Is There Any Climate Finance For Carbon Capture and Storage, Especially in Emerging Economies

UNFCCC COP29 Side-event

19 November 2024

Tim Dixon IEAGHG

Is There Any Climate Finance For Carbon Capture and Storage, Especially in Emerging Economies – Agenda and Speakers

- Tim Dixon, Director and General Manager **IEAGHG**- – Moderator and Scene-setting
- Brad Crabtree, Assistant Secretary FECM at the **US Department of Energy** - Welcome
- Professor Katherine Romanak, **University of Texas** – Safety and derisking geological storage and US incentives
- Olivia Powis, CEO **CCSA** – UK policies and incentives
- James Fann, CEO **International CCS Knowledge Centre** – Canadian incentives and de-risking capture
- Jonas Helseth, Director **Bellona** – EU policies
- Clarine Ovando **UNEP Copenhagen Climate Centre** - Technology Needs Assessments
- Donneil Cain, **Caribbean Community Climate Change Centre** – Role of CCCCC in Green Climate Fund
- Questions from audience

Technology Collaboration Programme
by IEA

DISCLAIMER

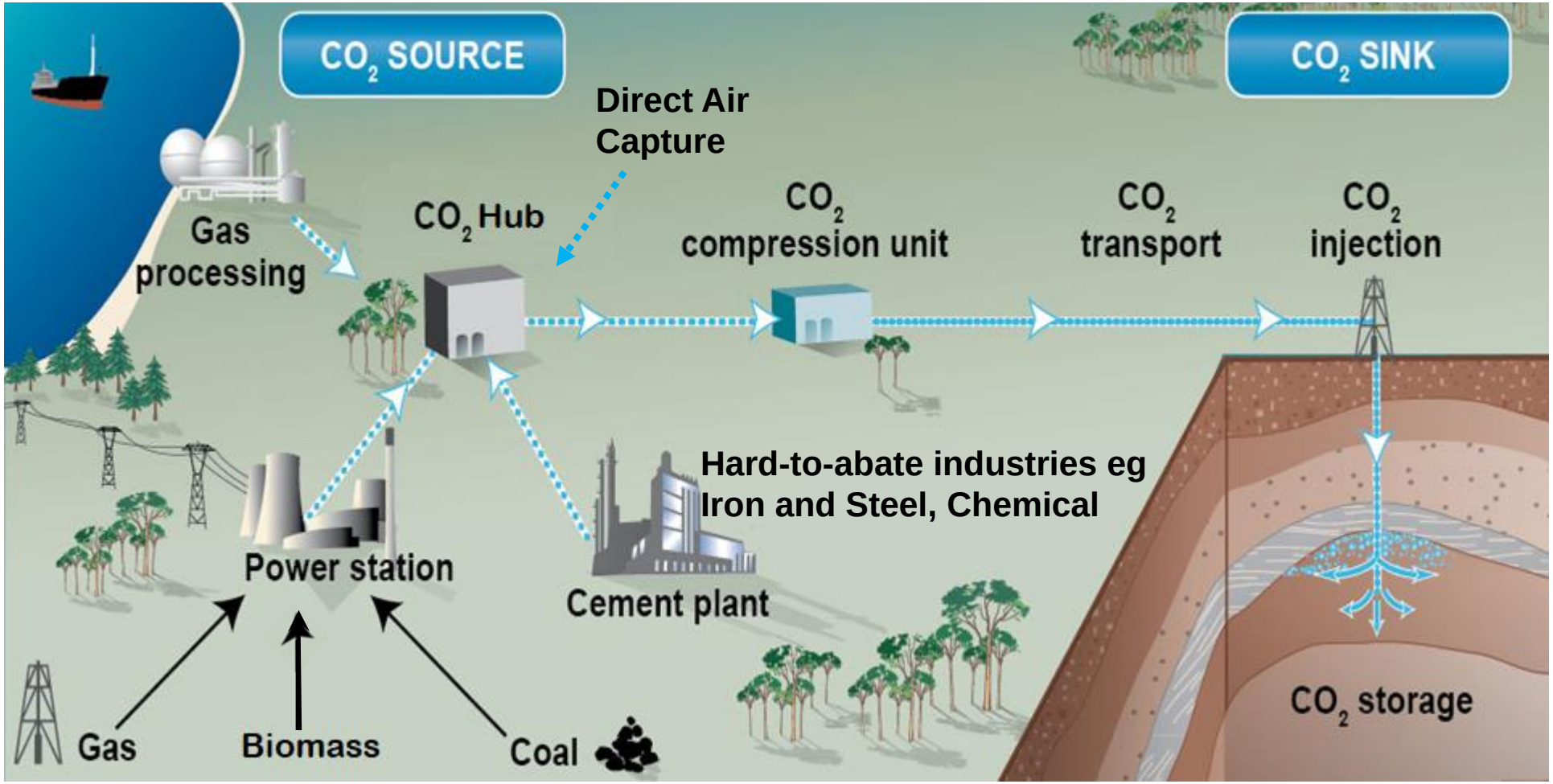
Who are we?

