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# A GLOBAL PERSPECTIVE ON CCS

3<sup>RD</sup> ASIA CCUS NETWORK FORUM

JARAD DANIELS  
CEO, GLOBAL CCS INSTITUTE



GLOBAL CCS  
INSTITUTE

# THE GLOBAL CCS INSTITUTE

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

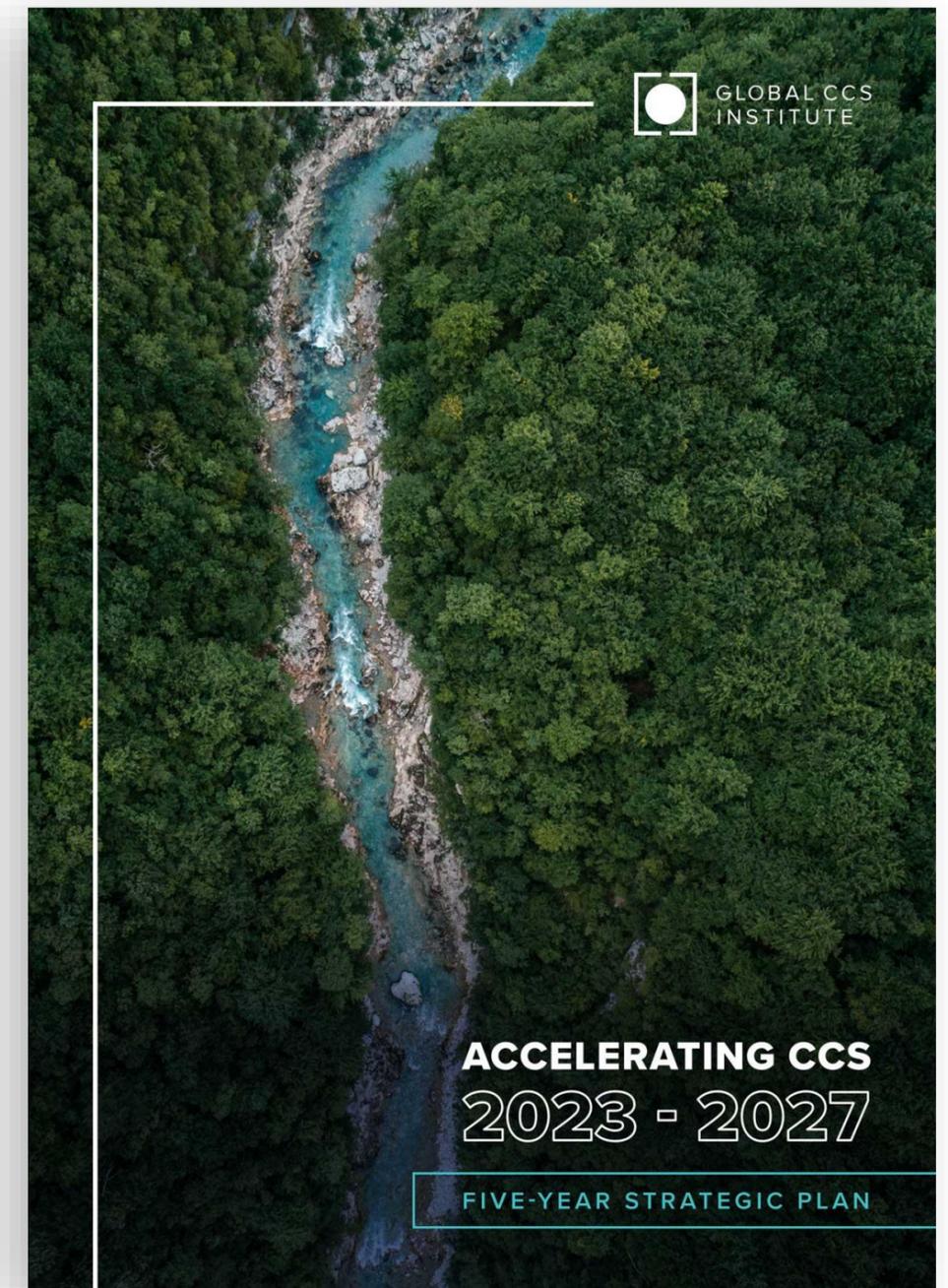
## **WHO WE ARE**

International CCS think tank with offices around the world.

Over 200 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.



