

# ***HYDROGEN AND CCS***

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GLOBAL CCS  
INSTITUTE

- **International think-tank** backed by governments, businesses and NGOs
- **Mission:** Accelerate the deployment of CCS globally
- **Member-owned** company: Melbourne, Washington DC, London, Brussels, Tokyo and Beijing
- **62 members** including governments, multi-national energy companies, technology providers, research organisations and NGOs



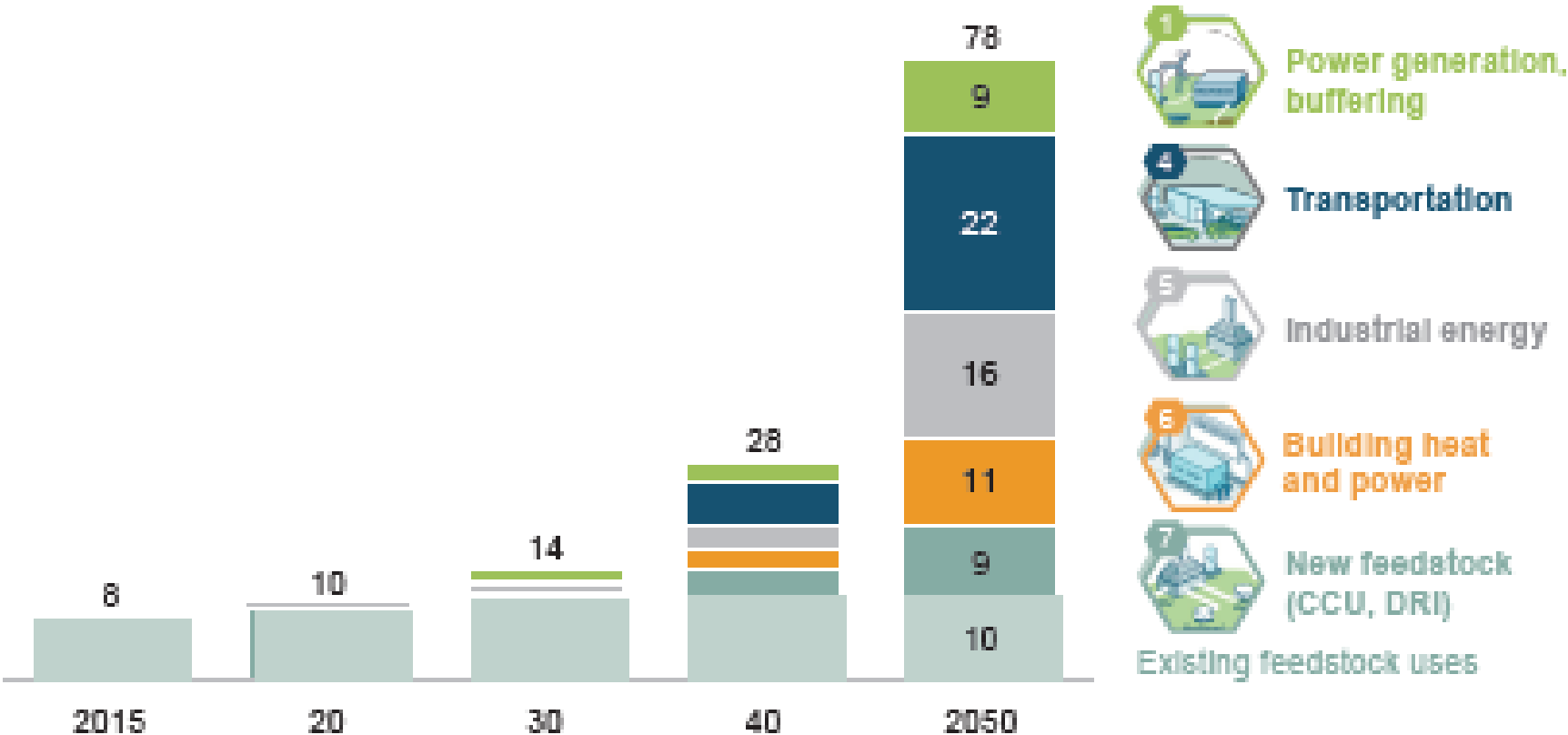
# THE CONTEXT

- Paris Agreement targets are super challenging
- A new energy economy is required
  - Electricity is transformational
  - New zero and ultra-low emission fuels
  - CDR to mop up residual emissions and the overshoot
- Hydrogen is a fast emerging part of the decarbonisation roadmap
  - Zero emission, flexible fuel
  - High heat need applications
  - Energy density and transportability features



