AUGUST 2022

GLOBAL STATUS OF CCS UPDATE

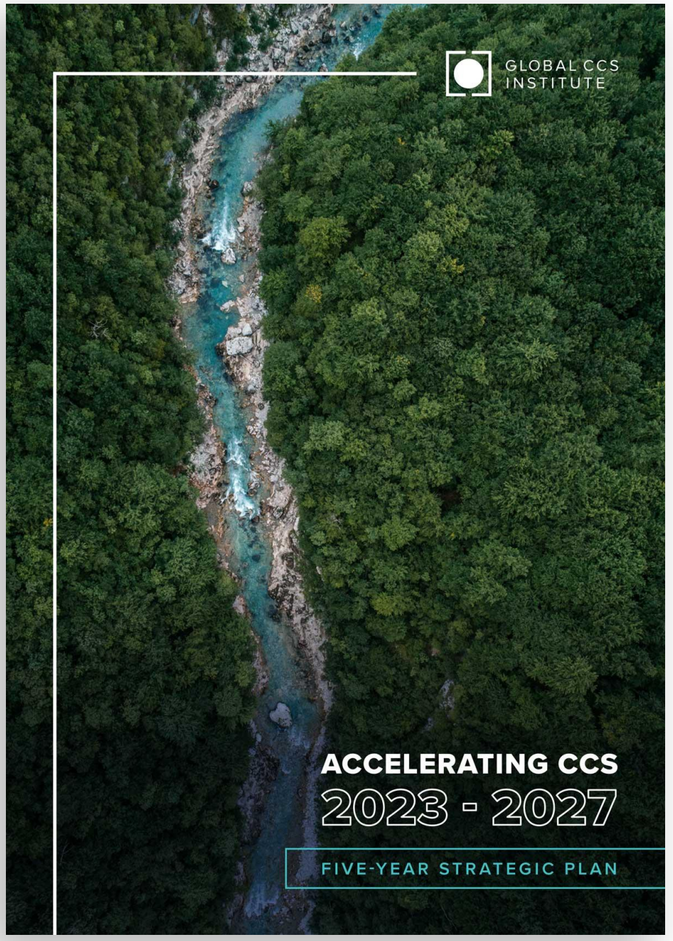
PROJECTS, INVESTMENT AND POLICY SUPPORT

JARAD DANIELS
CEO, GLOBAL CCS INSTITUTE

GLOBAL CCS INSTITUTE

THE GLOBAL CCS INSTITUTE

Accelerating the deployment of CCS for a net-zero emissions future.



WHO WE ARE

International CCS think tank with offices around the world.

Over 140 members across governments, global corporations, private companies, research bodies and NGOs, all committed to a net-zero future.

WHAT WE DO

Fact-based influential advocacy, catalytic thought leadership, authoritative knowledge sharing.

INSTITUTE'S 5-YEAR STRATEGIC PLAN

OUR VISION

CCS is an integral part of the net-zero emissions future

OUR MISSION

To accelerate global deployment of CCS

LISTEN TO AND SUPPORT OUR MEMBERS

OBJECTIVE		KEY STRATEGIES	
1.	Fact based influential advocacy	1.1	Inform net-zero strategies and policy making
		1.2	Build durable, strategic partnerships with industry leaders and experts
		1.3	Increase efforts to communicate CCS as a proven and enabling technology
2.	Catalytic thought leadership	2.1	Provide thought leadership on enabling policies, technologies, and business models
		2.2	Engage leading experts across industry, government, and academia to help inform and drive strategic road mapping
3.	Authoritative knowledge sharing	3.1	Be an authoritative source for CCS data
		3.2	Build knowledge across the full value chain of capture, transport and storage
		3.3	Increase engagement with the financial sector
	How we operate	1	Operate as an integral part of the global CCS community
		2	Attract, develop and grow a diverse, talented workforce
		3	Increase financial viability to fund strategic growth