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

The IEA Greenhouse Gas R&D Programme (IEAGHG) is organised under the auspices of the International Energy Agency (IEA) but is functionally and legally autonomous. Views, findings and publications of the IEA Greenhouse Gas R&D Programme do not necessarily represent the views or policies of the IEA Secretariat or its individual member countries.

Carbon Capture & Storage (CCS) value chain



(CO2CRC with IEAGHG additions of Biomass and DAC)

CO_2 Geological Storage to Scale: Aquistore (Canada)

How do we ensure it is safe and secure?
CCS-specific Regulations

London Protocol
CCS amendments to allow and regulate offshore CO2 storage and export (2006, 2009, 2019)

United Nations
Framework Convention on Climate Change

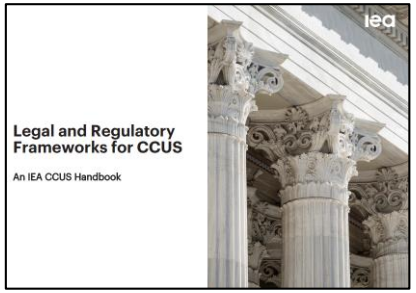
- Modalities and Procedures for CCS in CDM (2011)
- Article 6.4 Standard on Removals (2024)

ISO TC-265 – standards on Geological Storage, Capture Performance, Pipeline Transport, Storage in EOR, Vocabulary

USA EPA : Storage 2010 and GHG 2010
EU CCS : Directive 2009 and ETS Directive 2009
Australia, Japan. Canada

