



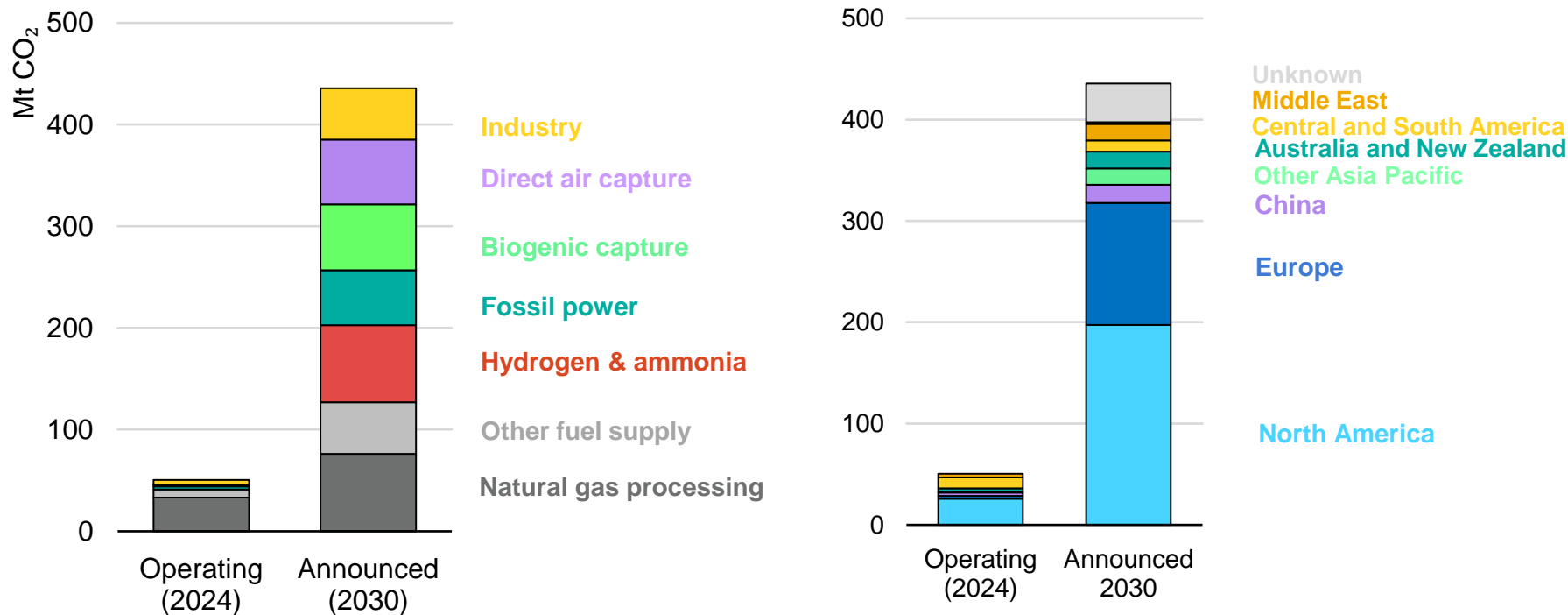
CCUS in clean energy transitions

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IENE workshop: The Economics of CCUS Applications, 12th March 2025

