



Global Hydrogen Review 2024

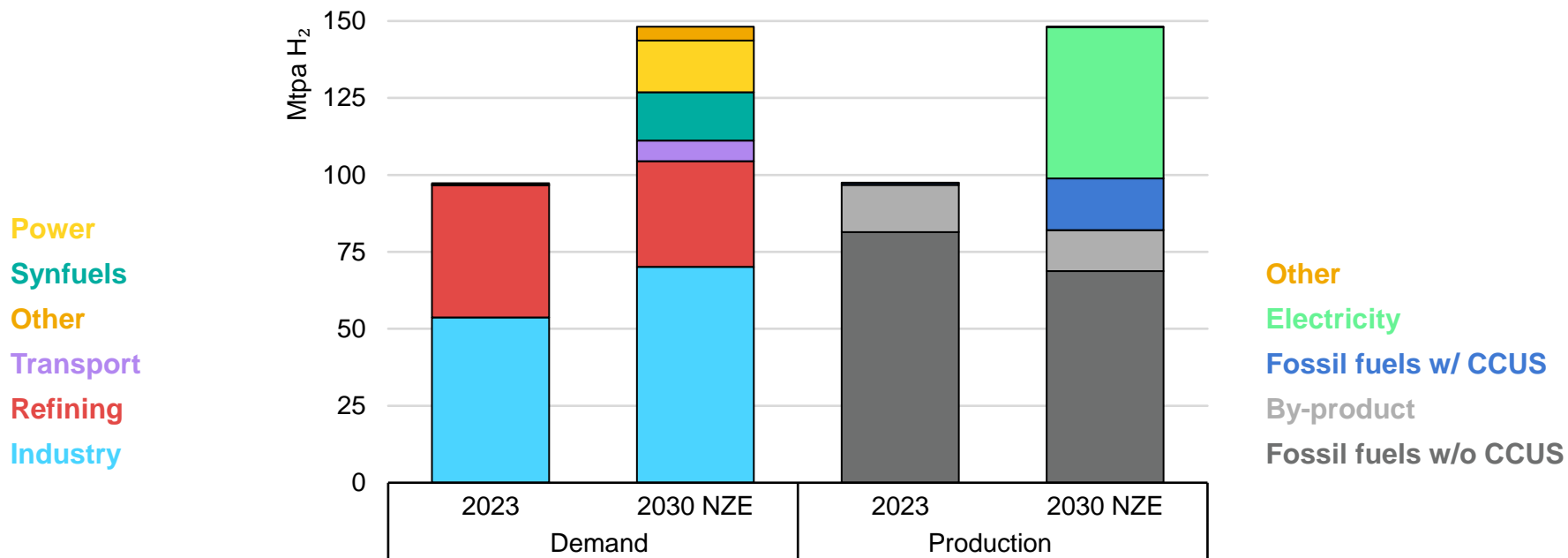
Hydrogen and Alternative Fuels Unit

Technical Webinar, Paris, 26 November 2024



The role of hydrogen in the energy transition

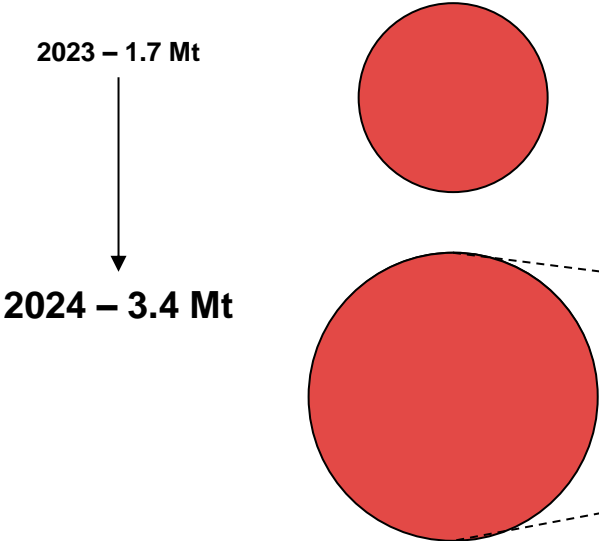
Hydrogen demand by sector and production by technology in the Net Zero Emissions by 2050 Scenario, 2023-2030