SUPPORT AND EMPOWER OUR TEAM

ANNUAL BUSINESS PLAN

OUR OUTCOMES

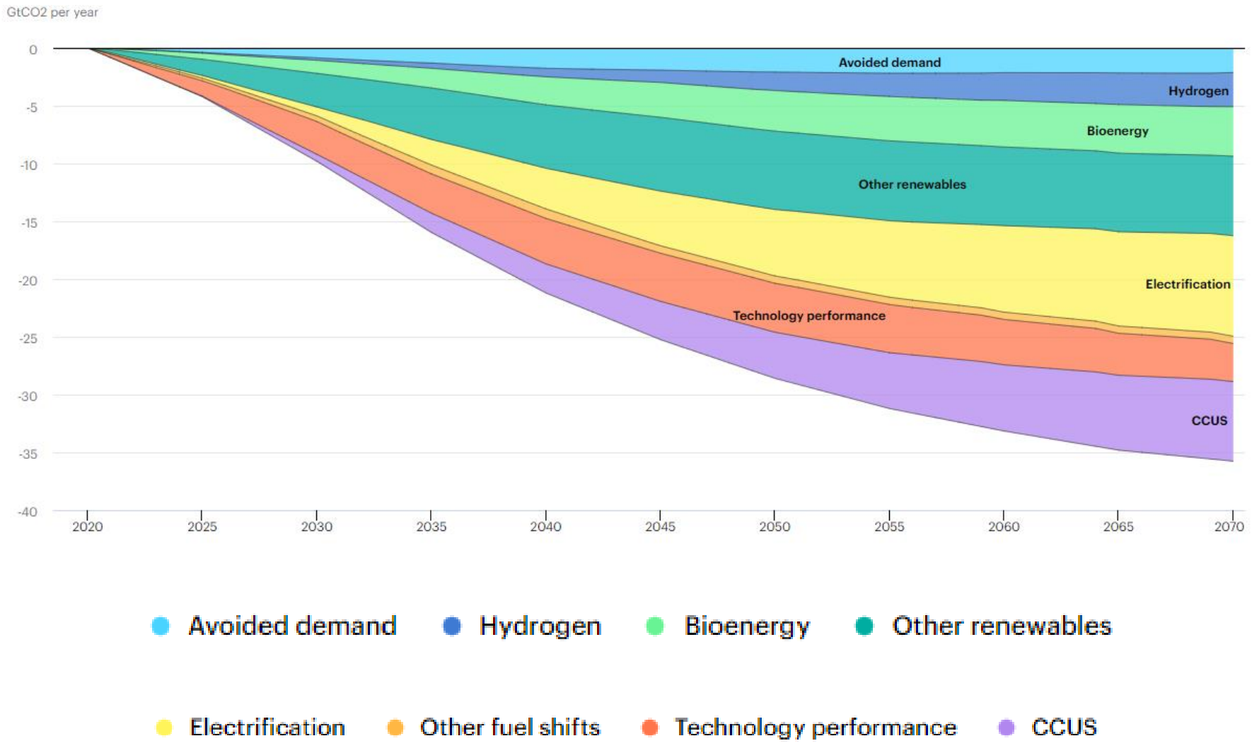
Widespread policy support and appropriate frameworks for CCS

Increased commercial project opportunities for CCS

Accelerating global CCS deployment

WHY CCS?

- Scientific consensus that CCS is necessary to achieve our climate goals.
- Three of four IPCC illustrative pathways require CCS.
- IEA suggests up to 15% of global emissions could be abated through CCS.

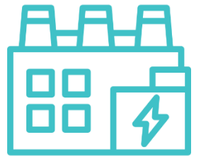


IEA 2020: Energy Technology Perspectives 2020

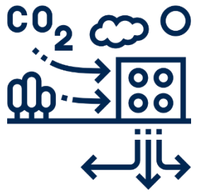
CCS: REACHING NET-ZERO AND DRIVING THE LOW-CARBON ECONOMY

Achieving deep decarbonisation in hard-to-abate industry.

Enabling the production of low-carbon hydrogen at scale.

