

GLOBAL STATUS OF CCS 2021

Global CCS Institute

Midland CO₂ Conference

December 7, 2021



THE GLOBAL CCS INSTITUTE

- International climate change think tank
- Not-for-profit entity limited by guarantee, incorporated in Australia
- HQ in Melbourne
- Offices in Washington D.C., Houston, London, Brussels, Abu Dhabi, Beijing, and Tokyo
- Member-led organization
- Diverse international membership consists of governments, global corporations, small companies, and NGOs
- Specialist expertise covers the complete CCS/CCUS chain



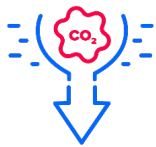
OUR VISION

CCS is an integral part of a low emission future

OUR MISSION

To accelerate the deployment and commercial viability of CCS globally

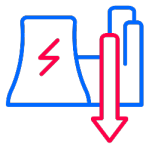
CCS: REACHING NET-ZERO AND DRIVING THE LOW-CARBON ECONOMY



Achieve industrial decarbonization including deep decarbonization in hard-to-abate industry



Enable the production of low-carbon hydrogen at scale



Provide low carbon dispatchable power



Deliver negative emissions

THE GLOBAL STATUS OF CCS 2021

THE MOMENTUM AROUND CCS CONTINUES

+71
NEW
FACILITIES

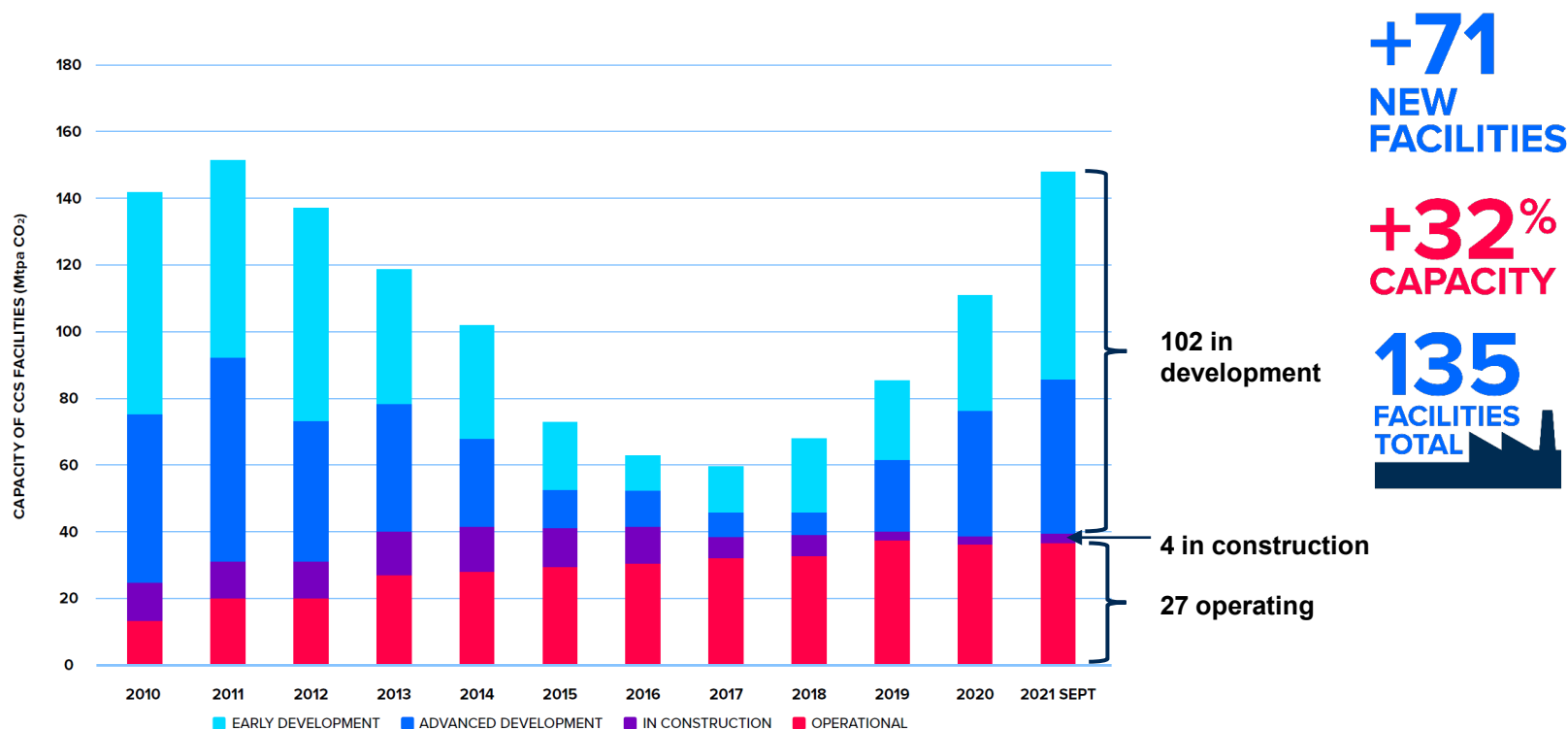
+32%
CAPACITY

135
FACILITIES
TOTAL



THE GLOBAL STATUS OF CCS 2021

FOUR YEARS OF GROWTH IN THE PROJECT PIPELINE



*135 total includes 2 facilities that have suspended operations – not shown on the chart

71 NEW FACILITIES ADDED IN 2021



- 41 new commercial facilities added in North America (31 of these part of the Summit Network), 25 in Europe and 5 across the rest of the world
- First commercial facilities in Belgium, Denmark, Hungary, Indonesia, Italy, Malaysia and Sweden
- First CCS applications in LNG liquefaction
- First commercial DACCS project in Europe
- First commercial cement CCS facility under construction
- Several power CCS projects around the world