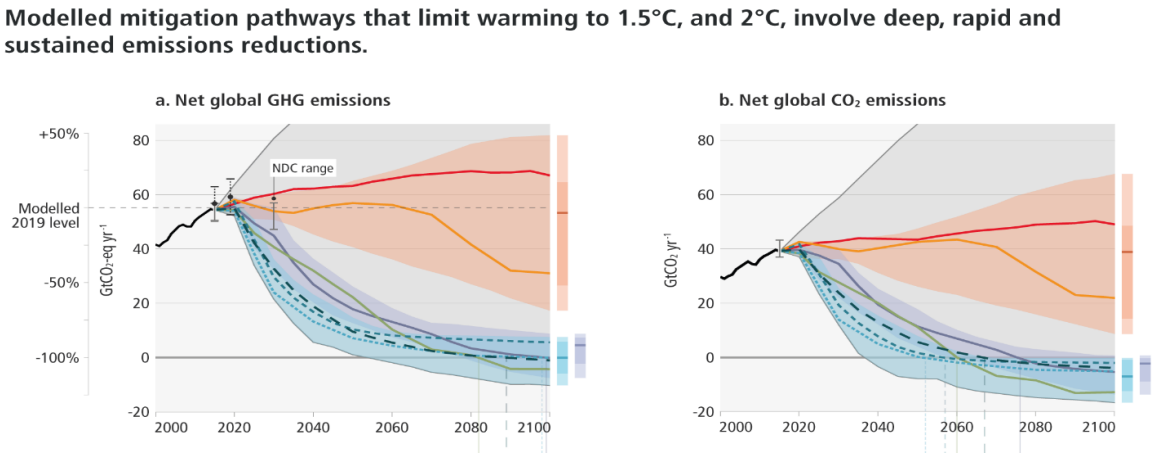
IPCC GHG Inventory Guidelines 2006

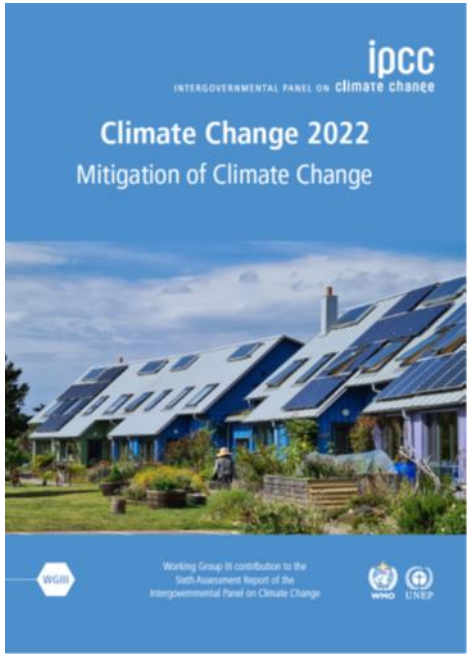
IEA Handbook on Legal and Regulatory Frameworks (2022)



IPCC AR6 reports

- WGI – Science of Climate Change (Aug 2021)
- WGII – Impacts of Climate Change (Feb 2022)
- WGIII – Mitigation of Climate Change (Apr 2022)



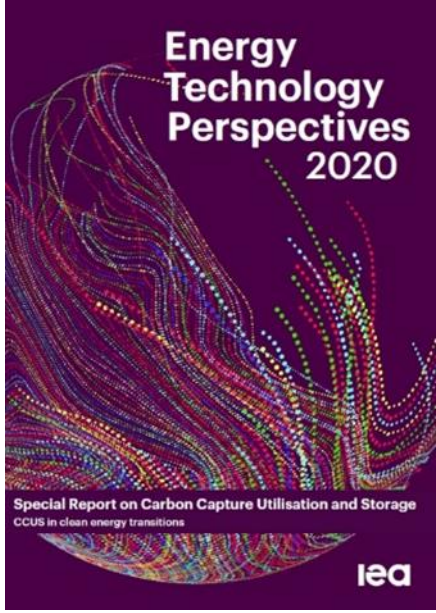


- Synthesis Report (Mar 2023)
  - Geological storage capacity is ~1000Gt , exceeds needs for 1.5C
  - Needs more policy instruments

IEA Special Report on CCUS

- Tackling emissions from existing energy assets;
- A solution for the most challenging emissions in sectors such as heavy industry & aviation;
- A platform for low-carbon hydrogen production;
- Removing carbon from the atmosphere

(IEA SR on CCUS 2020)