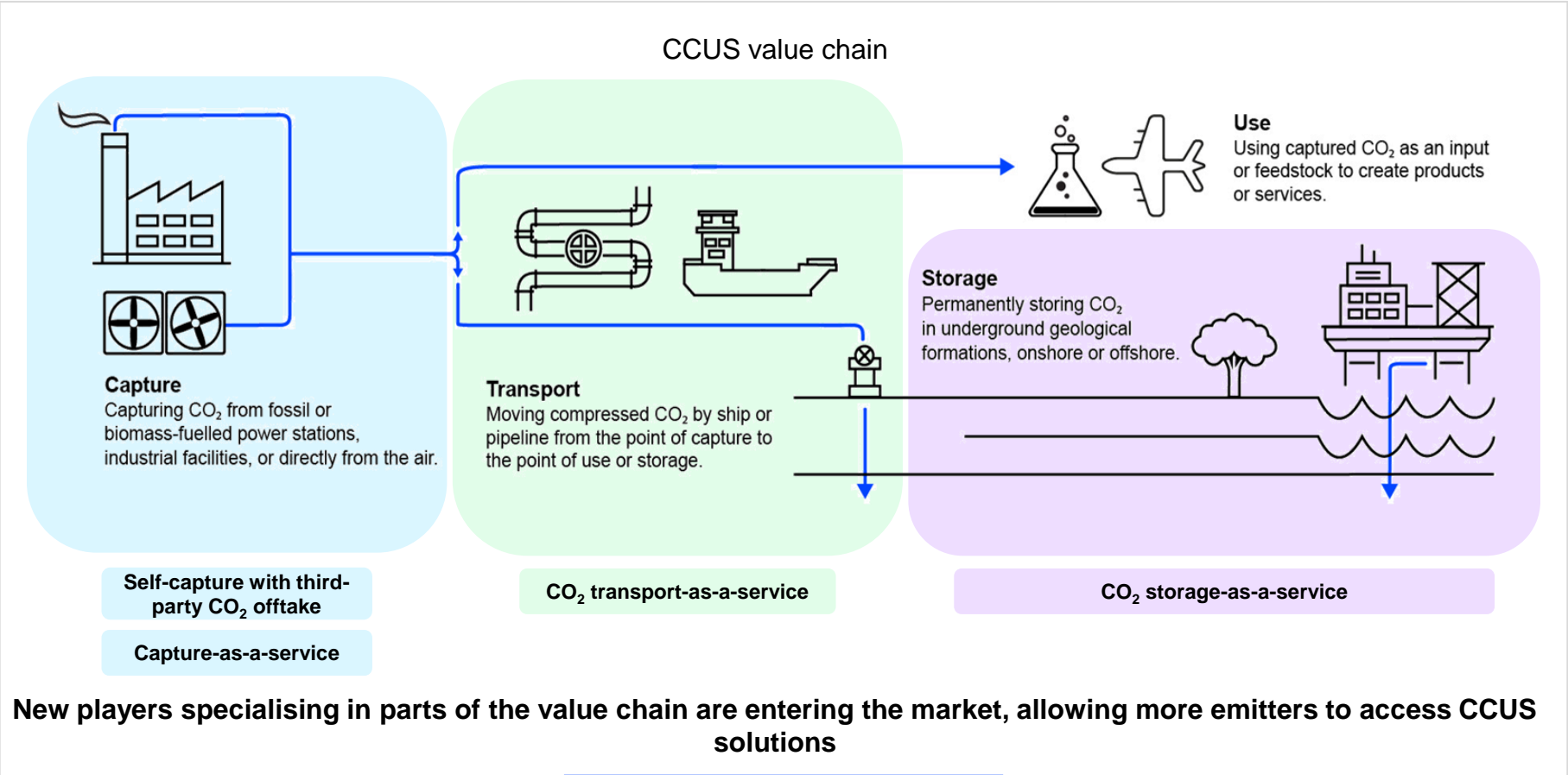
CCUS projects are diversifying from historical applications

Operating (2024) and announced (2030) capture and storage capacity by sector and region