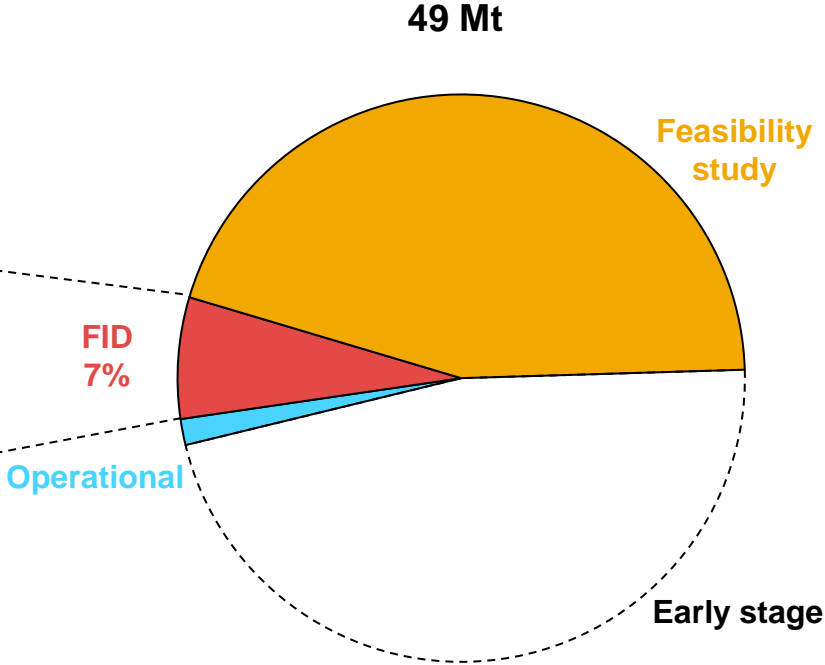
Hydrogen demand reached 97 Mt in 2023, less than 1% met with low-emissions hydrogen. In the NZE, hydrogen demand grows 50% by 2030, almost half being met with low-emissions hydrogen.