IEA Net Zero by 2050 Roadmap

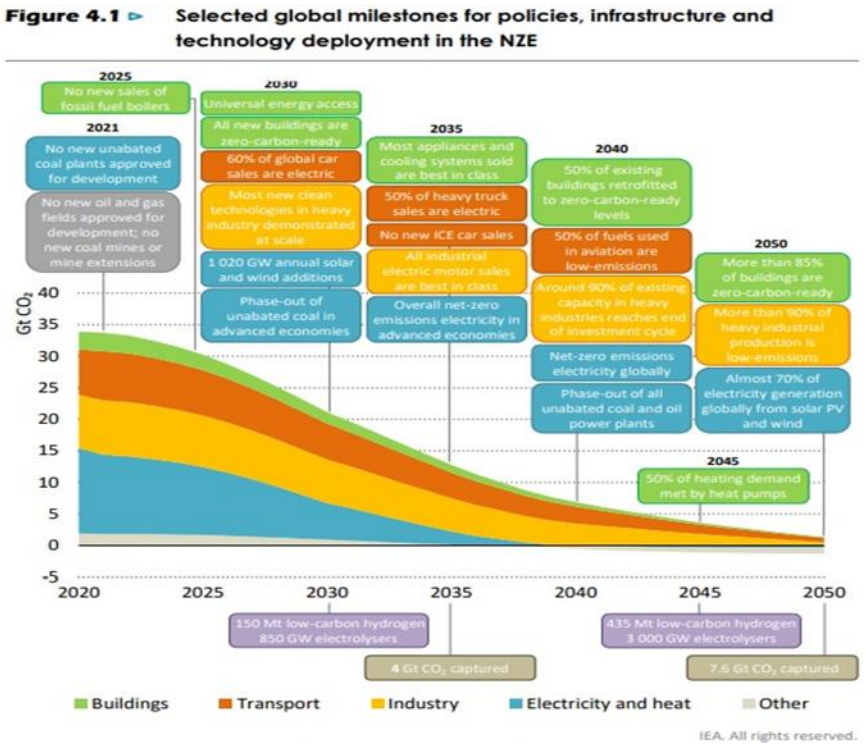
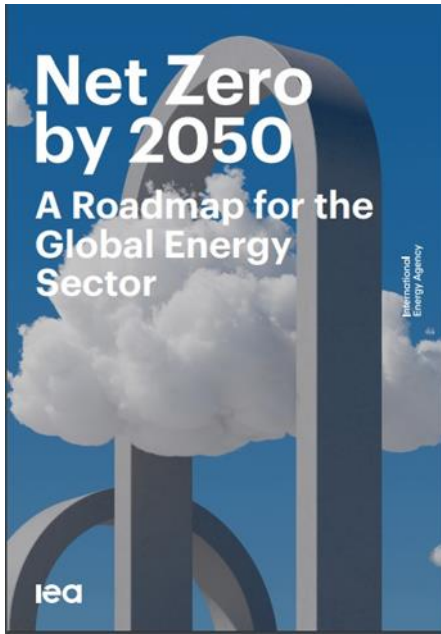
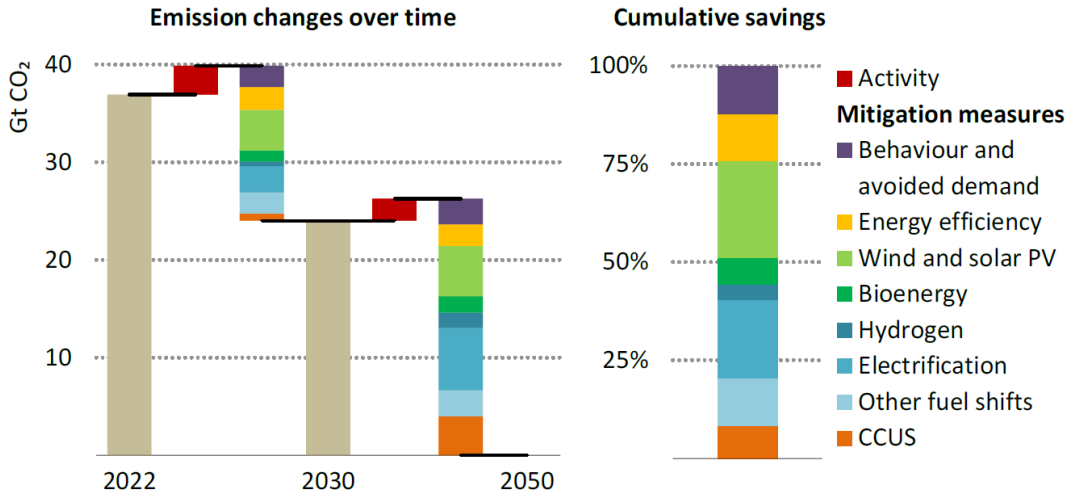


Fig 4.1. IEA NZE 2021



IEA Net Zero by 2050 Roadmap - 2023 update

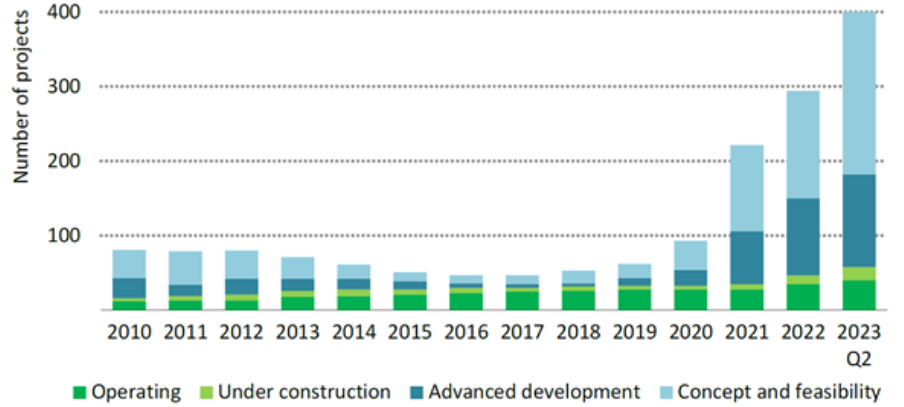
Figure 2.5 ▷ CO_2 emissions reductions by mitigation measure in the NZE Scenario, 2022-2050



IEA. CC BY 4.0.

