GLOBAL STATUS OF CCS

BERNARDENE SMITH
PRINCIPAL, POLICY REGULATION AND COMMERCIAL
ABOUT THE INSTITUTE
Accelerating the deployment of CCS for a net-zero emissions future

WHO WE ARE
• International, non-profit climate change think tank
• Headquarters in Melbourne and offices in Washington D.C., Houston, London, Brussels, Abu Dhabi, Beijing, and Tokyo
• More than 200 members comprising governments, global corporations, technology companies, research institutions, and non-governmental organisations

WHAT WE DO
• Fact-based CCS advocacy
• Catalytic thought leadership
• Authoritative knowledge-sharing
GLOBAL CCS FACILITIES (STATUS AS OF MARCH 2024)

- 43 Facilities in operation ● (50Mtpa capture capacity)
- 33 Facilities in construction ●
- 488 Facilities in development ●

Five new facilities entered construction phase in Q1 2024, notable projects:

- Bridgeport Energy Moonie (Australia)
- Orsted Avedore CHP Plant (Denmark)
- Orsted Asnaes CHP Plant (Denmark)
- Guanghui Energy Methanol Plant (China)
- Dow Fort Saskatchewan ethylene CCS (Canada)

This map does not include:
- Pilot and Demonstration Facilities
- Announced Facilities
- Approximately 150 facilities where precise location is yet to be confirmed
CCS PROJECT COUNT – ACCELERATED ACTIVITY IN APAC

This chart does not include the following:
- Announced or Operation Suspended Facilities.
- Transport and Storage Facilities unless a capture facility is cited.
- Facilities that have not announced their capacity

This map does not include the following:
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- Announced Facilities
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GLOBAL CCS CAPACITY PIPELINE: UNPRECEDENTED LEVELS

2022 to 2023 growth in CCS projects (in development to operating): top 5 countries

- New Countries in CCS Industry:
  - Latvia
  - Lithuania
  - Switzerland

- Average Capture Capacity:
  - Size: 1.6 Mtpa

- Largest Industry (Count): Ethanol (73)

- Largest Operating Capture: 10.6 Mtpa, Santos Basin Pre-Salt (Brazil)
APPLICATION OF CCS ACROSS INDUSTRIES – GSR ’23
Transboundary transport of CO₂ for geological storage is emerging as a significant issue and opportunity.

- PETRONAS and JERA signed Joint Study Agreement to assess full CCS chain from Japan to Malaysia.
- ENEOS, JX Nippon, Mitsubishi Corporation and PETRONAS signed MoU to evaluate and establish CCS Value Chains from Tokyo-Bay to Malaysia.
- BP and Chubu Electric signed MoU to study CO₂ capture in Japan and storage in Indonesia.
- Singapore and Indonesia signed a Letter of Intent (LOI) to collaborate on cross-border CCS, following Indonesia's presidential regulation allowing CCS operators to reserve storage capacity for international carbon dioxide.
- ExxonMobil Asia Pacific Private Limited and Shell Singapore Private Limited (S-Hub consortium), have partnered with the Government of Singapore to develop a cross-border CCS project in the country.
- Australian government:
  - released an interim National Action List for offshore carbon dioxide sequestration to meet our obligations under the London Protocol.
  - released its “Future Gas Strategy”, with next actions to “establish a new transboundary carbon capture and storage program which will provide options for energy security and carbon management solutions for our regional partners” and “continuing to release offshore acreage for greenhouse gas storage”.
- JERA and INPEX will conduct a joint study into a full CCS value chain, capturing CO₂ in Japan and transporting it for geological storage in Australia.
GLOBAL CCS TRENDS – Q1 2024

Acceleration in policy, legal and regulatory developments

- The Republic of Korea announced its CCUS Act – to be fully enacted by February 2025.
- The Japanese parliament passed “CCS Laws” through which areas for CO₂ storage will be designated, and CCS projects will be permitted.
- Four CCS-related bills are moving through the Brazilian legislature.
- US lawmakers introduced the Carbon Dioxide Removal Leadership Act of 2024.
- Government of Oman announced a programme to develop a legal and regulatory framework for CCS projects in Oman.
- The government of Indonesia issued Presidential Regulation No. 14 of 2024, providing a legal basis for carbon capture, transportation, and storage activities in Indonesia.
- The UAE announced its Long-Term Strategy, with plans for major CCS capacity to decarbonise hard-to-abate sectors - CCS contributing 32% to the country’s industrial sector’s carbon neutrality target.
- The EU released its Industrial Carbon Management Strategy, highlighting the availability of CCS and CDRs as key to attaining its climate targets.
- Western Australia has passed the Petroleum Legislation Amendment Bill, providing for property rights for GHG storage formations, acreage release provisions, explorations, retention and injection licences and addresses injection, closure and long-term liability in the State’s onshore & offshore petroleum legislation, plus pipeline legislation for the transportation of GHGs.
Increase in international and regional collaboration (Japan; SEA)

- Kingdom of Saudi Arabia and the UK explored mutual cooperation in the fields of energy, including in clean hydrogen standards and the formulation of policies pertaining to carbon capture, transport and storage.

- Kingdom of Saudi Arabia and Jordan signed an energy cooperation agreement to explore collaboration on decarbonisation technologies including “carbon capture, reuse, transportation and storage.”

- 14 cross-border CO₂ infrastructure projects in the EU have been designated and confirmed as Projects of Common Interest (PCIs) and Projects of Mutual Interest (PMIs), under the revised TEN-E Regulation.

- Porthos Project in the Netherlands commenced with first drilling under the seawall - Porthos will provide services to transport and store captured CO₂ of various companies, including Air Liquide, Air Products, ExxonMobil, and Shell.

- JOGMEC-METI workshop to contribute to the social implementation of CCS, including cross-border transport of CO₂, in the Asia-Pacific region through lectures by experts and discussions among stakeholders.
GLOBAL CCS TRENDS – Q1 2024

Increase in incentives and funding (US, EU and Australia)

- US DOE announced USD100M funding to help develop carbon dioxide removal industry - direct air capture, mineralization, and biomass carbon removal
- US DOE announced USD30M in funding to support point source CO₂ capture and CO₂ conversion to environmentally responsible and economically valuable products
- The UK government increased the Green Industries Growth Accelerator (GIGA) budget by up to £120 million, bringing the total funding available to support the expansion of UK's low carbon manufacturing supply chains to over £1 billion - up to £390 million will be allocated to CCUS and hydrogen supply chains.
- Australian government announced AUD566 million funding to Geoscience Australia, to produce a comprehensive map of both onshore and offshore geological resources across Australia, including potential sites for hydrogen storage and CCS.
- Australian government announced AUD32.6 million over four years to establish regulatory frameworks and bilateral instruments to support emissions reduction in Australia and overseas.
- Based on a record budget of €4 billion, the EU's Innovation Fund made a 4th call for proposals – closed 9 April 2024. 20 CCS-related projects have been funded in the first three rounds.
THANK YOU