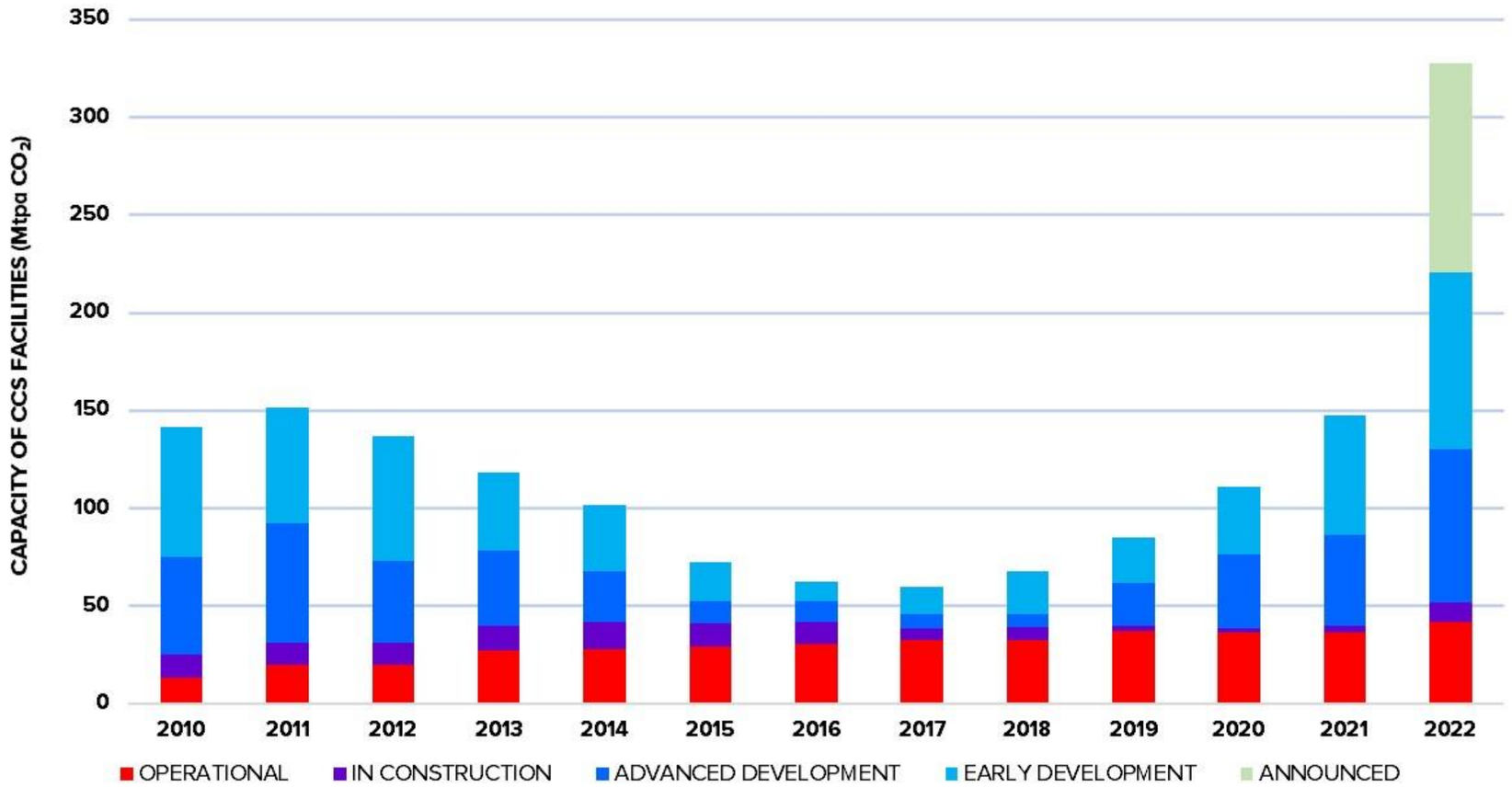


Providing low carbon dispatchable power.



Delivering negative emissions.