Expansion of solar PV, wind and other renewables, energy intensity improvements and direct electrification of end-uses combined contribute 80% of emission reductions by 2030

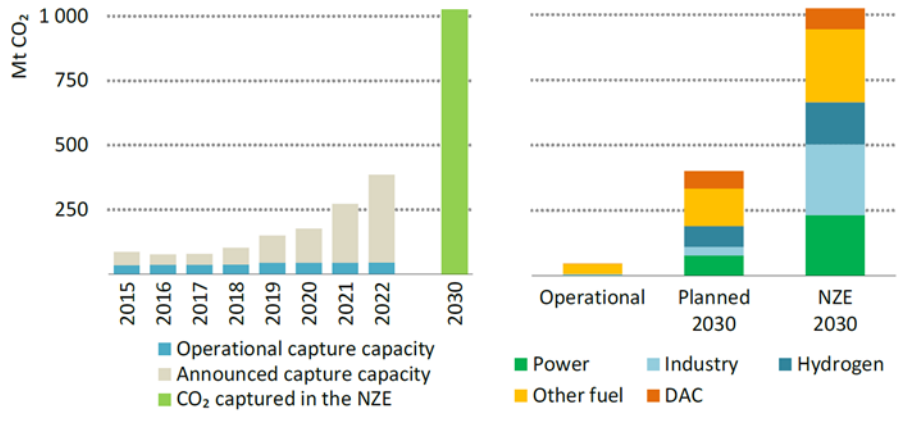
Figure 1.15 ▷ Global CO_2 capture project pipeline, 2010-2023



IEA. CC BY 4.0.

There has been strong growth in the project pipeline for CO_2 capture in recent years, implying that installed capacity is set to rise significantly

Figure 3.18 ▷ Global annual CO_2 capture capacity by status and sector in the NZE Scenario, 2015-2030



IEA. CC BY 4.0.

Planned CCUS projects, if brought to fruition, would increase capacity over eightfold, about one-third of needed requirements by 2030

"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)

CARBON MANAGEMENT CHALLENGE

Keep 1.5C⁰ within reach

Carbon Management Challenge participants

Carry a message that carbon management, in addition to traditional mitigation efforts, is integral to keeping pathways that limit warming to 1.5°C within reach.

Support a global goal of advancing carbon management projects that will reach gigaton scale by 2030.

Aim to act, as appropriate, joining collaborative efforts, setting national targets or initiatives, building project demonstration and developing policy

The CMC is Cosponsored by Brazil, Canada, Indonesia, the United Kingdom and the United States and includes participation from Australia, Denmark, Egypt, European Commission, Iceland, Japan, Kingdom of Saudi Arabia, Mozambique, Netherlands, Norway, Romania, Sweden, and the United Arab Emirates.

COP28 UAE

UNFCCC Paris Agreement
Nationally Determined Contributions (NDCs)

- Current NDCs looking to 2030
- To be updated in 2025

- **NDC updates:** As of 18 Aug 2024:
- ~195 submitted, and 23 include CCS (Norway, UAE, Australia, Iceland, USA, Canada, Malawi, Qatar, Tunisia, Pakistan, Kuwait, Togo, Bahrain, Saudi Arabia, China, Mongolia, Japan, El Salvador, Thailand, Turkey, UK, Vietnam, Oman) and 2 that implicitly include CCS (EU, Indonesia)

Paris Agreement

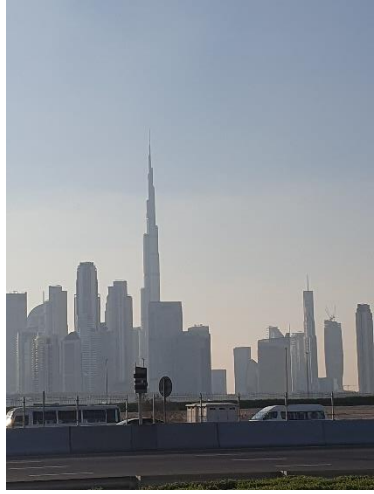
Low GHG emission development strategies (LT-LEDS)

- Longer-term, the Paris Agreement invited Parties to communicate *'long term low GHG emission development strategies'* to the mid-century.