DRIVERS OF CCS MOMENTUM IN 2021



Strengthening policy support for CCS



Blue Hydrogen Projects



Net Zero Commitments from countries and companies



Technology-based Carbon Removal



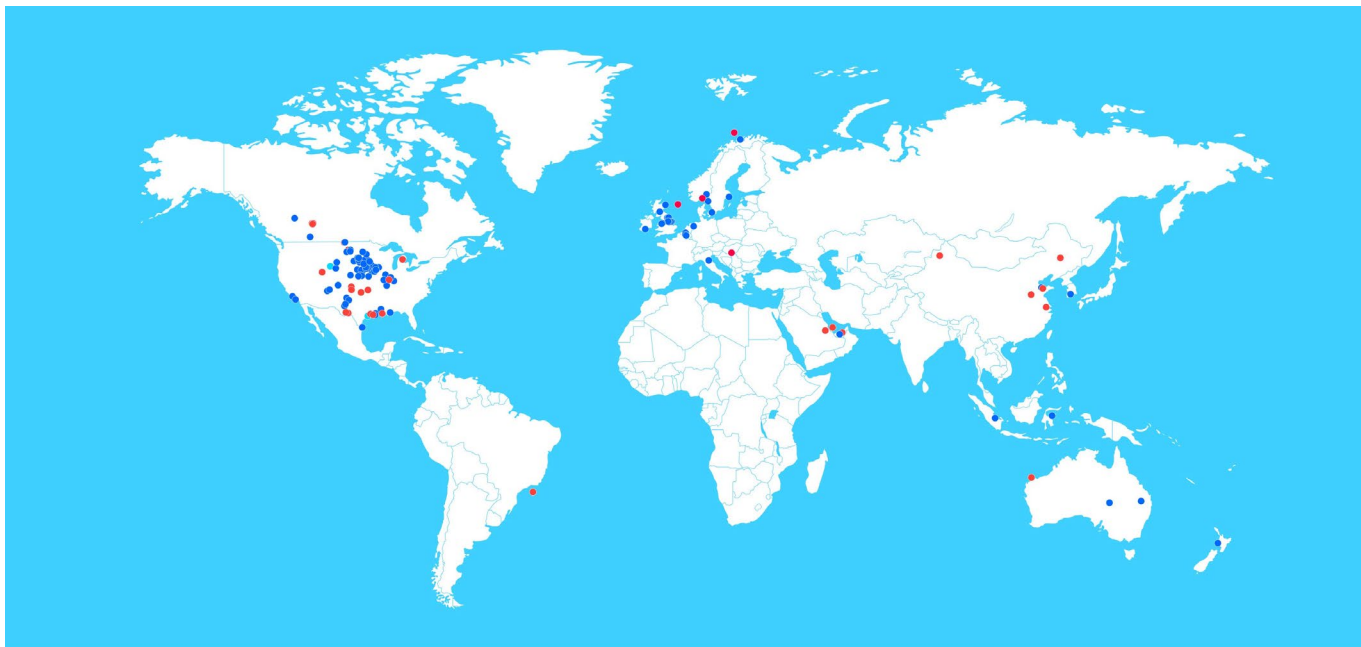
Rise of CCS Networks



Emergence of Strategic Business Partnerships

CCS FACILITIES

OPERATIONAL AND UNDER DEVELOPMENT



