

# GLOBAL STATUS OF CCS AND DEVELOPMENTS IN ASIA

Japan Asia CCUS Forum 2020  
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Brad Page, CEO



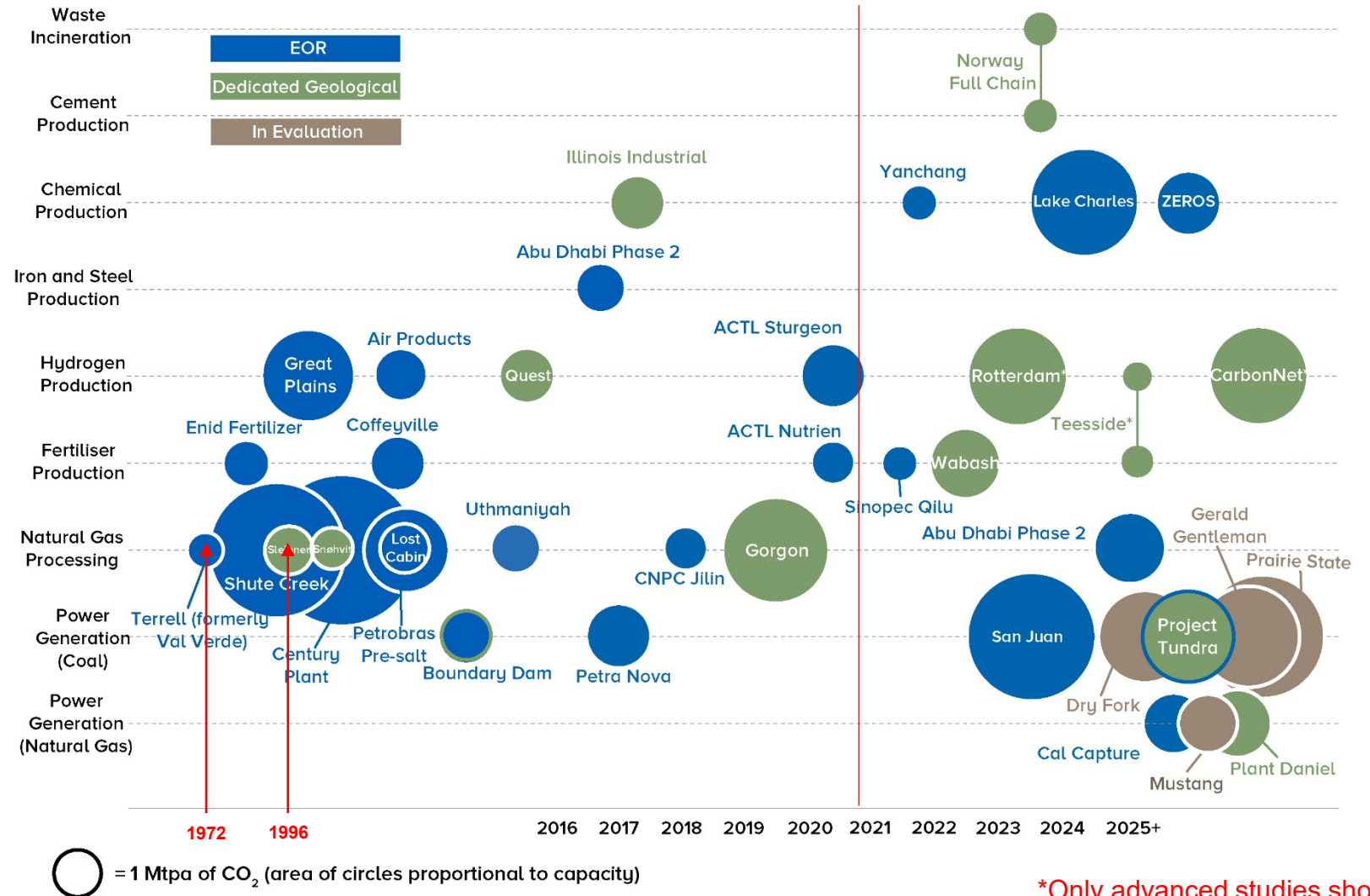
GLOBAL CCS  