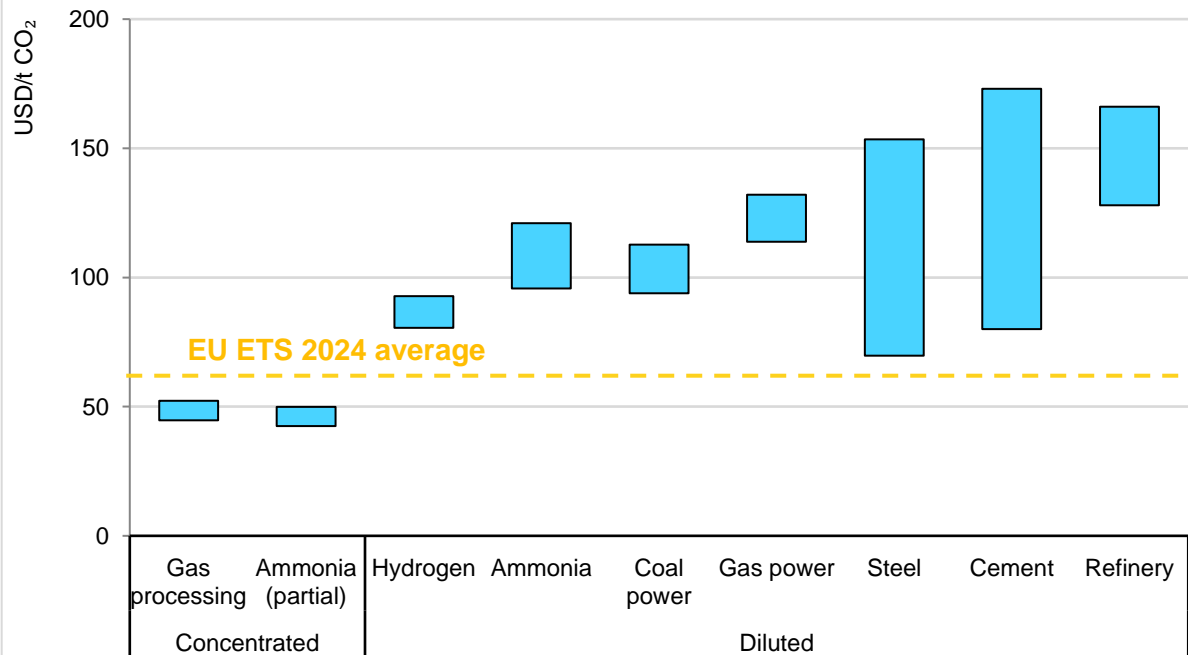


Two-third of operating capture capacity is on natural gas processing plants but the project pipeline shows important diversification towards key sectors. North America leads in planned capacity but Europe is a close second.

