GLOBAL STATUS OF CCS 2020

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CCS. VITAL TO ACHIEVE NET-ZERO

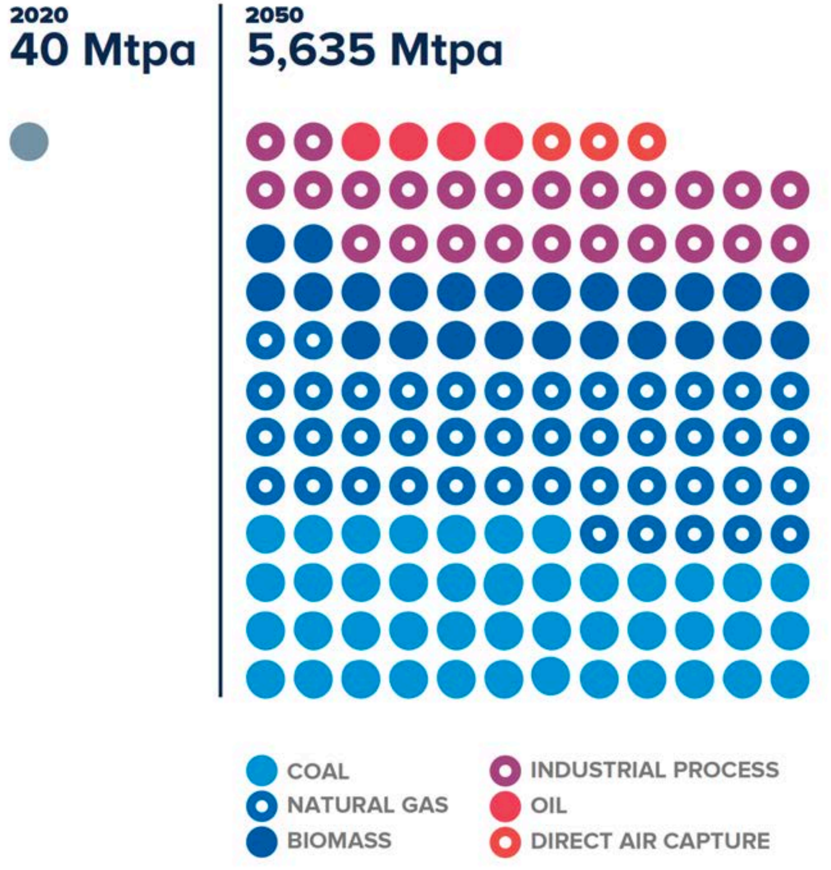
2020 CO_2 Conference
December 8-10

MOMENTUM

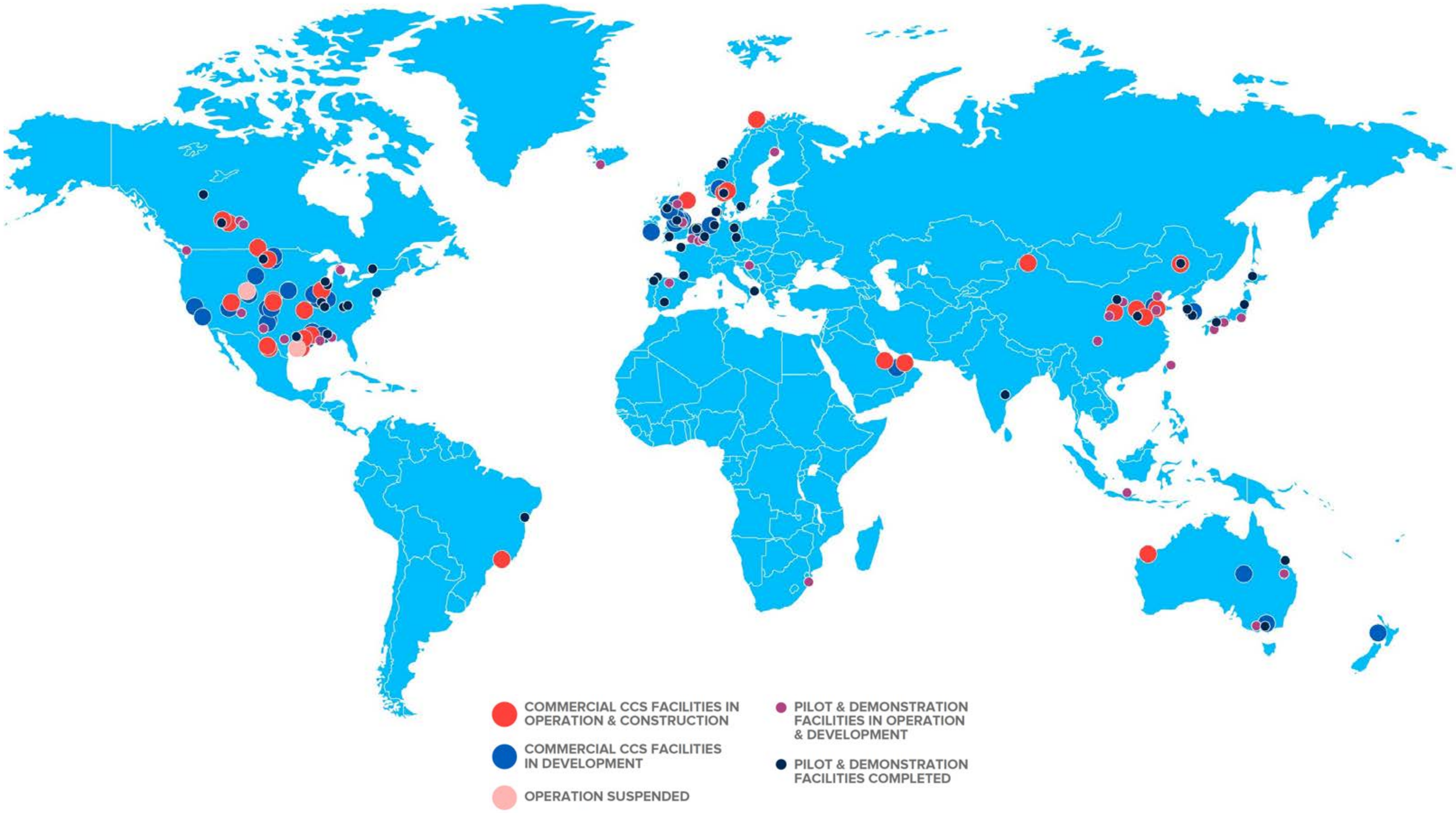
- CCS project pipeline continues to grow
- Net-zero emissions commitments driving interest and commitment
- Policy and funding support building, notably US, UK, Norway, EU, Japan, Australia
- Key developments
  - Enhanced tax credit in the US
  - Hubs and clusters
  - Hydrogen, as the fuel of the future

BUT… A STEEP HILL TO CLIMB

TO ACHIEVE NET-ZERO EMISSIONS, >100X INCREASE REQUIRED



THE BIG PICTURE



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BY THE NUMBERS

MATURING INDUSTRY REQUIRES UPDATED CLASSIFICATION SYSTEM

65 Commercial CCS facilities operating, under development, idle
- **26** Operating
- **3** In construction
- **34** Under development
- **2** Operations suspended

6 Reclassified as Commercial
2 Paired sources separated
6 Storage projects now Hubs

17 New commercial facilities added in 2020
- **12** New in US

115M Annual capture/storage capacity of all facilities
- **40M** Annual tonnes CO_2 captured and stored by operating facilities