THE GLOBAL STATUS OF CCS



DRIVERS OF CCS MOMENTUM

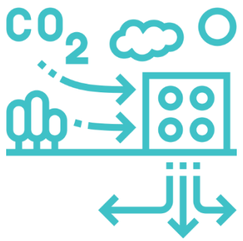
Strengthening policy support for CCS

Emergence of Strategic Business Partnerships

Net Zero Commitments

Blue Hydrogen Projects

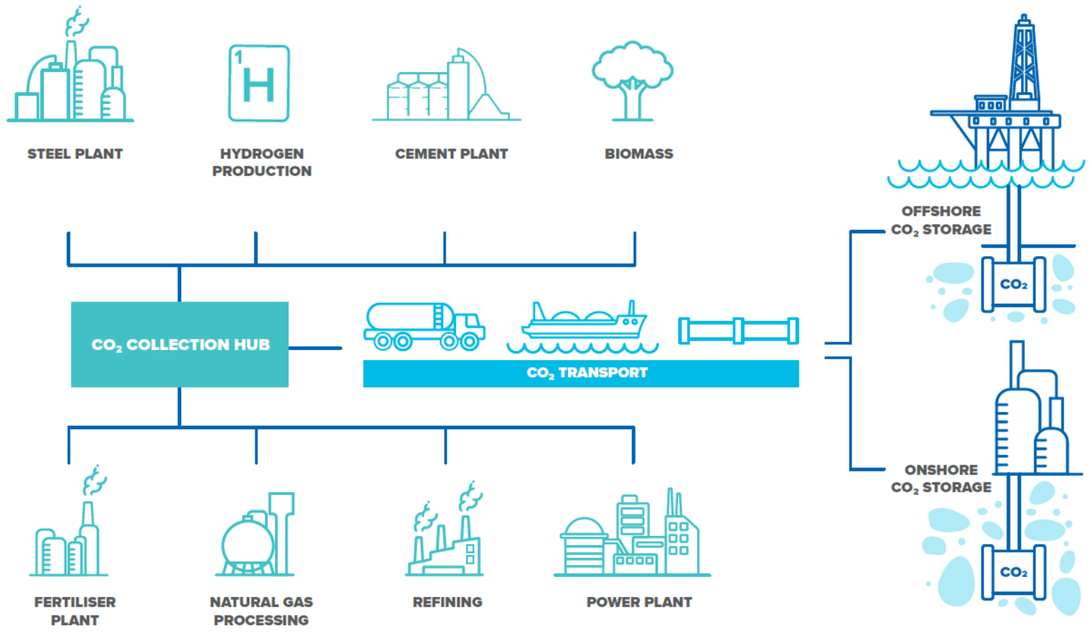
Rise of CCS Networks



Technology-based Carbon Removal

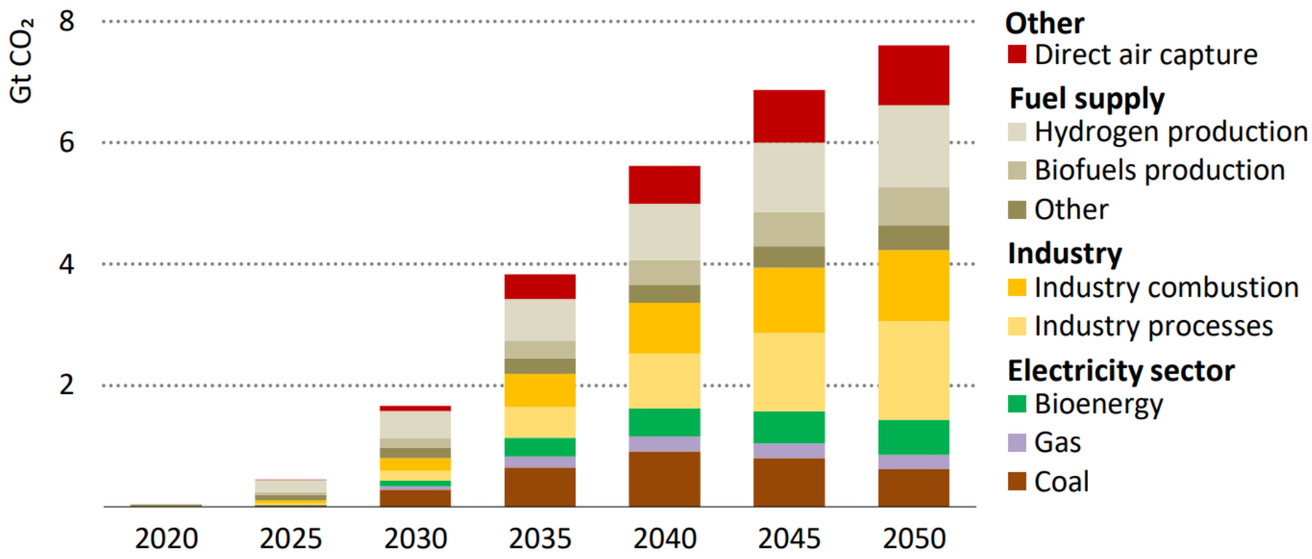
THE CONTINUED RISE OF CCS NETWORKS

- Networks continue to emerge as the preferred deployment method.
- Multiple industrial point sources of CO_2 connected to a CO_2 transport and storage network.
- Access to large geological storage resources with the capacity to store CO_2 from industrial sources for decades.
- Economies of scale deliver lower unit-costs for CO_2 storage.
- Synergies between multiple CO_2 sources and the storage operator reduce cross chain risks and support commercial viability.



CCS ACCELERATION NEEDED

- According to IEA SDS, by 2050 7.6 $GtCO_2$ captured per year, including 2.4 Gt removal from BECCS and DACCS.
- CCUS across diverse sectors and increasingly important to industry.
- Stronger policy to incetivise rapid CCS investment is required.



