NZE 2023)

Operational projects

Year	Operational CCS facilities	Capture capacity Mtpa
2022	30	43
2023	41	49
2024	50	51
2025 (as of 02/2025)	65	57

While hard-to-abate sectors still represent a small share, deployment in these areas is growing.

Regional and sectoral distribution of 2025 facilities

Category	Detail
Regional distribution	Americas: 27 Europe & UK: 5 Middle East: 3 Others: RoW (~30)
Sector distribution	Leading sectors: natural gas processing (~65% capacity); chemical/hydrogen/ammonia; power/heat; ethanol; fertiliser Smaller share: cement, steel, DAC, waste-to-energy

Source: GCCSI reports

Some takeaways

- **High growth:** The number of projects and capture capacity has risen dramatically – from single-digit demonstration sites to hundreds at various stages of development.
- **Pipeline robustness:** There's a robust pipeline - 628 total CCS projects by late 2024 - with substantial capacity being developed.
- **Diversification:** CCS is expanding beyond natural gas applications into industries like cement, power, hydrogen and DAC.
- **DAC scaling:** DAC facilities like Orca and Mammoth are pioneering – but the upcoming STRATOS plant, with a capture capacity of up to 500 000 tpa, could become the largest of its kind.

Source: GCCSI reports

Recent developments

Area	Latest Highlights
Membrane Capture	For example, MTR's Polaris system at Wyoming ITC to capture up to 150 tpd CO_2
Modular PCC	For example, Carbon Clean's CycloneCC units deploying rotating packed beds are making flexible roll-out practical
Hybrid Systems	For example, 2S-MB + AB (2-stage membrane + absorption)hybrid configurations show strong promise for power-sector use
Advanced Adsorbents	For example, MOFs, adsorbents, ionic liquids and calcium looping are advancing toward deployment
Policy & Market Drivers	Strong support in Europe (e.g., for Heidelberg Material's evoZero cement) … … but regulatory setbacks in the United States

Post-combustion capture is becoming more efficient, modular and versatile - thanks to membrane technology, hybrid systems and new materials. While progress is strong globally, a patchwork of regulatory environments remains a critical challenge to operation at scale.

Source: GCCSI reports


GHGT-18
PERTH
25–29 OCT 2026
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Thank you