- As of 18 Aug 2024, 73 countries have submitted these, and **49** contain CCS as a mitigation activity (USA, Canada, Germany, Mexico, France, Czech Republic, UK, Ukraine, Japan, Portugal, Slovak Republic, Singapore, South Africa, Finland, Norway, Latvia, Belgium, Spain, Sweden, Netherlands, Austria, Korea, Denmark, Switzerland, Indonesia, Slovenia, Hungary, China, Iceland, Australia, Thailand, New Zealand, Nigeria, Cambodia, Morocco, Malta, Lithuania, Russia, India, Singapore, Tunisia, Cyprus, Ethiopia, Ireland, Oman, Armenia, UAE, Ireland)

- **Most Strategies include CCS**

COP28, Dubai - Global Stocktake - 1



Assessment of progress towards Paris Agreement (PA) goals drawing upon IPCC AR6 reports (2022-23).

Became the 'overarching' outcome text for COP28 - the "***UAE Consensus***" :

- Notes with concern an Implementation gap – emissions trajectories not in line with PA
- Carbon budget is 4/5 towards reaching 1.5°C
- World needs deep and rapid emissions reductions of 43% by 2030 and 60% by 2035 (wrt 2019) and reach net zero CO_2 by 2050, to achieve limiting to 1.5°C
- Hence…..

COP28 Global Stocktake – 2

"UAE Consensus":

➢28. Calls on Parties to contribute to:

a) Tripling renewables and doubling energy efficiency by 2030
b) Accelerate towards phase-down of unabated coal power
c) Accelerate towards new zero energy systems, using zero- and low-carbon fuels by 2050
d) Transitioning from fossil fuels in energy systems…..so as to achieve net zero by 2050 "in keeping with the science"
e) "Accelerating zero- and low-emission technologies, including renewables, nuclear, abatement and removal technologies such as CCUS, particularly in hard-to-abate sectors, and low-carbon hydrogen"
f) Substantially reducing methane emissions by 2030
g) Reducing emissions from road transport
h) Phasing out inefficient fossil fuel subsidies