INSTITUTE

# CCS: PROVEN, AVAILABLE AND OPERATING

EOR since 1972

Dedicated CO<sub>2</sub> storage since 1996

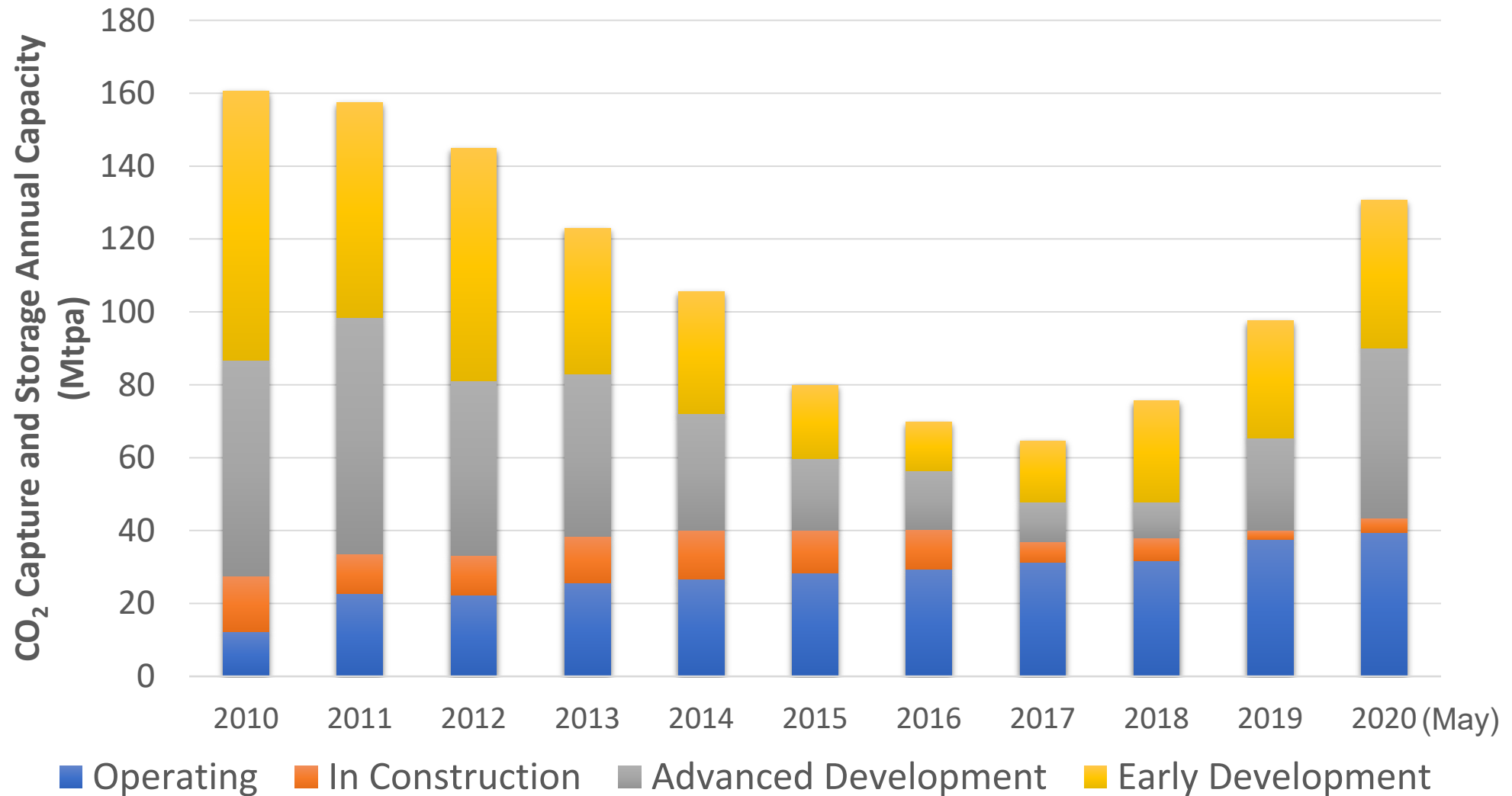
260Mt anthropogenic CO<sub>2</sub> stored to date