# CCS AND REACHING NET-ZERO



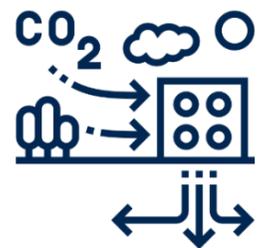
Achieving deep decarbonisation in hard-to-abate industry.



Enabling the production of low-carbon hydrogen at scale.

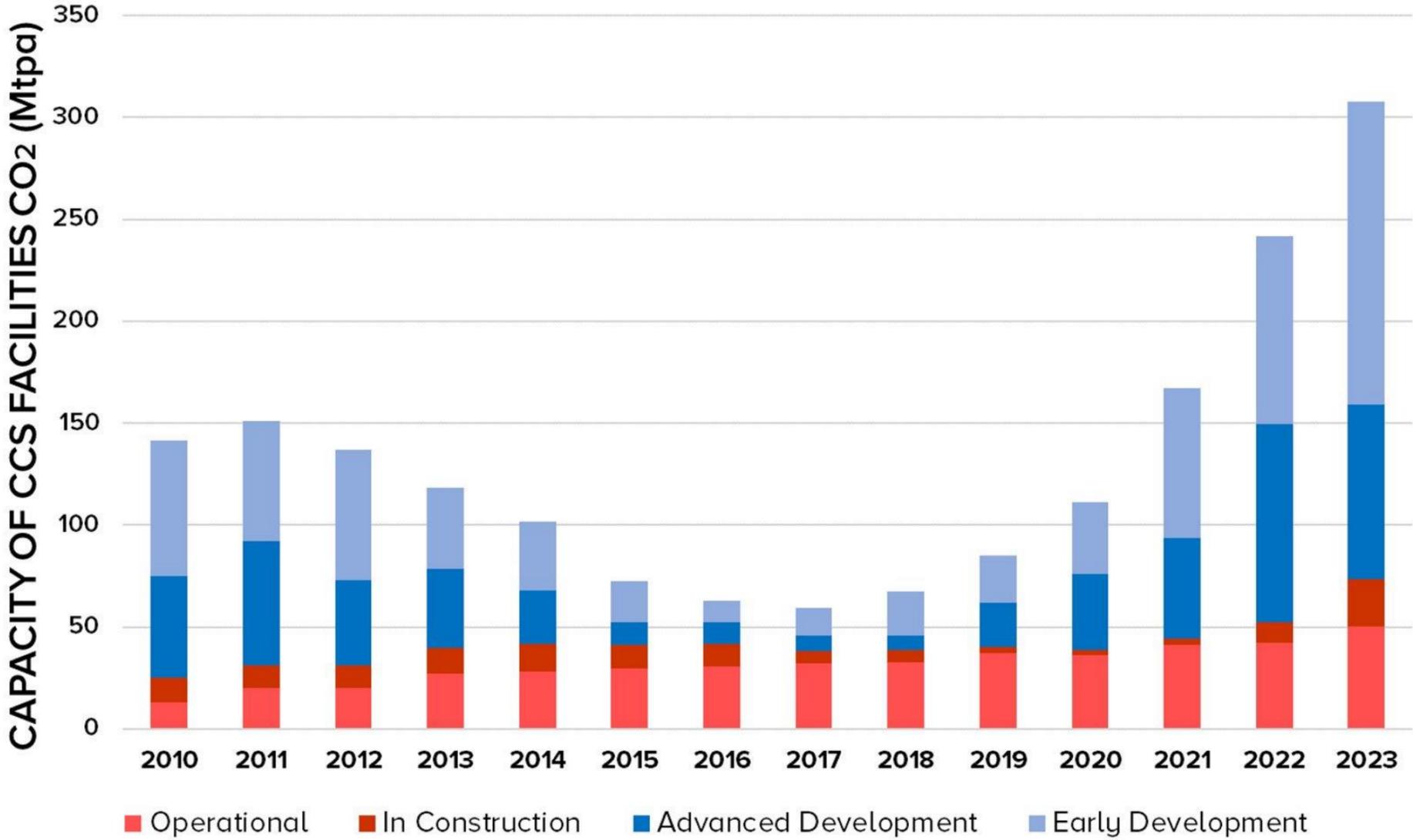


Providing low carbon dispatchable power.



Delivering negative emissions.