● COMMERCIAL CCS FACILITIES
IN OPERATION AND CONSTRUCTION

● COMMERCIAL CCS FACILITIES
IN DEVELOPMENT

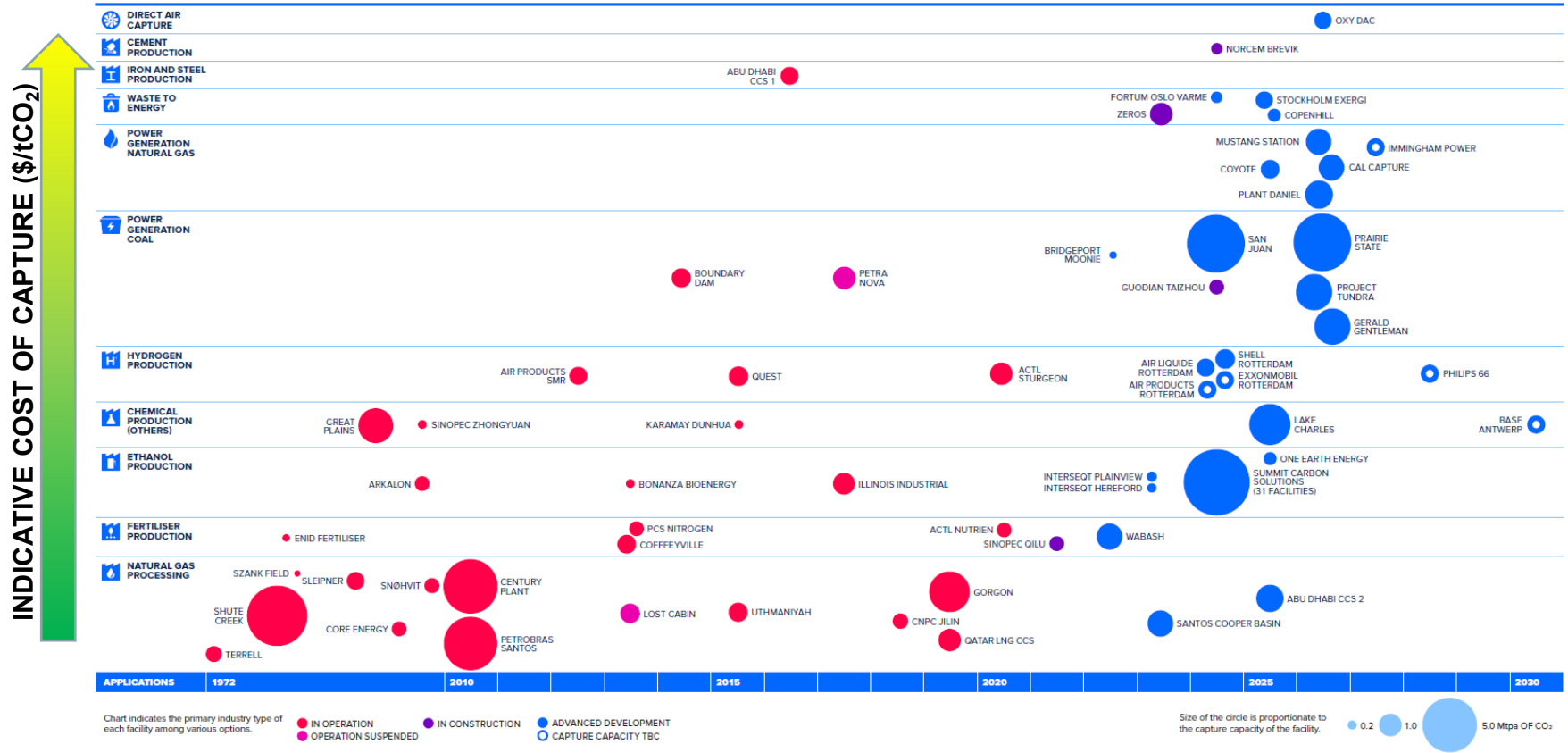
● OPERATION SUSPENDED

CCS FACILITIES AROUND THE WORLD



	OPERATING	IN DEVELOPMENT	SUSPENDED	TOTAL
North America	16	60	2	78
China	3	3	-	6
Europe	3	35	-	38
Gulf Cooperation Council	3	1	-	4
Rest of World*	2	7	-	9
Total	27	106	2	135