Investment decisions doubled in the last year

Low-emissions hydrogen production at FID



Announced projects for low-emissions hydrogen production, 2030

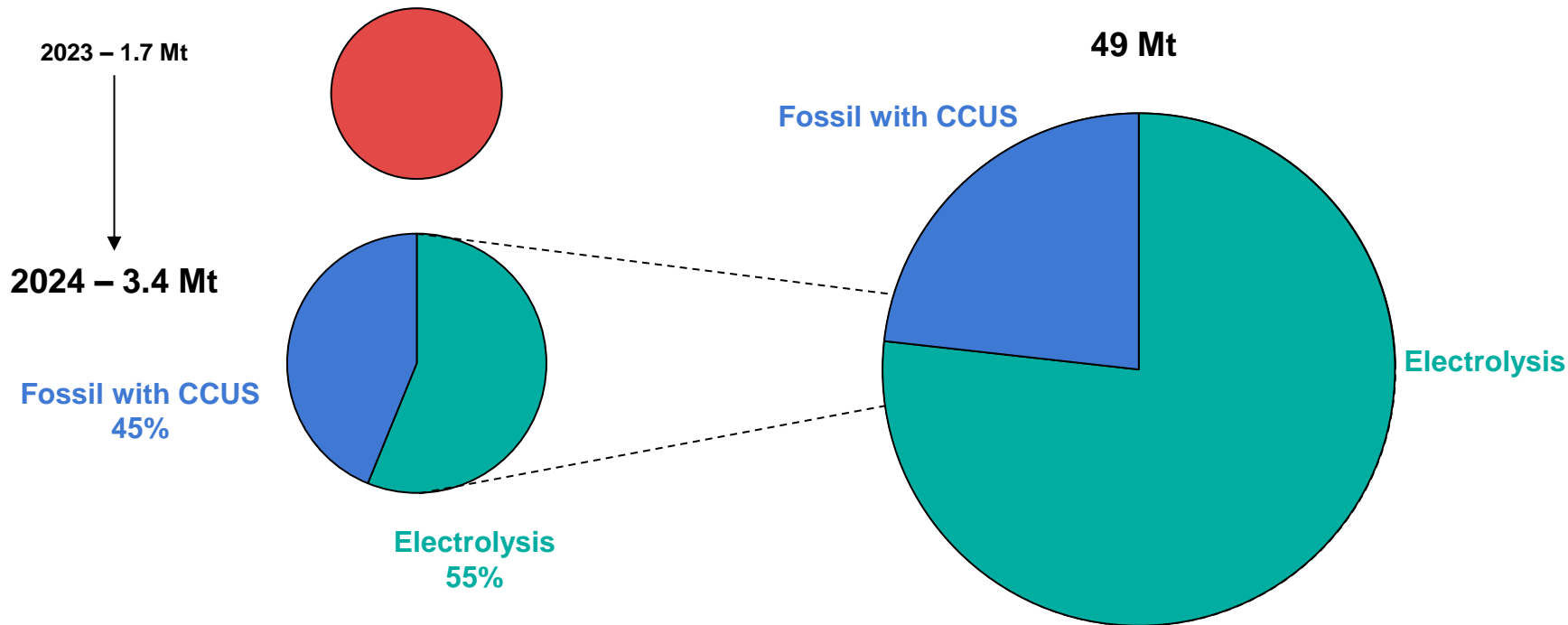


Low-emissions hydrogen of 4.1 Mt could be produced by 2030 from projects in operation today and those that reached FID, 6 times larger than in 2023.