# CCS FACILITY PIPELINE GROWING



Status	GSR 2022	CO2RE 2023
Operation	30	37
Construction	11	20
Adv Dev	78	97
Early Dev	75	103
<b>Total</b>	<b>194</b>	<b>257</b>

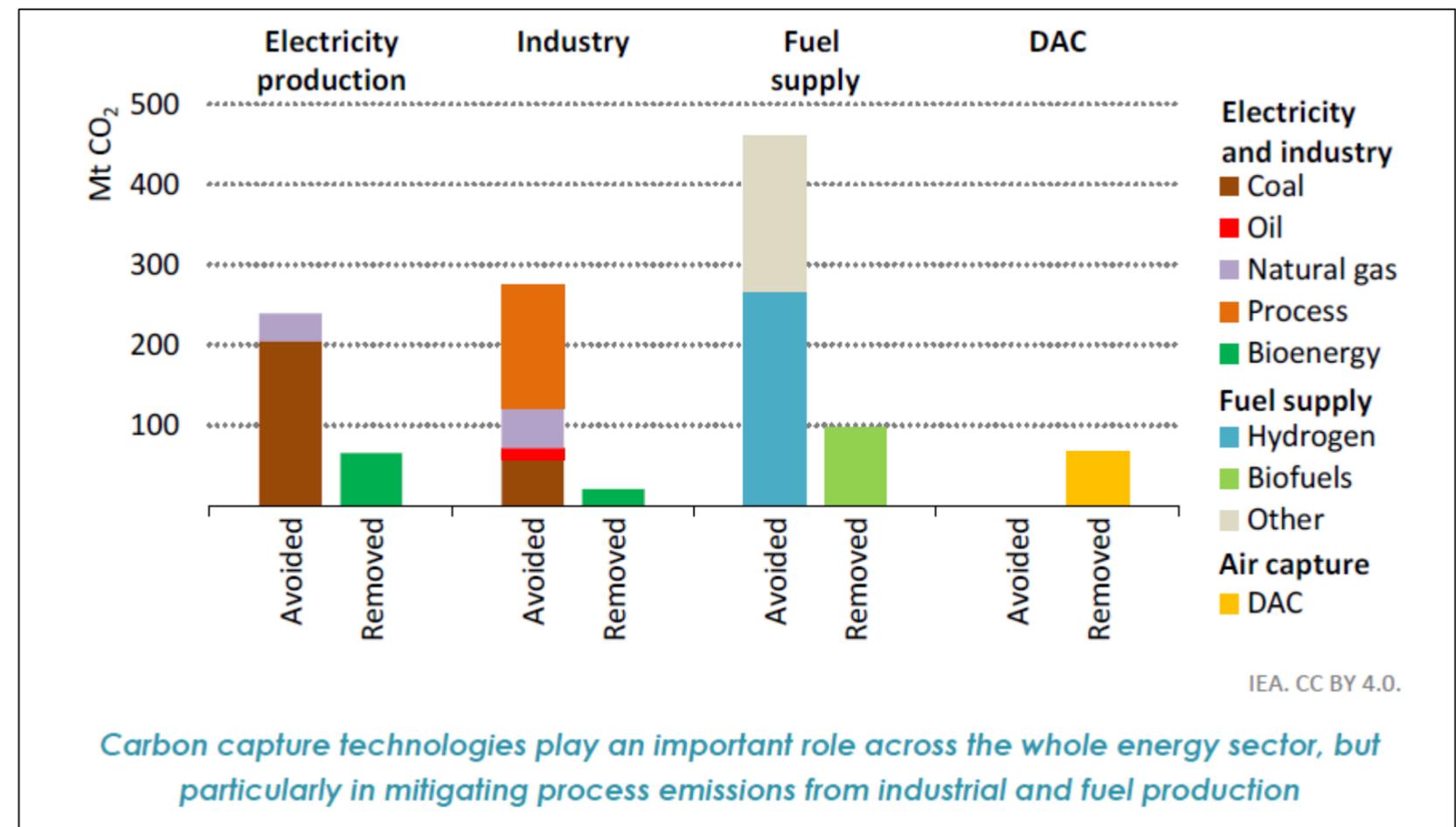
\* By capture capacity



# SCALING UP THROUGH 2030

- According to IEA NZE, 1.2 GtCO<sub>2</sub> per annum should be captured by 2030, including for removals.
- Capturing 1.2 GtCO<sub>2</sub> by 2030 as modelled, requires 25-fold increase over current operational capacity and 4 times increase over the current pipeline.
- CCUS is required across diverse sectors and is increasingly important to industry.
- Stronger policy to incentivise rapid CCS investment is needed.