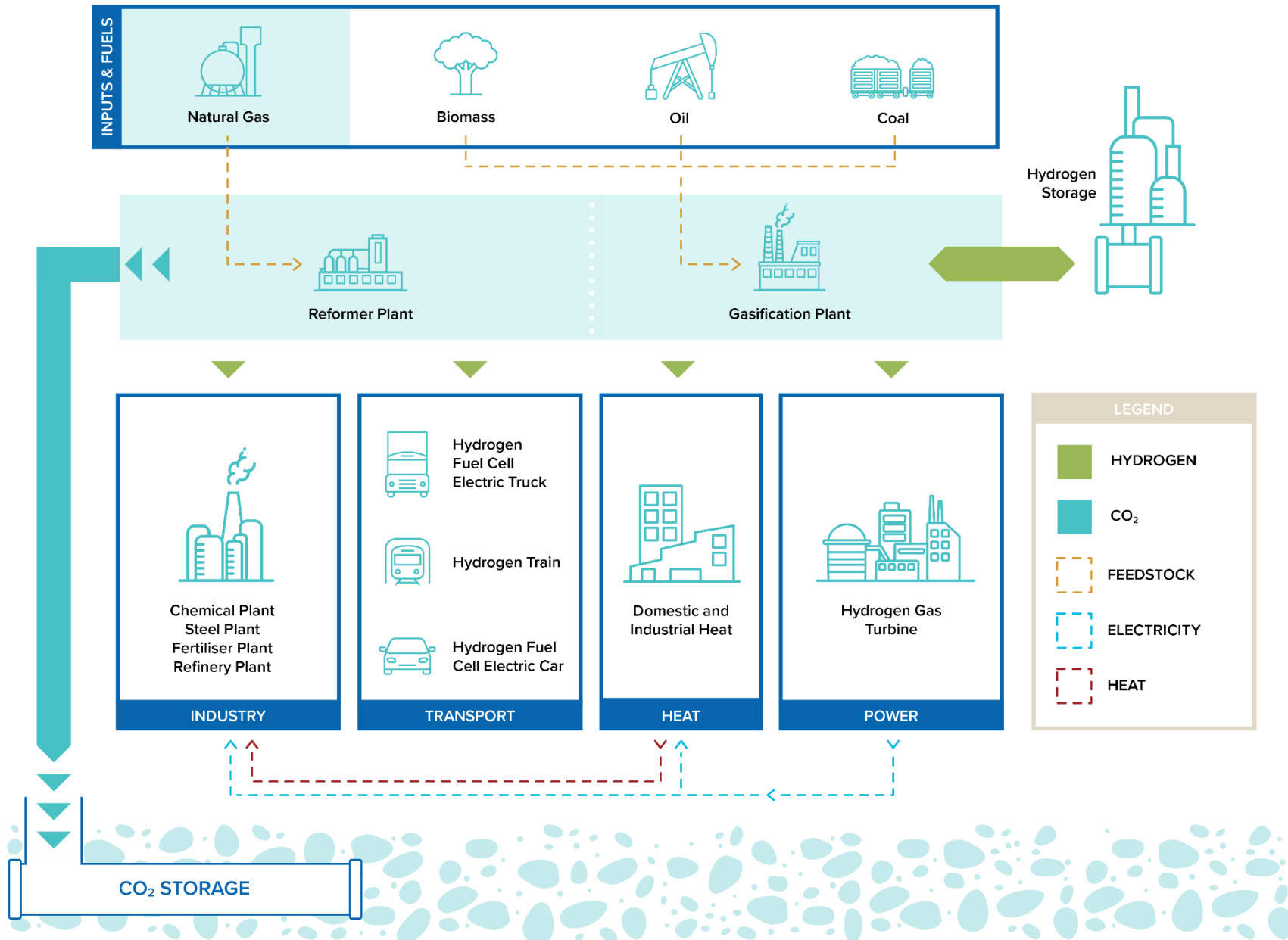
# THE LIKELY DEMAND

Global energy demand supplied with hydrogen, EJ