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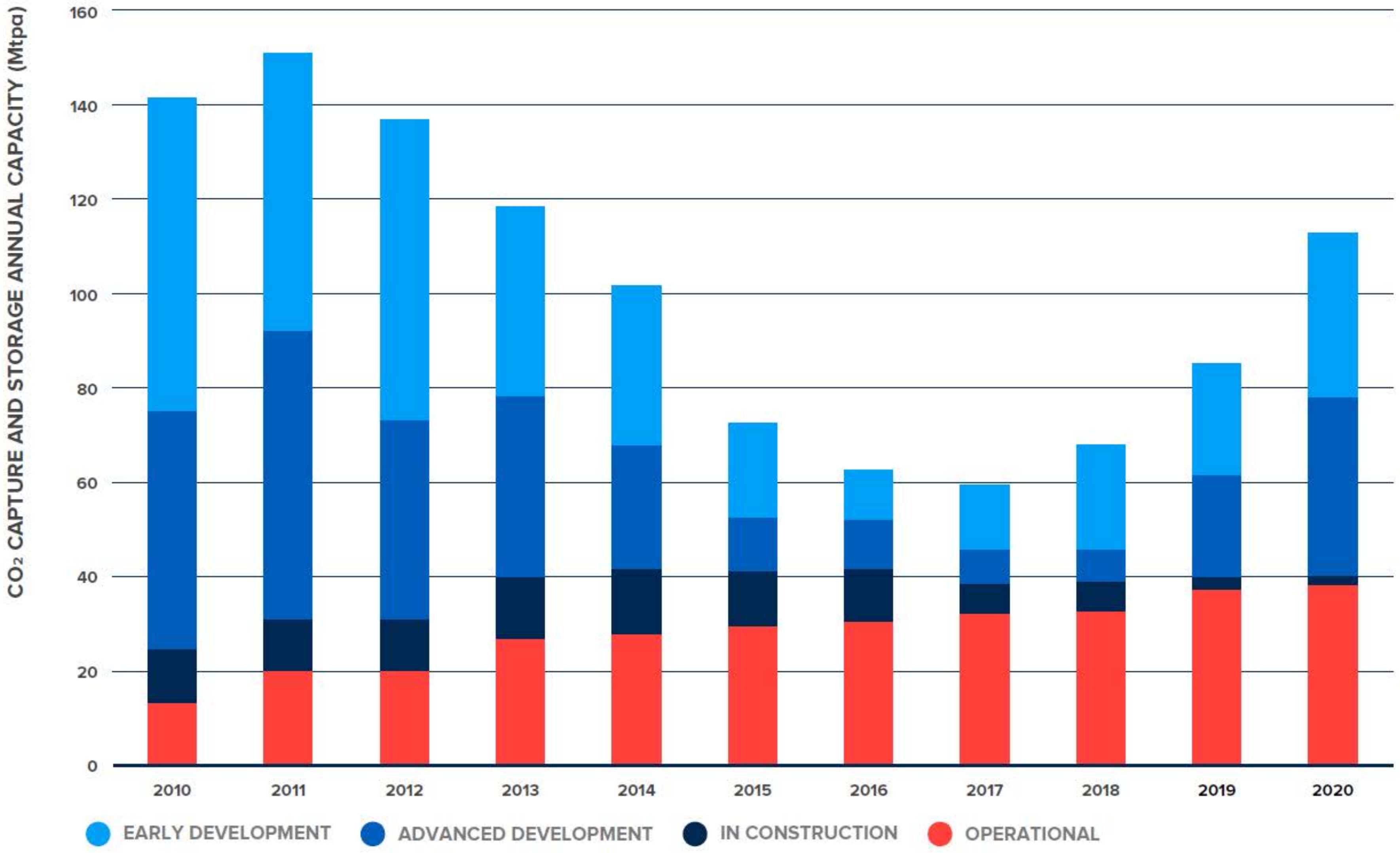
A GROWING PROJECT PIPELINE



THE CAPACITY OF FACILITIES WHERE OPERATION IS CURRENTLY SUSPENDED IS NOT INCLUDED IN THE 2020 DATA.