\*Only advanced studies shown

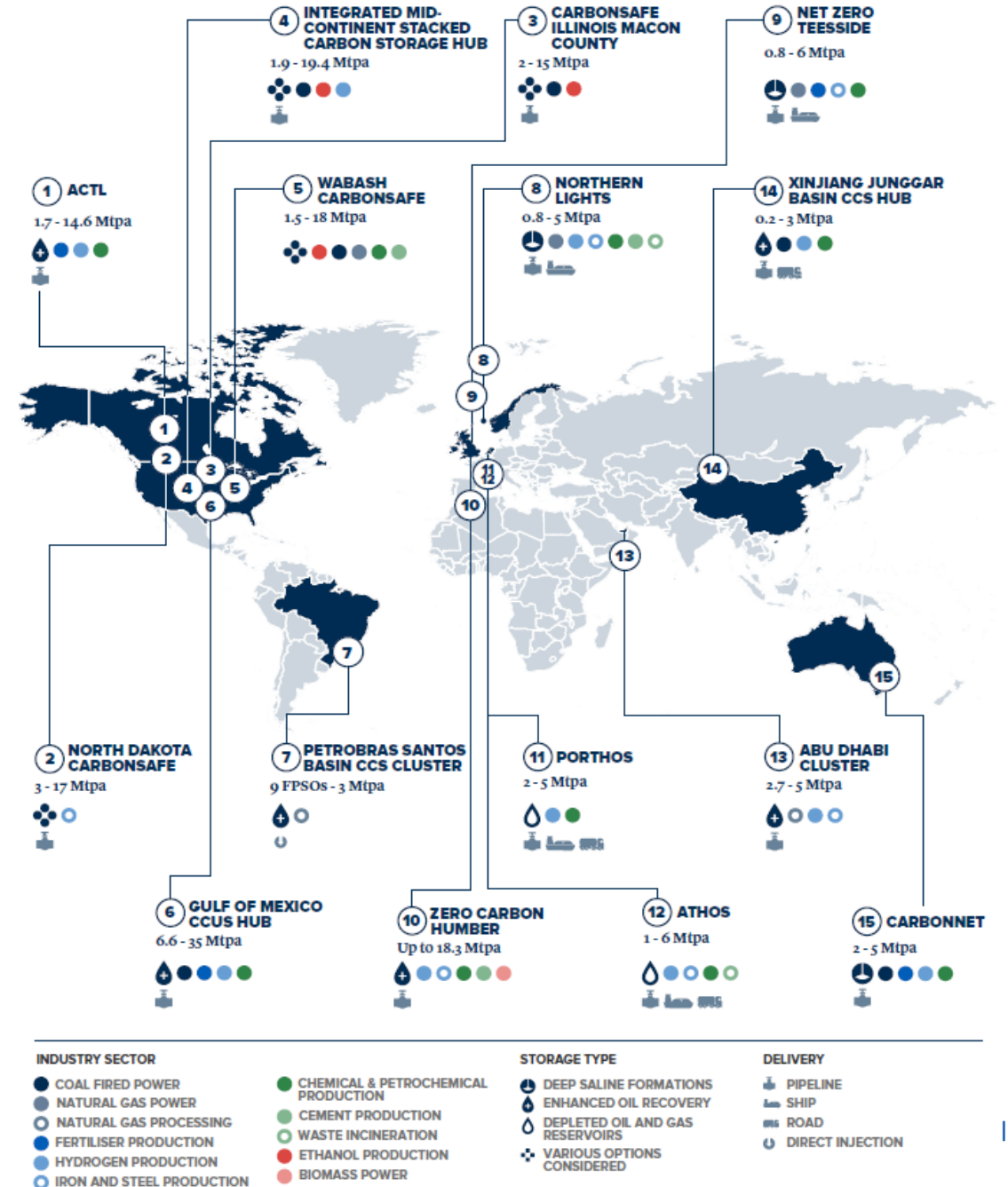


# CCS PROJECT PIPELINE IS GROWING



# INDUSTRIAL CCS HUBS

- Economies of scale
- Commercial synergies
- Reduce cross-chain risk
- Create low-emission industrial precincts
- *Just transition* for communities that rely on high-emission industries
- Lowest cost opportunities US\$15-25/tonne CO<sub>2</sub> for high concentration CO<sub>2</sub> gas streams
  - Natural gas processing
  - Bioethanol production
  - Various chemical processes