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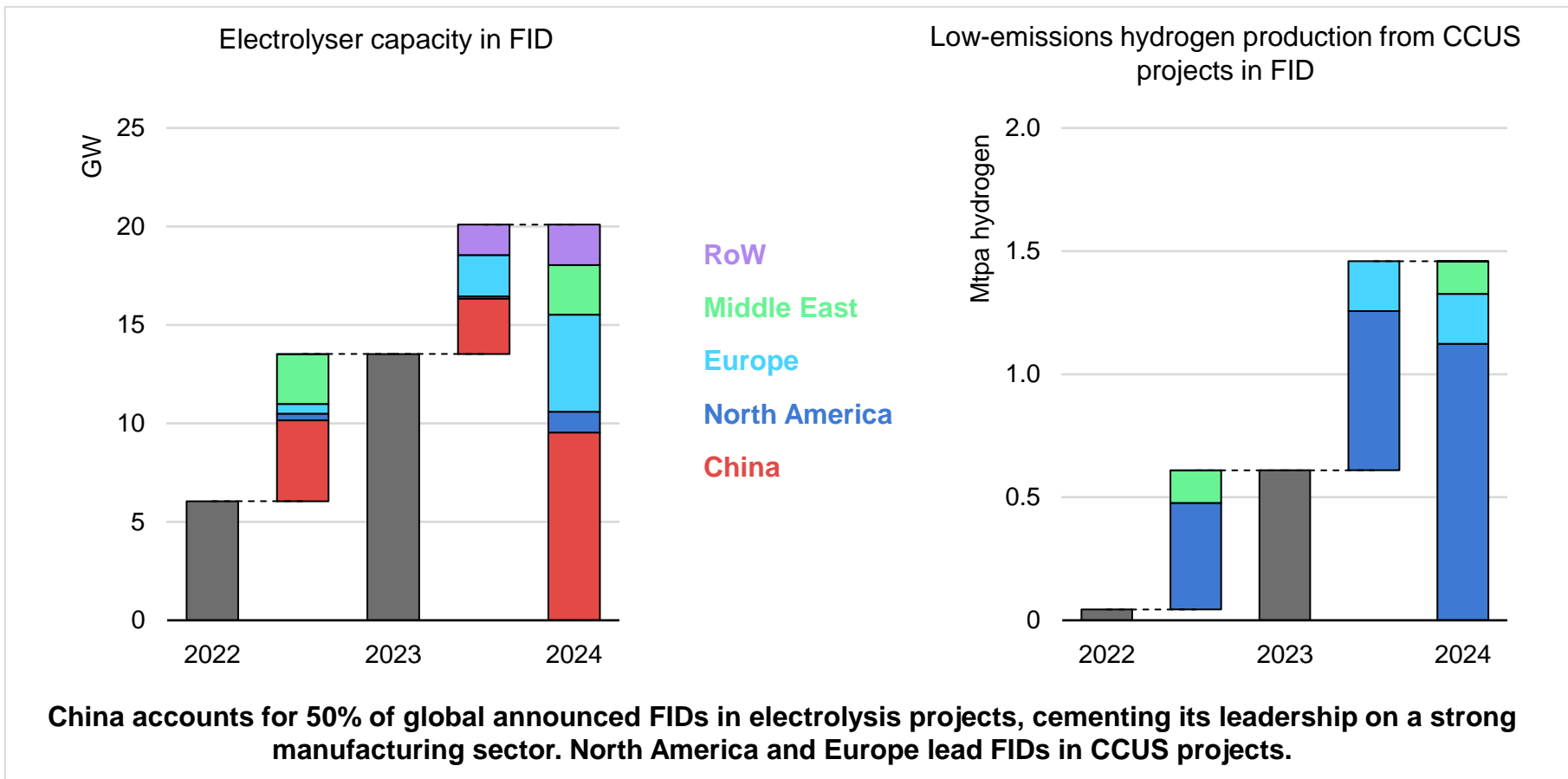
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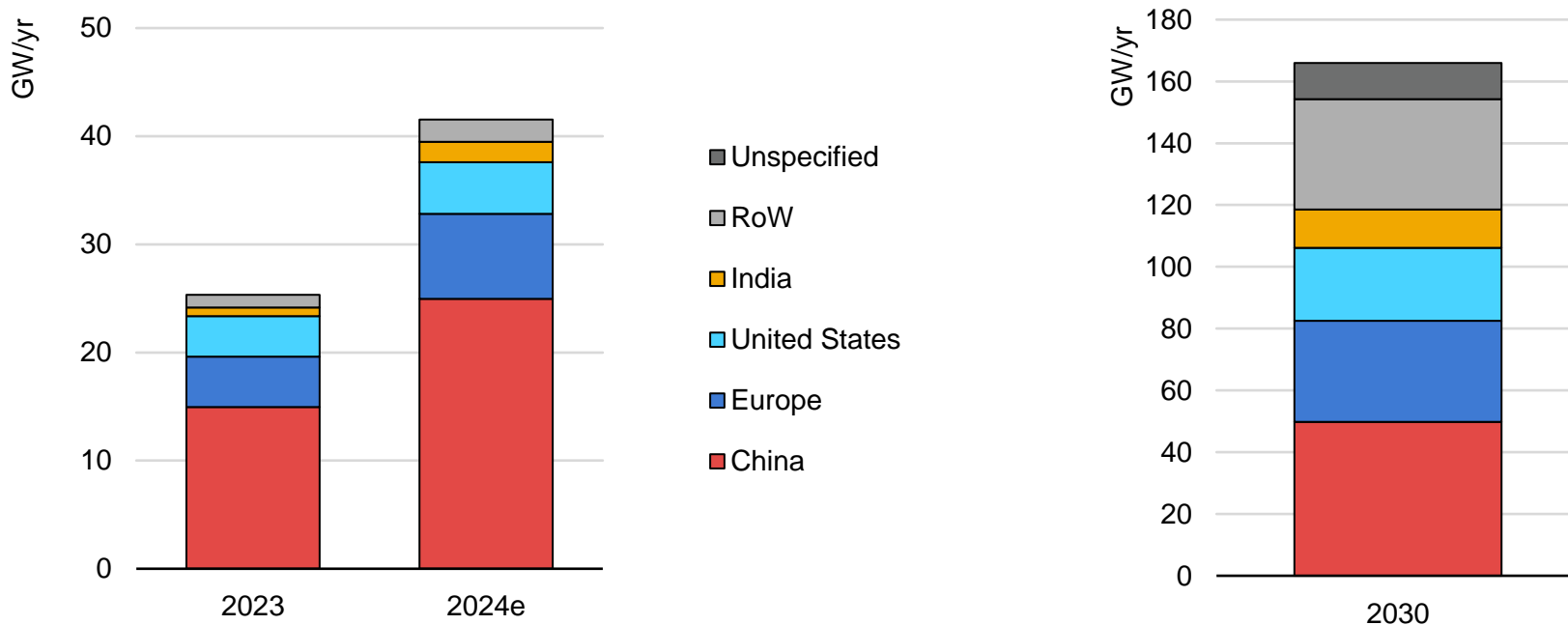
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China and electrolyzers: the sequel to solar PV and EVs?