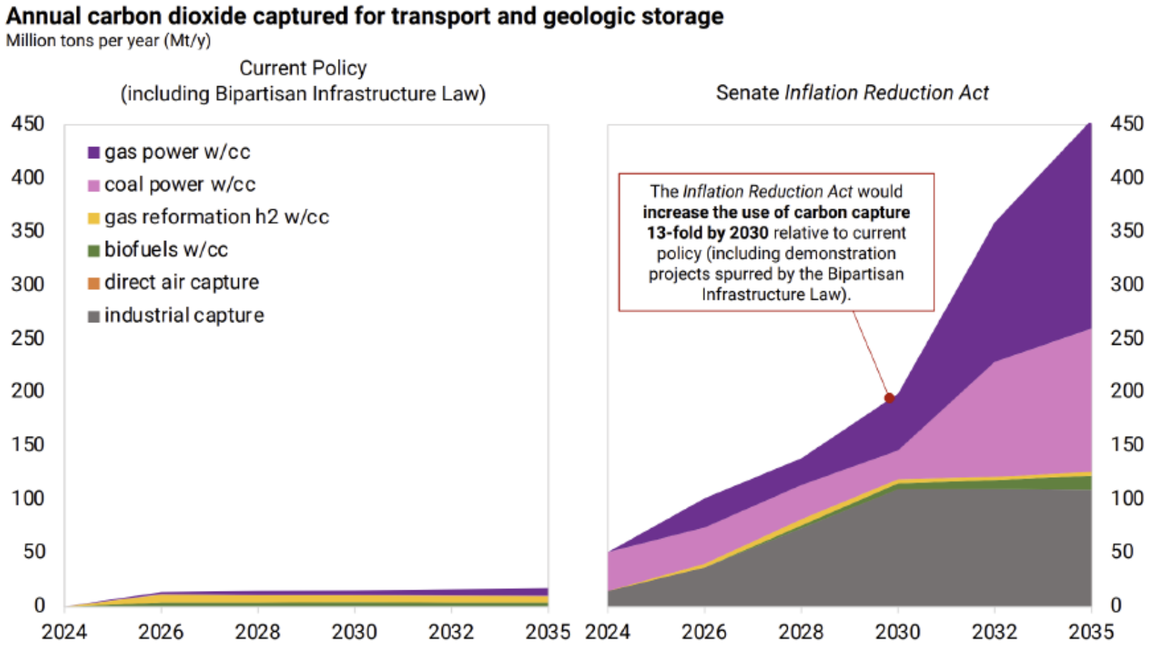
GLOBAL POLICY AND REGULATORY CONTEXT

- Publication of IPCC Working Group III Report: 'Mitigation of Climate Change' highlights effectiveness and viability of CCS.
- 13 countries with CCS included in NDCs with more expected.
- Limited number of countries with legal and regulatory frameworks that fully support a project through lifecycle. Strong interest from APAC region and renewed interest from regulators to address gaps in existing regimes.
- Trend toward closer regional cooperation, particularly surrounding transboundary storage activities (e.g. North Sea, Southeast Asia).

IAN HAVERCROFT
Senior Consultant – Legal and Regulatory

POLICY DEVELOPMENTS IN THE US

- Inflation Reduction Act (expected to increase the deployment of CCS by 13-fold compared to existing policy)
- SEC's Enhancement and Standardization of Climate-Related Disclosures
- White House CEQ Guidance
- US Department of Energy FECM Strategy
- Department of Interior's Bureau of Ocean and Energy Management Offshore Carbon Sequestration Regulations Development



Jenkins, J.D., Mayfield, E.N., Farbes, J., Jones, R., Patankar, N., Xu, Q., Schivley, G., "Preliminary Report: The Climate and Energy Impacts of the Inflation Reduction Act of 2022," REPEAT Project, Princeton, NJ, August 2022.

CCS DEVELOPMENTS IN ASIA PACIFIC

Japan: Strong support, limited domestic storage, reliant on imports of low-carbon energy and export of capture CO_2. Looking for strong regulatory regimes in countries for storage.

Indonesia: Focus remains on economic development as a priority. CCUS regulatory framework is in development and the anticipated carbon pricing mechanism will launch its first phase later this year.

Malaysia: Ambitions to become a regional storage hub for CCS. Announced a carbon tax and development of a regulatory framework in late 2021.