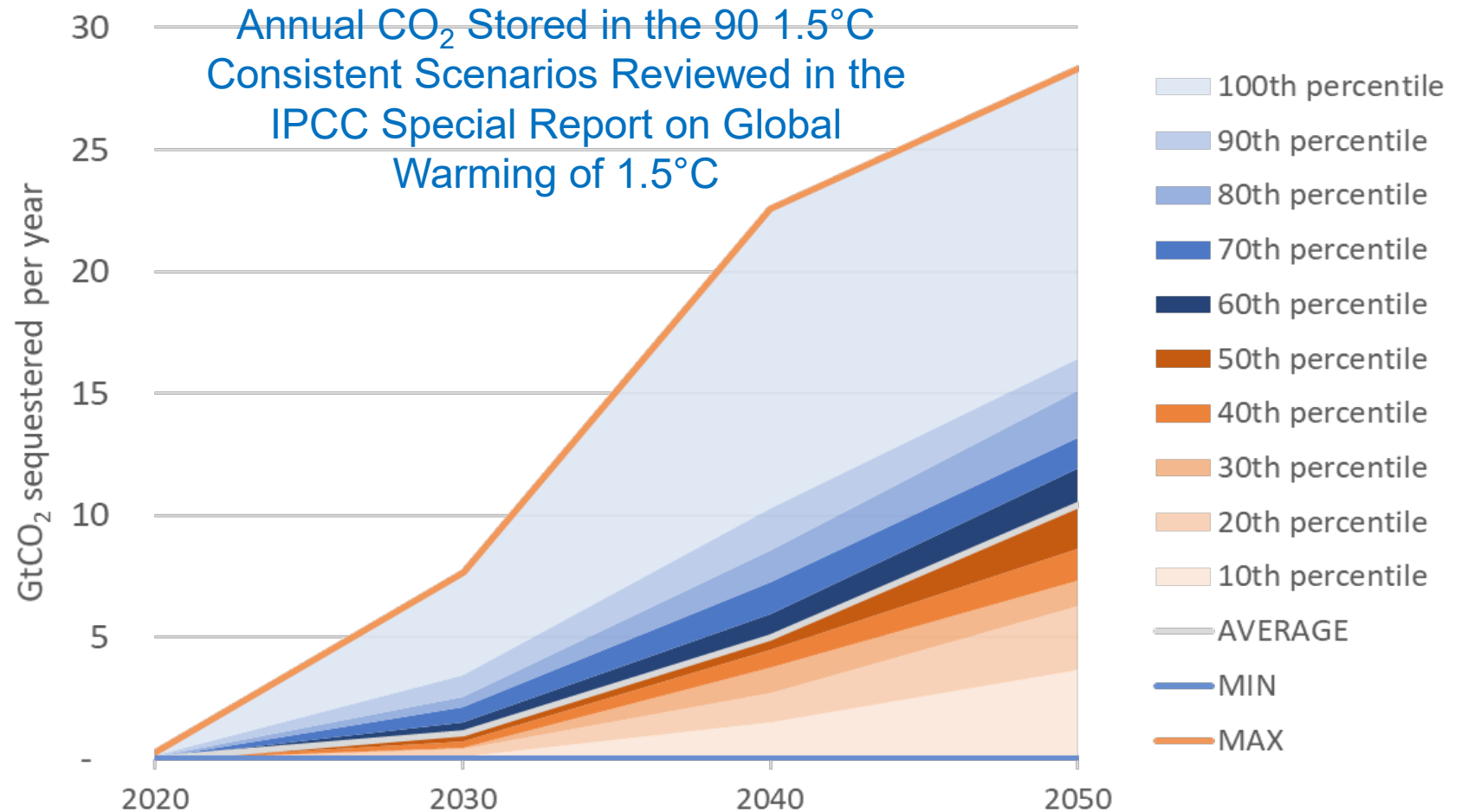


# C MANAGEMENT POTENTIAL: >1,000 GtCO<sub>2</sub> THIS CENTURY

Almost all scenarios required CCS