Manufacturing capacity continues to scale up

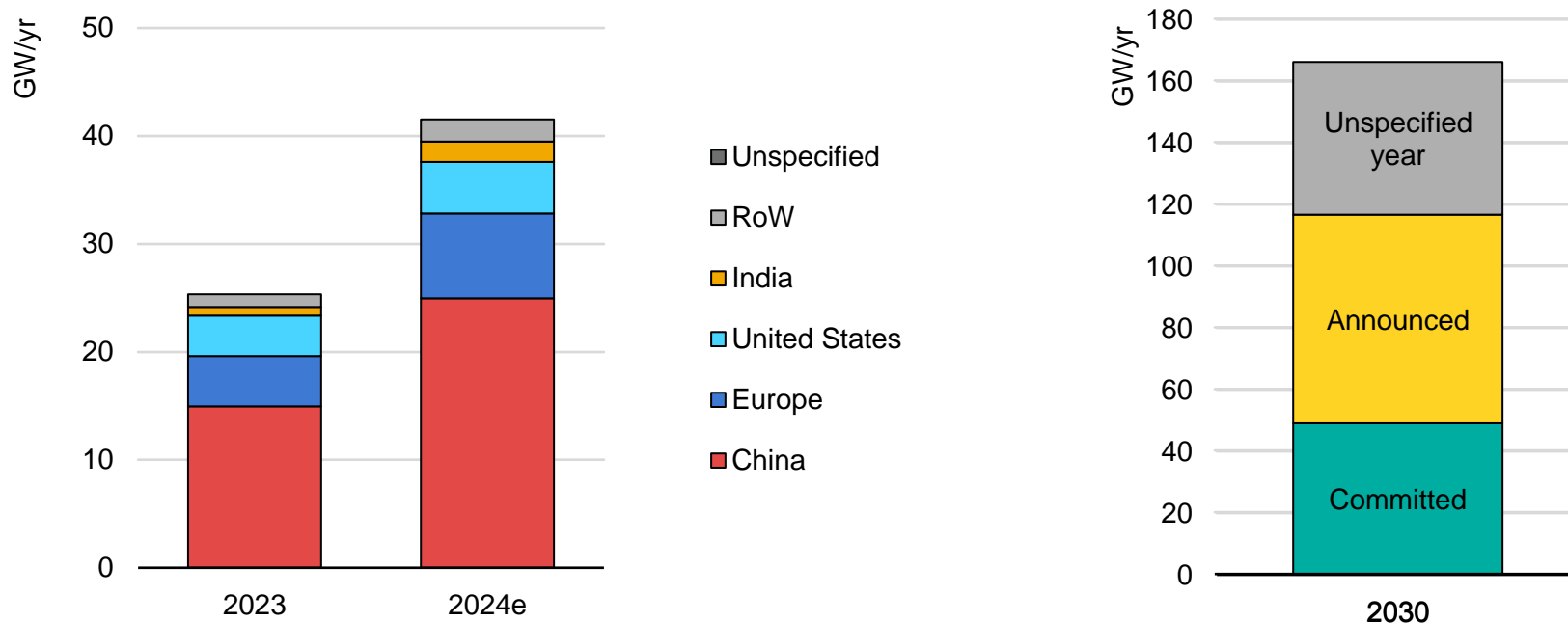
Installed electrolyzers manufacturing capacity and announced expansion in 2030 by region and status