**Total CO<sub>2</sub> capture by sector and type in the NZE, 2030**



IEA. CC BY 4.0.

*Carbon capture technologies play an important role across the whole energy sector, but particularly in mitigating process emissions from industrial and fuel production*



# COUNTRIES SHOWING INCREASING AMBITION

- **The EU** needs to have 300 to 550 mtpa of installed CCUS capacity by 2050 to meet its NZE target. Net-Zero Industry Act aims to have **50 mtpa** storage developed by 2030.
- **The UK's** CCUS roadmap foresees **20 to 30 mtpa** of installed capacity by 2030.
- **The US**, through the Inflation Reduction Act (IRA), has given immense stimulus to the deployment of CCUS and Direct Air Capture (DAC) and could increase the deployment of CCS by 13-fold\* compared to existing policy to between **200 and 250 mtpa** of capacity by 2030.
- **Japan** announced its CCS Long-Term Roadmap in January 2023, setting a target for Japan's first commercial CCS projects to commence by 2030 and aiming to store up to **240 Mtpa** of CO<sub>2</sub> by 2050.
- **The KSA** has announced the target of capturing and storing **44 mtpa** by 2035.
- In **Brazil**, Petrobras injected more than 10 mt of CO<sub>2</sub> in 2022, a world record for a company, and aims to inject **40 mtpa** between 2023 and 2025.

\* According to analysis carried out by REPEAT project



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# CCS DEVELOPMENTS AROUND THE WORLD

- **EUROPE**

- CCUS in Net-Zero Industry Act; EC developing CCUS strategy
- The EU through, the Innovation Fund, to invest in 22 CCS and CCU projects (and counting)
- Netherlands, Denmark, the UK are progressing their CCS policies and projects.

- **NORTH AMERICA**

- The US leads globally with project and policy development.
- In Canada, CCUS Strategy under development and CCUS investment tax credit in federal budget.

- **MENA**

- 3 facilities in operation in the region, equivalent to ~10% of global capture capacity.
- Ambition and momentum going into COP28.

- **APAC**

- JOGMEC selected 7 candidate projects for feasibility studies in Japan and overseas
- China's first 1 Mtpa CCUS facility started operations in 2022, with several other projects now in construction or in development.
- Project progress in Malaysia, Indonesia, and Australia



# SOUTHEAST ASIA CCS ACCELERATOR (SEACA)

Objective: To accelerate investment in carbon capture and storage (CCS) in Southeast Asia

## SEACA Pillars

CCS Regulation	Enabling Policy	Geological Storage
To develop fit-for-purpose guidance on CCS regulation in Southeast Asia to support the development and promulgation of legislation.	To identify and define specific policy options that will enable investment in commercial CCS projects in Southeast Asia and to support their development and implementation by relevant governments.	To discover and where possible, release data relevant to geological storage resource appraisal and materially advance geological storage resource development in Southeast Asia. To complete a Geological Storage Resource Assessment Gap Analysis for Southeast Asia.

Engage Stakeholders → Identify Projects → Define Specific Barriers → Develop Specific Solutions

Focus on Near-Term Deployment



# FINANCIAL FRAMEWORK FOR DEPLOYMENT OF CCUS IN THE ASEAN REGION

The Institute is undertaking research and analysis on the financial framework needed to deploy CCS in the ASEAN region in order to:

- Understand the role that a CO<sub>2</sub> market price will have in the Asia region and how this price will affect CCS projects
- Forecast the required investment for the deployment of CCS in the Asia Region
- Identify the roles of public and private finance for CCS projects
- Identify the financial risks for private sector debt financing and equity investments in CCS projects

The Institute has developed “Global economic net zero optimisation (GENZO) model”

- CO<sub>2</sub> prices needed for net zero targets with and without CO<sub>2</sub> trading
- CO<sub>2</sub> captured by sector/application in ASEAN



# LESSONS LEARNED

- Despite significant progress since 2017, more is required, urgently.
- CCS capacity needs to scale from 50 million tons today to multiple gigatons by mid-century.
- Capital investment of \$655 billion - \$1.28 trillion is required over the next 30 years.
- Governments to establish appropriate policies; Industry to build, own, and operate CCS facilities at scale and the Finance Sector to include CCS in their portfolios, ESG and green taxonomies.
- Stronger policy coupled with strong action by 2030 is crucial.



# WHAT IS NEEDED GLOBALLY?

- 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<sub>2</sub>.
- 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.



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# THANK YOU