Australia: CCS projects now eligible to generate financial returns through the Emissions Reduction Fund. Regulatory frameworks being developed at the state level (WA, NT). Oil and gas continue to drive deployment.

CCS DEVELOPMENTS IN ASIA PACIFIC

China: Great need for CCS. High-level policy support through inclusion in "1+N". Energy SOEs driving development yet require enhanced policy and technology support.

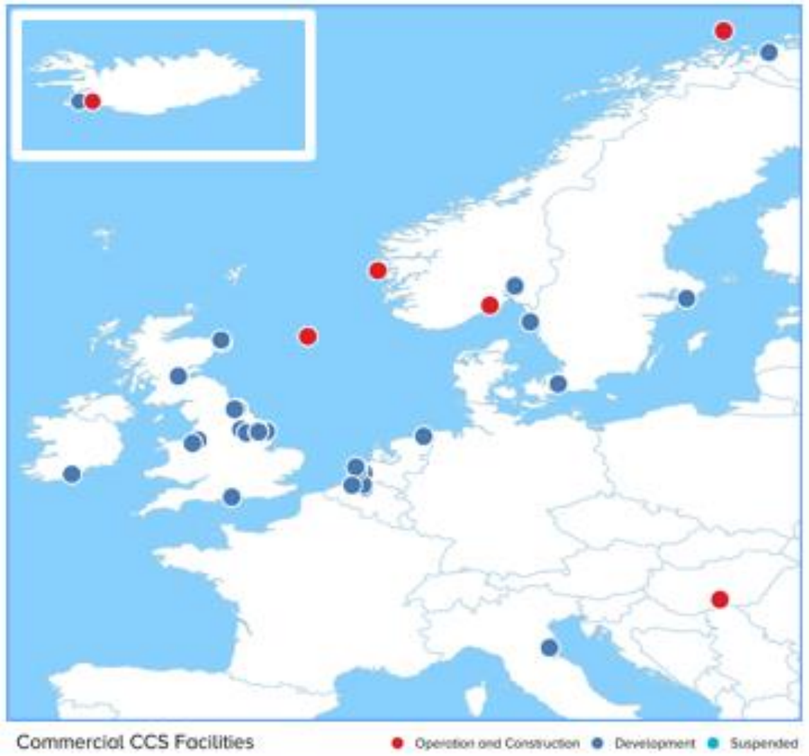
Thailand: PTTEP announced first project this year, regulatory frameworks under development.

Singapore: Supportive government but lack of domestic storage necessitates reliance on domestic partnerships. Companies exploring opportunities to become a CCS shipping hub.

Cambodia, Vietnam: CCS on the agenda, but with a view to jobs, investment and infrastructure development.

CCS DEVELOPMENTS IN EUROPE

- More than 30 commercial facilities in various stages of development across Europe.
- First two calls of the EU Innovation Fund to invest in 11 CCS and CCU projects, supplemented by individual member state policies.
- The UK aims to establish 4 CCS networks by 2030 capturing 20-30 mtpa, with £1 billion allocated to support CCS development.
- Dutch Government allocated €2bn SDE++subsidy to capture facilities in the Port of Rotterdam network.
- Denmark allocated €2.4bn for CCS projects over 10 years under Energy Technology Development and Demonstration Project.



6 commercial projects operating or in construction.

32+ projects in development (not including announcements).

CCS DEVELOPMENTS IN MENA REGION

- 3 facilities in operation in the region, capturing 3.7 Mtpa $CO_{2,}$ equivalent to ~10% of global capture capacity.

- CCS in MENA region being driven by multiple factors:
  - NDCs and net-zero commitments
  - Potential to take a significant share of low-carbon hydrogen market
  - Low-carbon industrialization plans

- Less-dependent on policy incentives – CCUS being driven by government ambition and vision.

- Kingdom of Saudi Arabia, United Arab Emirates, and Egypt have announced VCMs and carbon trading schemes.

REALISING CCS AT SCALE

Define the role of CCS and CDR in meeting national climate strategies and plans, set and communicate targets.

Create a long-term, high value on the storage of CO_2.

Support the identification and appraisal of geological storage resources.

Develop specific CCS laws and regulations.

Identify opportunities for CCS networks and facilitate the establishment of transport and storage infrastructure.

Enable investment in CCS through appropriate policy and market mechanisms

THANK YOU

GLOBAL CCS INSTITUTE