China accounted for 60% of the manufacturing capacity in 2023 and is expected to maintain the lead in the short term. Capacity expansion by 2030 could be enough for the NZE needs if announced projects move ahead to FID.

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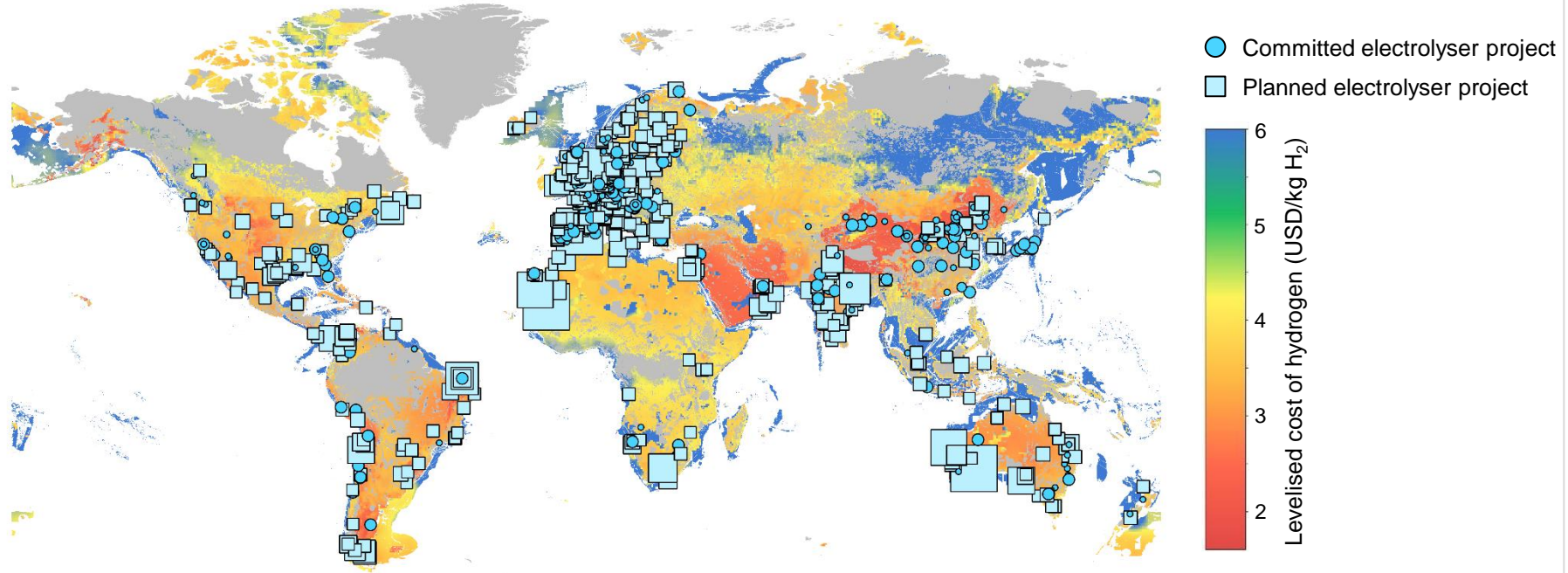
