


AS WE ACCELERATE ON THE PATH TO NET ZERO, CARBON CAPTURE AND STORAGE IS VITAL TO REACHING OUR SHARED CLIMATE GOALS

Carbon capture and storage captures CO₂ emissions at the source and from the atmosphere, making it vital to climate mitigation efforts. The IPCC and International Energy Agency, among many other credible organisations, have outlined a critical role for CCS in achieving net zero emissions by mid-century. As governments and private companies look beyond the first step of setting a net zero target, the importance of CCS is becoming more prominent.

HOW CCS HELPS MITIGATE CLIMATE CHANGE

-  **DEEP DECARBONISATION OF INDUSTRY**
-  **LOW-CARBON HYDROGEN PRODUCTION**
-  **NEGATIVE EMISSIONS**
-  **LOW-CARBON DISPATCHABLE POWER**

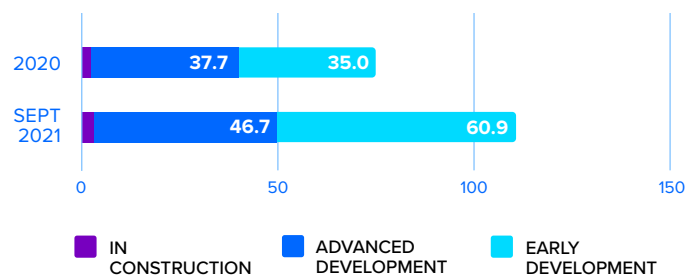
GLOBAL STATUS OF CCS

2021



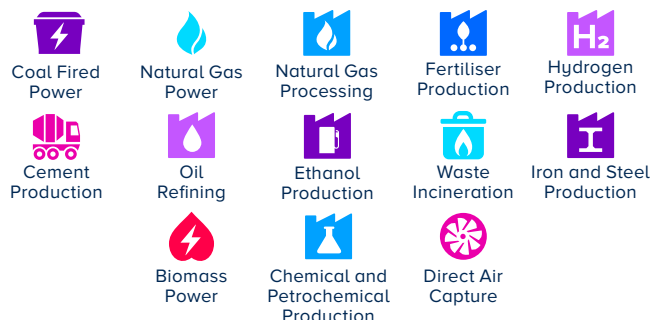
	NUMBER OF FACILITIES	CAPTURE CAPACITY (Mtpa)
Operational	27	36.6
In Construction	4	3.1
In Advanced Development	58	46.7
Early Development	44	60.9
Operation Suspended	2	2.1

CAPACITY OF CCS FACILITIES IN DEVELOPMENT (MtpaCO₂)*1



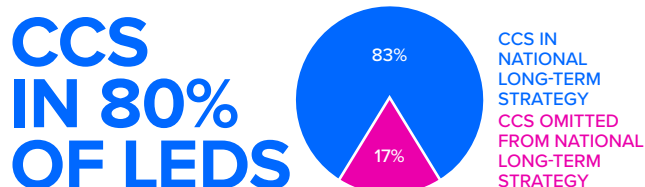
*As of September 2021

CCS PROJECTS ARE BECOMING MORE DIVERSE



RECOGNITION OF CCS IN NATIONAL STRATEGIES

CCS features in 80 per cent of countries' Long Term Low Emissions and Development Strategies (LEDS).



¹ SOURCE: 'CO2RE Database' 2021

NETWORKS: THE PREFERRED DEPLOYMENT MODEL

The trend of networks of projects sharing CO₂ transport and storage infrastructure is continuing.

EMERGING NETWORKS BY REGION

Americas	10
Europe	17
Asia Pacific	2
Gulf Cooperation Council States	1

THE ECONOMIC AND SOCIAL BENEFITS OF CCS








VITAL FOR REDUCING CO₂ EMISSIONS, INVESTMENT IN CCS PROVIDES SEVERAL ECONOMIC AND SOCIAL BENEFITS

-  **CREATES AND SUSTAINS HIGH-VALUE JOBS**
CCS facilities begin as large engineering and construction projects that require a significant workforce. For example, at its peak the Boundary Dam CCS facility in Canada employed a construction workforce of 1,700 people. Ongoing jobs are then created to run and maintain CCS facilities. A commercial CO₂ capture facility may employ about 20 operators and maintainers, while supporting jobs in firms that provide its goods and services. The global CCS industry must grow by more than one-hundred-fold by 2050 to achieve the Paris Agreement climate targets, meaning 100,000 construction jobs and ongoing jobs for 30-40,000 people.
-  **FACILITATES A JUST TRANSITION FOR COMMUNITIES RELIANT ON EMITTING INDUSTRIES**
Emissions intense industries often develop in clusters due to resource, infrastructure, transport, workforce and supplier availability. Many local communities rely on these clusters to support their employment and local economy. They would suffer severe economic and social dislocation if their emissions intense industries were shut down. CCS can help transform these emissions-intense industries to near-zero emissions industries, protecting jobs and communities.
-  **ENABLES INFRASTRUCTURE RE-USE**
Where oil or gas production fields are at the end of their lives, there may be opportunities to re-use existing oil and gas infrastructure by repurposing it for CO₂ transport and storage. This could provide a range of benefits, including reducing the cost of building transport and storage infrastructure and potentially reducing permitting time. The re-use of infrastructure could also defer the costs and the environmental impact of decommissioning, freeing-up resources that can be invested in other value generating activities.
-  **SUPPORTING ECONOMIC GROWTH THROUGH INNOVATION**
CCS could also be a source of high-value innovation spillovers and therefore play a role in supporting innovation-led economic growth alongside other technologies.

NET ZERO BY 2050 REQUIRES STRONG POLICY ACTION

The International Energy Agency's Sustainable Development Scenario defines a pathway where fifteen per cent of global emissions reductions up to 2050 are delivered by CCS. Within this scenario, the installed capacity of CCS needs to increase one hundred-fold by 2050. The capital requirement for this would be between US\$650-1,300 billion, depending on the rate at which CCS costs reduce with installed capacity.

The pathway to wide-scale CCS deployment will require private sector financing. Governments will play a key role in creating an enabling environment for private sector investment. Government's can take several steps to realise investment in CCS.

-  **1 Define the role of CCS in meeting national emission reduction targets and communicate this to industry and the public.**
-  **2 Create a long-term, high value on the storage of CO₂.**
-  **3 Support the identification and appraisal of geological storage resources.**
-  **4 Develop specific CCS laws and regulations that include the transfer of liability to the government subject to acceptable performance and behaviour of the stored CO₂.**
-  **5 Ensure emissions abatement policies are inclusive of all options (including CCS) to enable an optimum mix of technologies to maximise abatement and minimise cost.**
-  **6 Identify opportunities for CCS hubs and facilitate their establishment.**
-  **7 Provide capital grants, low-cost finance and/or guarantees to reduce the cost of capital for CCS investments.**