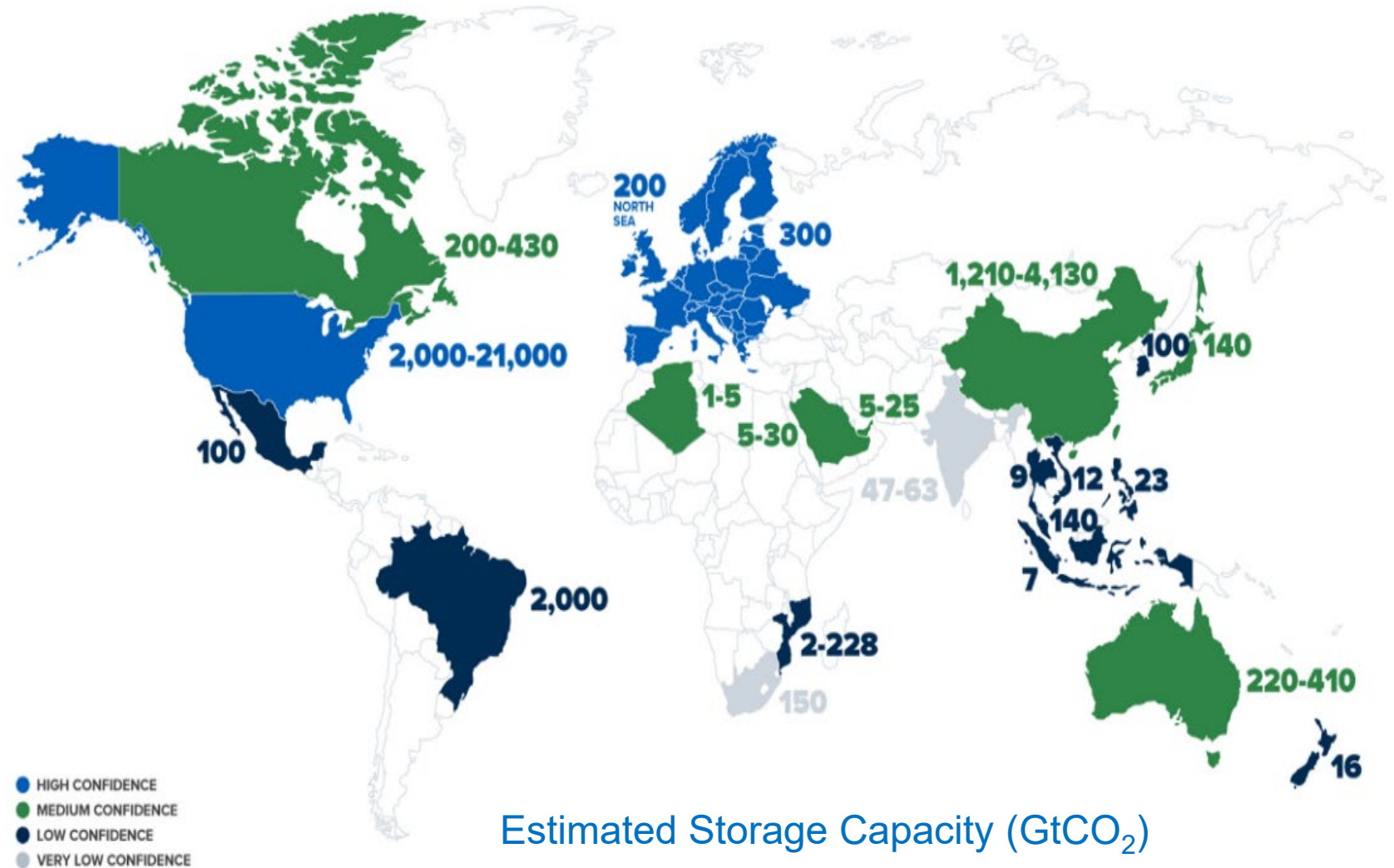
3 of 4 Illustrative Pathways required 348Gt to 1,218Gt CO<sub>2</sub> to be stored this century.