INCREASING DIVERSITY OF APPLICATIONS



NORTH AMERICA

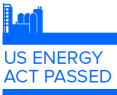
- More than 40 facilities added to the Institute database in 2021
- In February 2021, the US rejoined the Paris Agreement
- The US Energy Act of 2020 passed, which authorized more than \$6 billion for CCS research, development and demonstration for FY 21 – FY 25
- Major bills introduced in the US Congress during 2021 to augment 45Q tax credits
- Canada's Budget 2021 proposed an investment tax credit for CCS projects. Proposed Clean Fuel Regulations include use of CCS to generate credits
- Biorefinery networks and low-carbon LNG with CCS emerging

+40



MORE CCS INTEGRATION

AT LNG FACILITIES

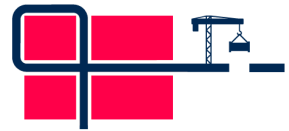

US ENERGY ACT PASSED
AUTHORISING MORE THAN \$6 BILLION IN CCS RESEARCH, DEVELOPMENT & DEMONSTRATION

EUROPE

- More than 30 commercial facilities under development, with construction having started in Norway's Langskip CCS network
- The EU made climate neutrality by 2050 a binding target, along with reducing emissions by 55% by 2030
- Over 60 projects with a CCUS component applied to the first call of the EU's €20 billion Innovation Fund, with several progressing to the final round
- The UK aims to establish 4 CCS networks by 2030 capturing 10 mtpa, with £1 billion allocated to support CCS development
- The Dutch Government allocated SDE++ subsidy to capture facilities in the Port of Rotterdam network



Construction is underway on the Norwegian project, Langskip.



ASIA PACIFIC

- 5 new facilities in APAC added to the database
- First commercial CCS projects announced in Indonesia and Malaysia
- China launched its Emission Trading Scheme, covering >2000 power plants. CCS included in China's 5-year plan for the first time
- Australia is including CCS in its Emissions Reduction Fund and allocated \$300 million in funding for CCS projects and networks
- Japan is pursuing blue hydrogen opportunities and driving transnational cooperation in CCS



AUSTRALIA
INCLUDES CCS
IN EMISSIONS
REDUCTION FUND



GCC STATES

- 3 CCS facilities in operation in the GCC States, capturing 3.7 Mtpa of CO₂, about 10% of global capture capacity in operation
- Qatar Ras Laffan and UAE Al Reyadah facilities are developing expansion plans
- Bahrain, Qatar, Saudi Arabia and UAE include CCS in their NDCs* under the Paris Agreement
- Power generation and blue hydrogen are expected to emerge as new CCS drivers in the region
- The Global CCS Institute is opening its inaugural GCC office in Abu Dhabi



*Nationally Determined Contributions: climate plans of signatory countries to the Paris Agreement.

CCS: VITAL TO NET-ZERO

- Despite progress in 2021, to achieve net zero emissions, CCS capacity must increase by 100-fold by 2050
- Between US\$655 - \$1,280 billion in capital investment is needed in the next three decades
- Stronger policy to incentivize rapid CCS investment is overdue

STRONG POLICY ACTION NEEDED



Define the role of CCS in meeting national emissions reduction targets and communicate this to industry and the public.



Create a long-term, high value on the storage of CO₂.



Support the identification and appraisal of geological storage resources.



Develop specific CCS laws and regulations.



Ensure emissions abatement policies are inclusive of all options (including CCS).



Identify opportunities for CCS networks and facilitate their establishment.



Provide capital grants, low-cost finance and/or guarantees to reduce the cost of capital for CCS investments.

THANK YOU

Download our *Global Status of CCS 2021 Report* at
www.globalccsinstitute.com

Follow us on social media:  @GlobalCCS

Further questions? Reach out:
info@globalccsinstitute.com

or

Christina Staib
christina.staib@globalccsinstitute.com