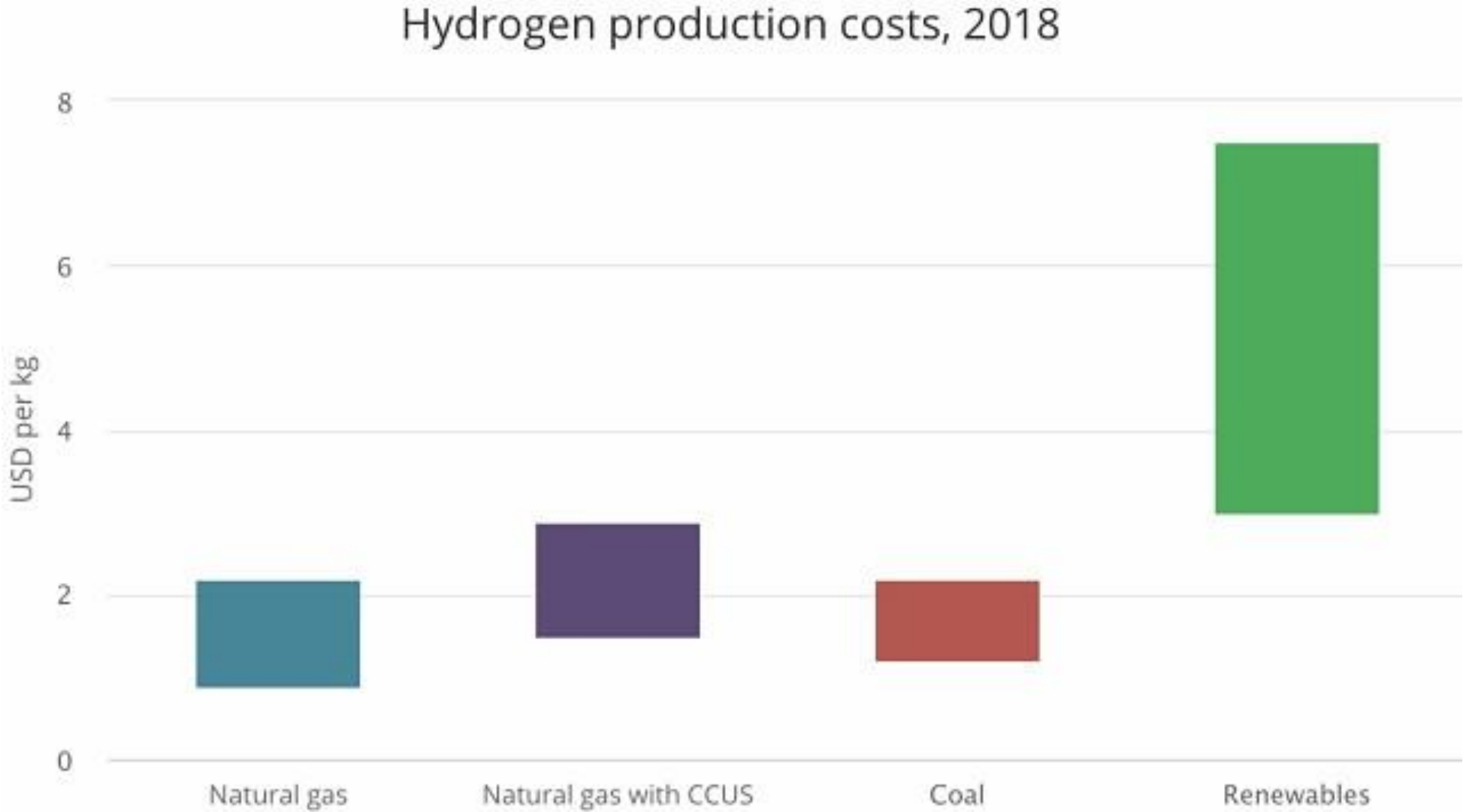


Source: COAG Energy Council National Hydrogen Strategy Issue Paper 1, Figure 1, p3