Average mass of CO<sub>2</sub> stored in the year 2050 across all scenarios: 10Gt



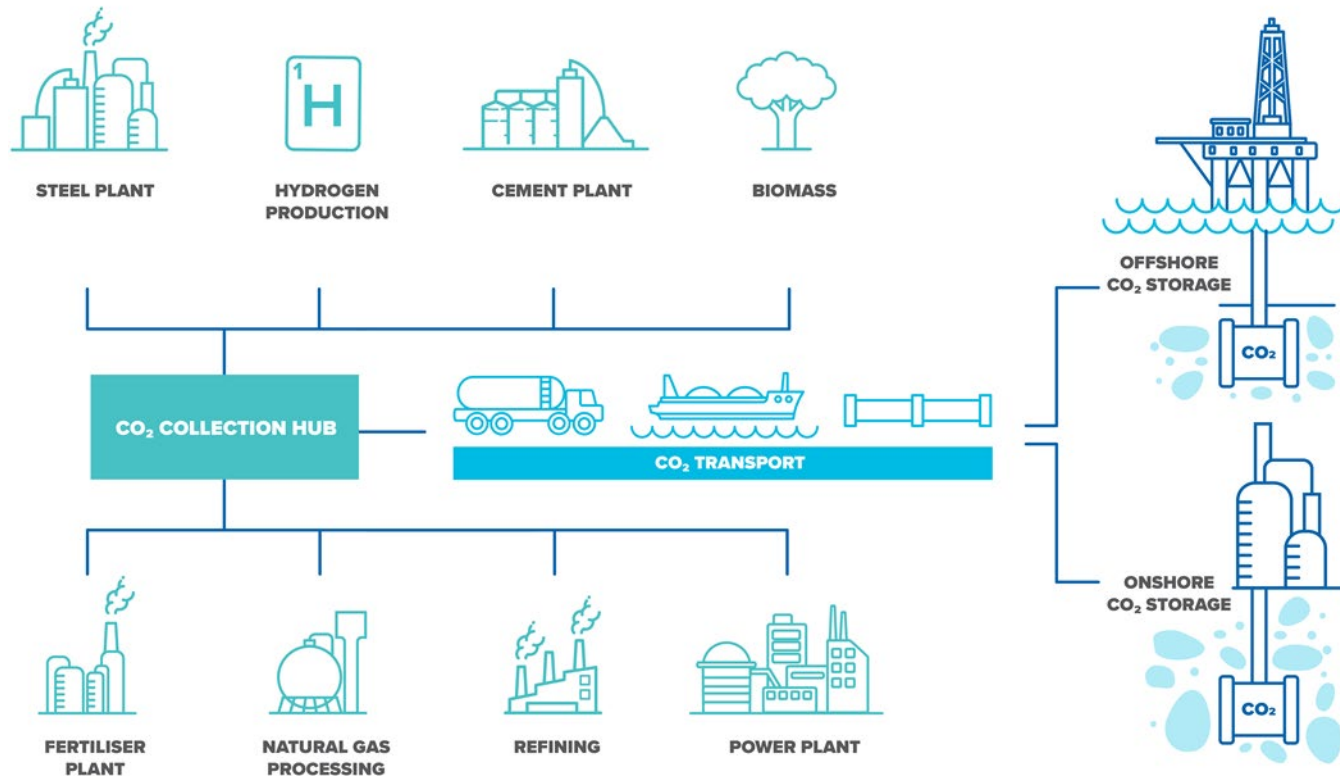
# AMPLE GEOLOGICAL STORAGE CAPACITY

Conservative estimates of global storage capacity are several times larger than required this century under any scenario.





# THE OPPORTUNITY: CREATING NEAR-ZERO EMISSION INDUSTRY



Source: Global CCS Institute

## Key Policy Enablers:

- Define & communicate the role of CCS in national abatement strategies
- Create a financial reward for CO<sub>2</sub> storage
- Support and facilitate investment in CCS infrastructure



# POLICY DEVELOPMENT IN ASIA

## China

- China committed to peak emissions by 2030 and to reach net zero emissions by 2060.
- *The Green Bond Endorsed Projects Catalogue* (2020 Edition) includes CCS for the first time CCS is now eligible for Green Bonds in China.

## Singapore

- In Early 2020, Singapore published its *Long-Term Low-Emissions Development Strategy (LEDS)*. Includes carbon capture, utilisation and storage (CCUS), and low-carbon fuels.

## Australia

- CCS as one of five priority technologies in first Low Emissions Technology Statement
- Remits of the Clean Energy Finance Corporation (CEFC) and the Australian Renewable Energy Agency (ARENA) to be expanded to include CCS).
- Funding commitment of AUD50 million for a CCUS Development Fund, AUD 70.2 million to establish a hydrogen export hub.





# PROJECT DEVELOPMENT IN SOUTH EAST ASIA

## Identified new projects (early stage)

### **Repsol Project - Indonesia**

- Repsol and partners Petronas and MOECO made a large gas find in in South Sumatra, in 2019. Preliminary estimate of >2TCF recoverable resources.