➢29. Recognising transitional fuels can play a role while ensuring security

Sleipner - Equinor.; Boundary Dam - SaskPower; Quest - Shell

Global Commercial CCS Facilities

GLOBAL STATUS OF CCS REPORT 2024

Global CCS Institute
Global Status of CCS 2024 report

Global facilities & trends

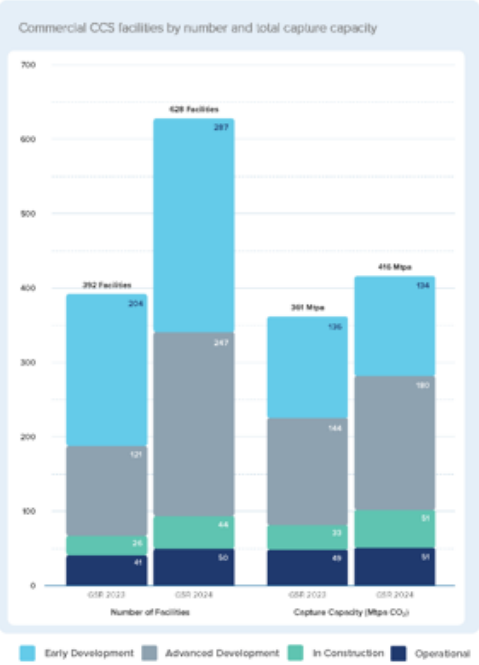
628 Projects in the pipeline

416 Mtpa Cumulative capture capacity

Significant growth in the CCS facilities pipeline

50 Facilities in operation

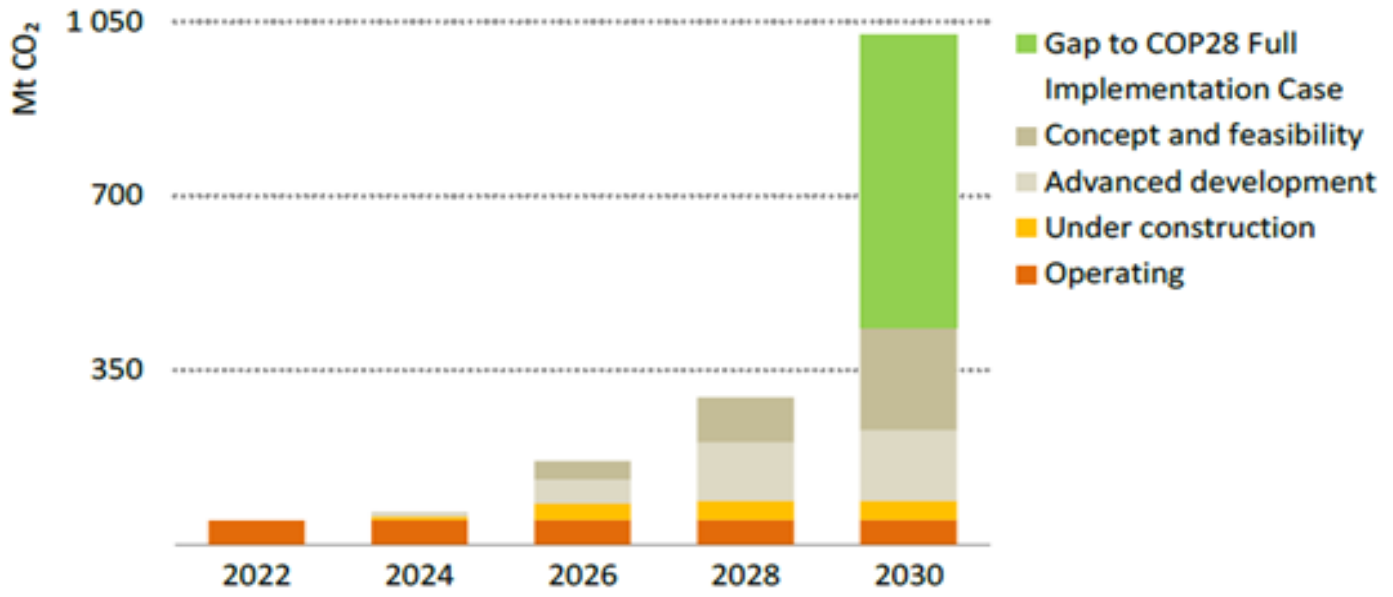
44 Projects in construction



GLOBAL STATUS OF CCS REPORT 2024

From Taking Stock to Taking Action - How to Implement the COP28 Energy Goals (IEA 2024)

Figure 4.16 ▷ **Capacity of current and planned large-scale CO_2 capture projects versus the COP28 Full Implementation Case, 2020-2030**



Current annual CO_2 capture is a fraction of what is needed in the COP28 Full Implementation Case – new projects are emerging, but many are at an early stage

Notes: Mt CO_2 = million tonnes of carbon dioxide. Includes large-scale projects with capture capacity more than 100 000 tonnes per year (1 000 t per year for DAC). Capture projects for CO_2 use are included if the CO_2 is used in fuels, chemicals, polymers, building materials or for yield boosting. Within planned CCUS industrial hubs, only identified CO_2 capture projects are included (not the full potential capture capacity of industrial hubs for which capture sources are not specified).

Is There Any Climate Finance For Carbon Capture and Storage, Especially in Emerging Economies – Agenda and Speakers

- Tim Dixon, Director and General Manager **IEAGHG**- – Moderator and scene-setting
- Brad Crabtree, Assistant Secretary FECM at the **US Department of Energy** - Welcome
- Professor Katherine Romanak, **University of Texas** – Safety and derisking geological storage and US incentives
- Olivia Powis, CEO **CCSA** – UK policies and incentives
- James Fann, CEO **International CCS Knowledge Centre** – Canadian incentives and de-risking capture
- Jonas Helseth, Director **Bellona** – EU policies
- Clarine Ovando **UNEP Copenhagen Climate Centre** - Technology Needs Assessments
- Donneil Cain, **Caribbean Community Climate Change Centre** – Role of CCCCC in Green Climate Fund
- Questions from audience