From full-chain to part-chain business models



Levelised cost of carbon avoided for a range of applications

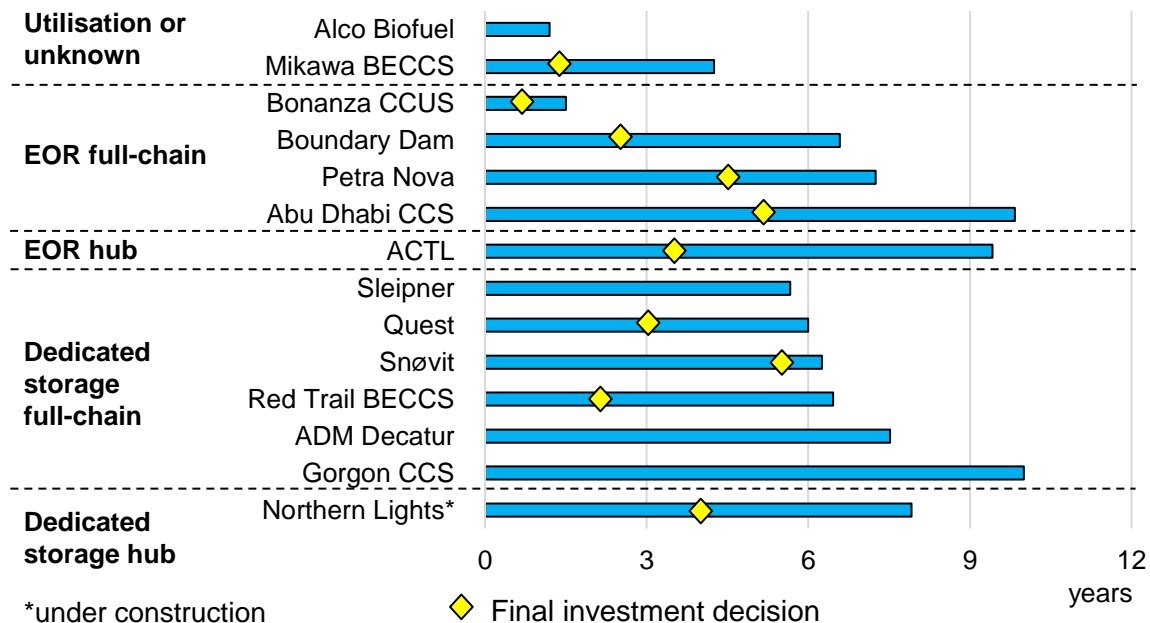


Policy tools

- ✓ Grants, tax credits, loans
- ✓ Public procurement and mandates
- ✓ Carbon pricing and leakage policy
- ✓ (Carbon) contracts-for-difference
- ✓ Regulated asset base

Carbon prices in the European Union currently have limited ability to incentivise dilute applications. Policy tools are available to support higher-cost projects

Lead times of projects in operation



Policy tools

- ✓ One-stop shop for permitting
- ✓ Clear approval timelines
- ✓ Regulatory capacity
- ✓ Precompetitive resource assessments
- ✓ Data sharing and transparency
- ✓ Community engagement

Projects have taken between 2 and 10 years to reach completion, with a median around 6 years. Lead times can be reduced where infrastructure is in place (hubs), but efforts are required to streamline procedures

CO₂ emissions clusters and storage hubs in planning in Europe, 2023

Storage

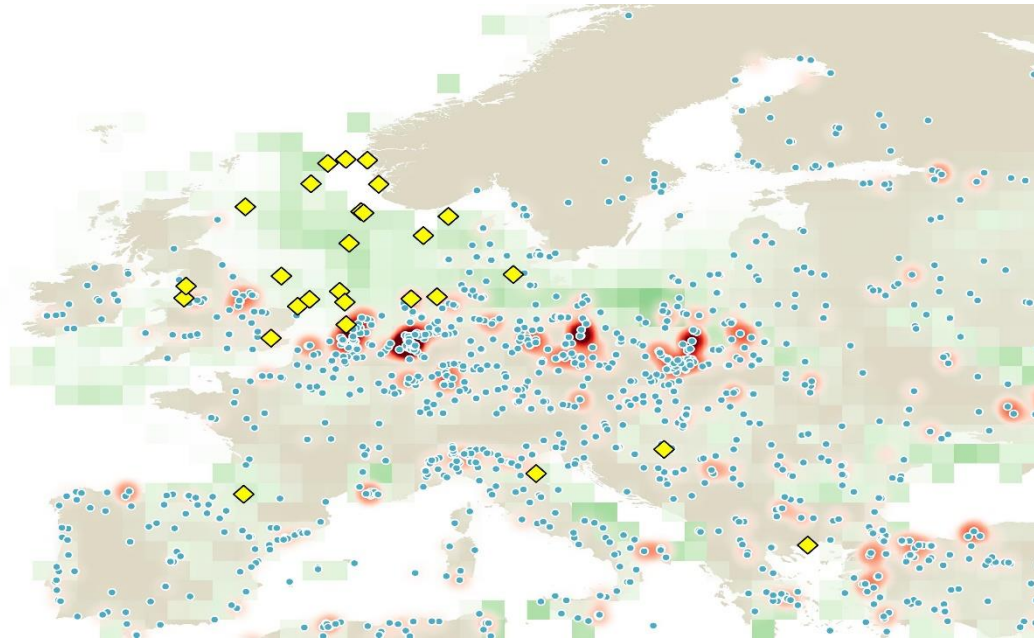
■ Potential

◆ Planned hubs

Emissions

■ Clusters

● Sources



Policy tools

- ✓ Long-term liability
- ✓ Competitive tenders for hubs
- ✓ One-off backstop agreements for first movers
- ✓ London Protocol

**Infrastructure deployment needs to adapt to sectoral requirements and regional contexts.
Governments have a central role to play in co-ordinating hub development**

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