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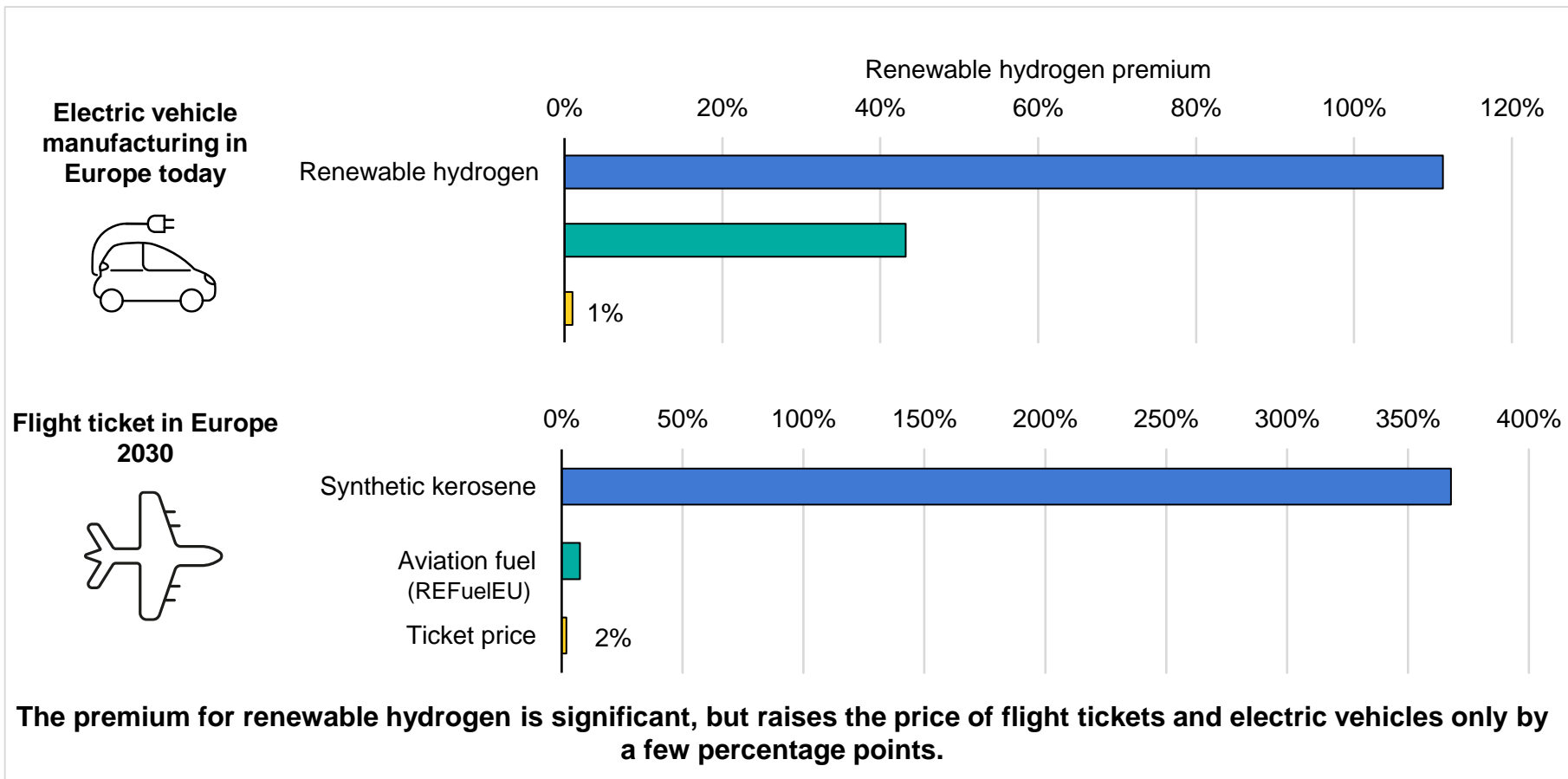
Scaling up deployment will bring down costs for renewable hydrogen

Hydrogen production cost from hybrid solar PV and onshore wind, and from offshore wind
in the Net Zero Emissions by 2050 Scenario, 2030