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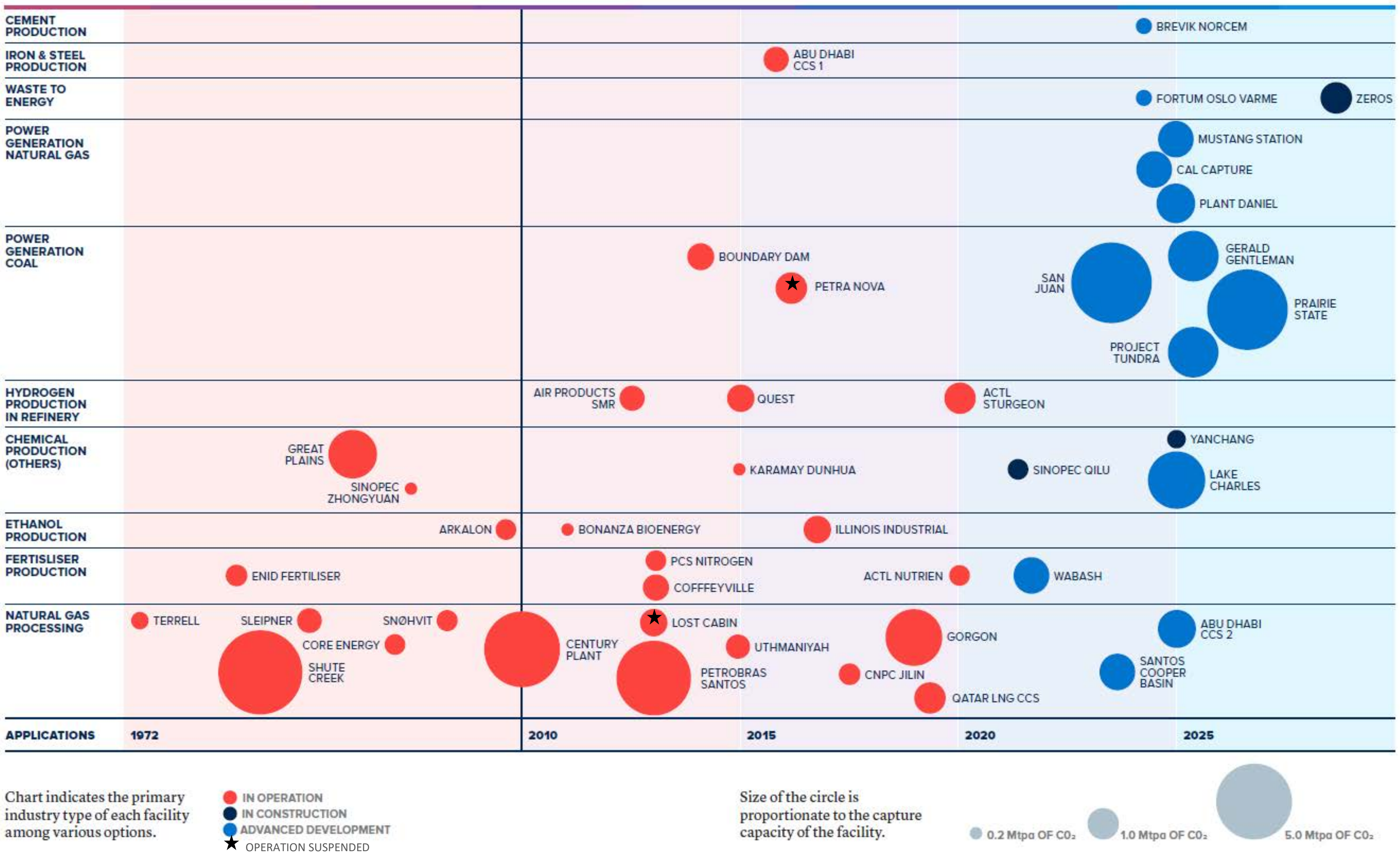
CCS ACROSS NUMEROUS INDUSTRIES