# CCS IS SIGNIFICANT FOR HYDROGEN PRODUCTION

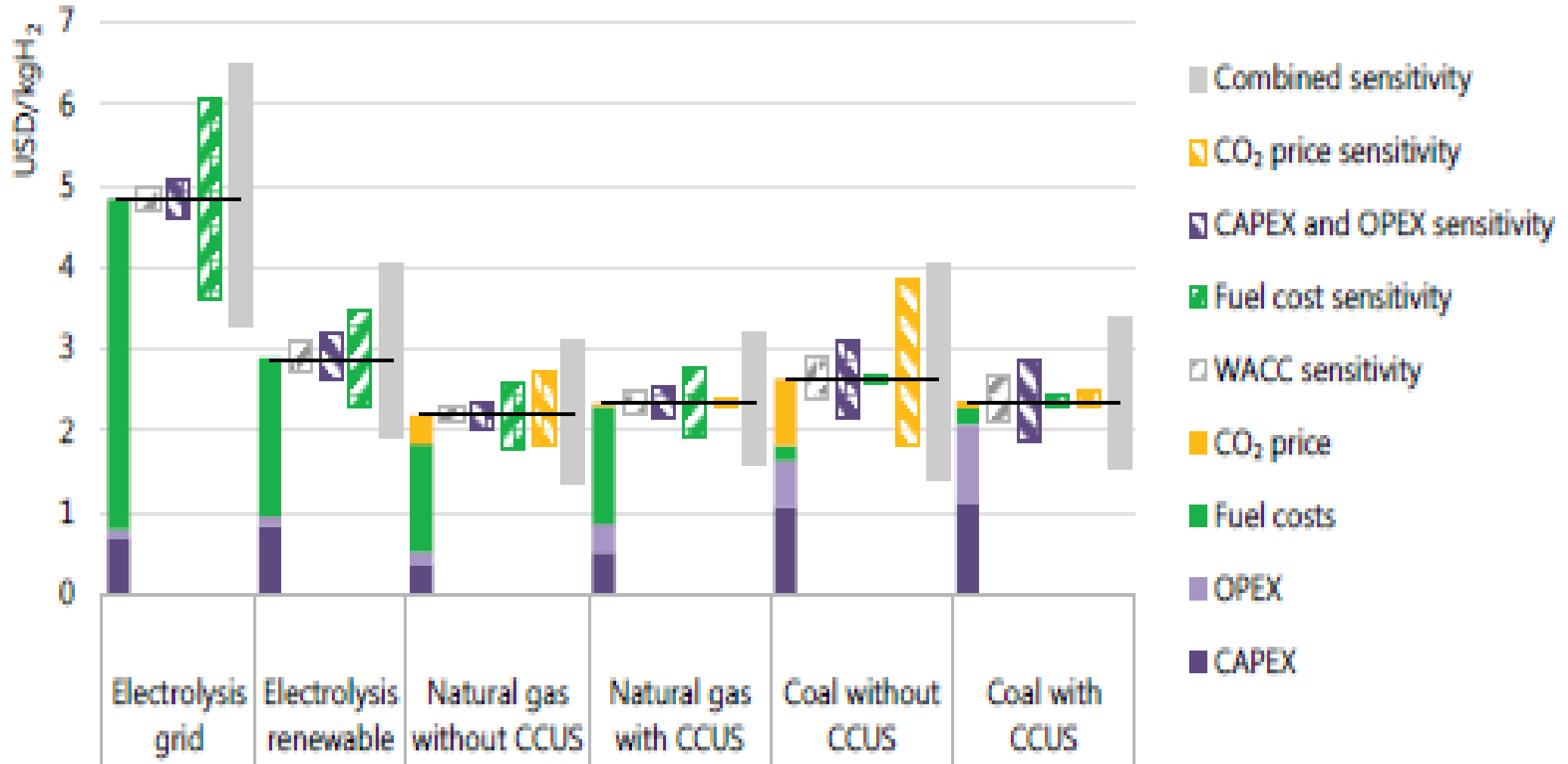


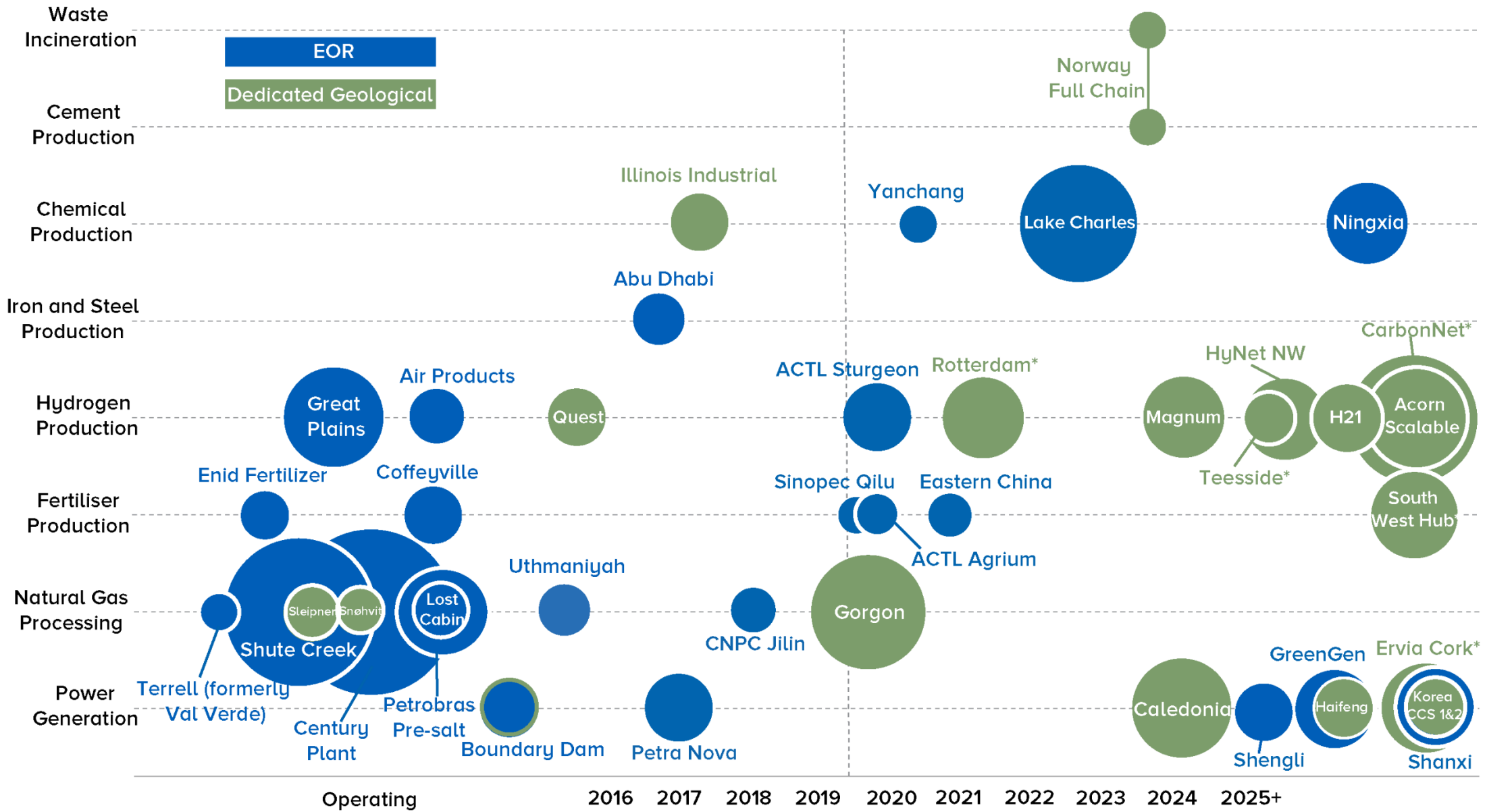
# HYDROGEN PRODUCTION COSTS - 2018



Source: <https://www.iea.org/hydrogen2019/>

# HYDROGEN PRODUCTION COSTS 2030





○ = 1 Mtpa of CO<sub>2</sub> (area of circles proportional to capacity)

\* Various industries. Only the primary industry type is showed here



# GREAT PLAINS SYNFUEL PLANT AND WEYBURN-MIDALE

- **Large-scale operation** since October 2000
- **Location:** North Dakota
- **Industry:** Synthetic natural gas (mixture of H<sub>2</sub> and CO from brown coal gasification)
- **Capture Type:** Industrial separation via Rectisol solvent absorption (3.0 Mtpa)
- **Storage:** CO<sub>2</sub>-EOR in Weyburn and Midale oilfields
- **Milestone:** Since 2000, Great Plains Synfuel Plant has captured and transported nearly 35 million tonnes of CO<sub>2</sub> for enhanced oil recovery.



# HYDROGEN, CCS AND THE LATROBE VALLEY

## *Natural Advantages*

- Abundant, ultra low cost brown coal; otherwise a stranded resource?
- Extensive sunk cost infrastructure
- Highly skilled workforce, tertiary education facilities
- Extractive resource familiarity in the community
- Well characterised geological storage nearby offshore

## *Just Transition*

- Carbon constrained future confronting for local and regional economy
- Climate change does not mean no fossil fuels; addressing CO<sub>2</sub> is the issue
- CCS can deliver regional jobs, strong economy and efficient new industries

***BEWARE THE COMPETITION***



# CLIMATE TALKS

# ACTION

JOIN THE UNDERGROUND

PARIS CLIMATE CHANGE TARGETS  
CANNOT BE MET WITHOUT CARBON CAPTURE AND STORAGE



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