- The raw natural gas contains high CO<sub>2</sub> concentrations. Project examining transporting separated CO<sub>2</sub> to depleted hydrocarbon reservoirs nearby for underground storage.

### **Petronas Project - Malaysia**

- Petronas has commenced work on a CO<sub>2</sub> storage unit for its high CO<sub>2</sub> (40-70%) natural gas development project offshore Sarawak, Malaysia.
- FID in 2022 and injection in 2025.

### **Gundih CCUS Project – JCM Feasibility Study**

- J-POWER and JANUS have been awarded funding by Japanese Government to do feasibility study for a CCS Demonstration in Gundih, Indonesia.
- The targeted gas field contains 20% CO<sub>2</sub> and its annual amount is around 300,000 tonne.



# PROJECT DEVELOPMENT IN EAST ASIA

## **Toshiba BECCS Demonstration Project, Mikawa, Japan**

- Construction completed and commissioning underway.
- First BECCS project in Japan. Biomass materials are sourced from Southeast Asia.
- 500 tonne CO<sub>2</sub> per day capture.

## **China Energy Investment Corporation Jinjie Carbon Capture Project, Shaanxi**

- Absorber and regenerator installed in August.
- 150,000 tonne CO<sub>2</sub> per year capture from a coal-fired power station.
- Total capital expenditure of \$5.3 billion and operational expenditure \$450 million pa
- 1,500 jobs during construction and 200 during operation.
- Project expects to close funding in December 2020 and be operational by 2025.

## **Tomakomai CCU Project, Japan**

- Industry consortium funded by NEDO to research the effective recycling of carbon dioxide emitted from the refinery at TOMAKOMAI City, Hokkaido.



# THANK YOU

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