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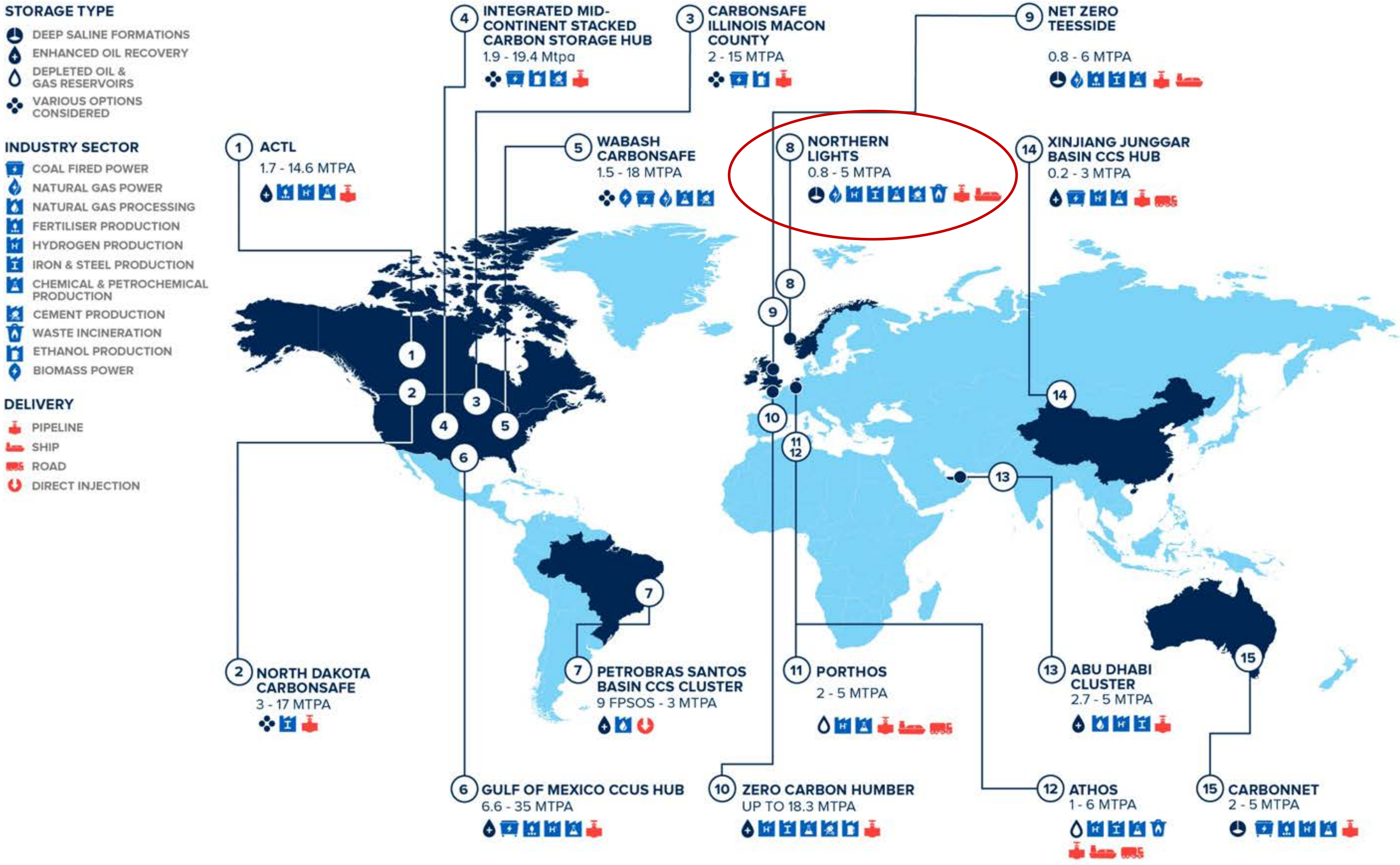
HUBS AND CLUSTERS



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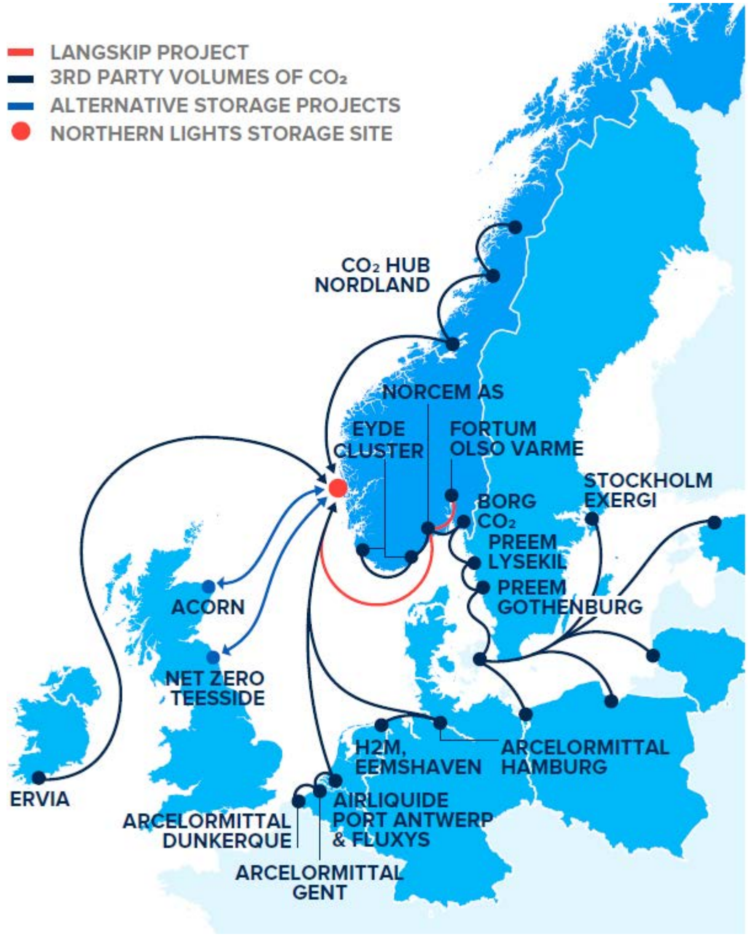
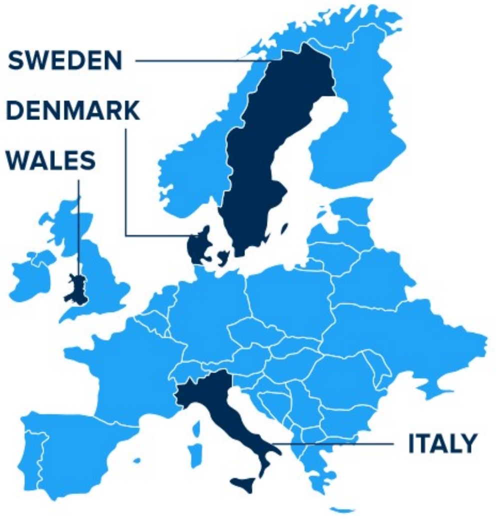
HUBS AND CLUSTERS

- Multiple industrial point sources of CO_2 connected to transport and storage network
- Access to large geological storage resources with 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 storage operator reduce cross chain risks, support commercial viability



EUROPE – GROWING POLICY SUPPORT

- 14 commercial facilities in operation or various stages of development
- New European jurisdictions in the CCS market: Wales, Denmark, Sweden and Italy
- EU's €10 billion Innovation fund – first call for projects; expected to be a major CCS funding source across the EU
- United Kingdom to establish first net zero industrial cluster; 1 billion pounds allocated to support CCS development
- Norwegian Government has moved forward with $1.8 billion investment to further CCS development



GULF STATES – A CRITICAL REGION

- 3 CCS facilities in operation, capturing 3.7 Mtpa of carbon dioxide
- Circular carbon economy: CO2 emissions managed through holistic approach to climate mitigation, including carbon removal
- The development of up to 30 GT of storage to support the region’s climate plans
- Saudi Arabia and UAE have largest emissions in the region; power generation the biggest contributor

ASIA-PACIFIC – EMERGING POWERHOUSE

- 10 CCS facilities in operation or in development
- Regional collaboration between governments, e.g. bilateral agreements with Australia and Singapore
- Japan driving clean hydrogen production using CCS
- Malaysia, Singapore, and Australia have newly established CCS strategies
- Australian government established a $50 million CCUS development fund

AMERICAS – SUSTAINED LEADERSHIP

- 12 new commercial CCS projects added; 36 commercial facilities operating or in development, plus two currently idled
- US: New projects largely incentivized by 45Q tax credit and the California Low Carbon Fuel Standard (LCFS); U.S Congress allocated \$217.8 million for CCUS development
- Canada: Alberta Carbon Trunk Line began operating; over \$550 million in provincial and federal funding
- Brazil: Offshore projects continue, 14M+ tonnes of CO_2 to date

CCS: VITAL TO NET-ZERO

- 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

CCS: VITAL TO NET-ZERO

- To achieve net-zero emissions, CCS capacity must increase more than a hundredfold by 2050
- Stronger policy to incentivize rapid CCS investment is overdue
- Policy priorities include:
  - Creating conditions for investment
  - Facilitating development of CO_2 infrastructure
  - Clarifying key legal and regulatory issues

2,000+
LARGE-SCALE FACILITIES REQUIRED BY 2050

RESOURCES

- The Global Status of CCS 2020 Report can be downloaded from: https://www.globalccsinstitute.com
- Webinar recordings available through Institute website: https://www.globalccsinstitute.com/resources/audio-and-visual-library/
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