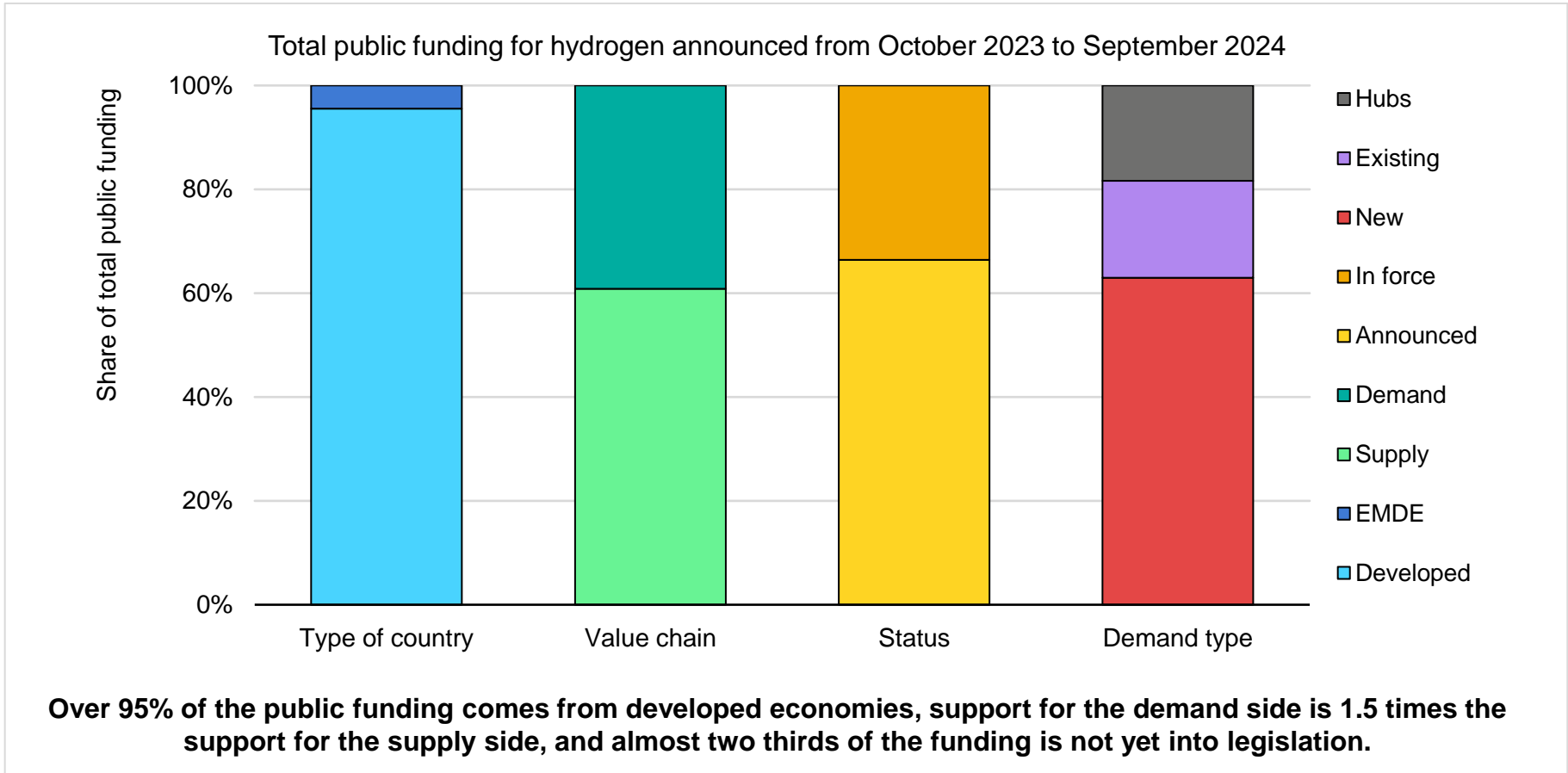


**Various regions around the world have excellent renewable resources for low-cost hydrogen production.
Production costs could fall below USD 2/kg H₂ by 2030 in certain locations.**

Cost premium in final goods and services is limited



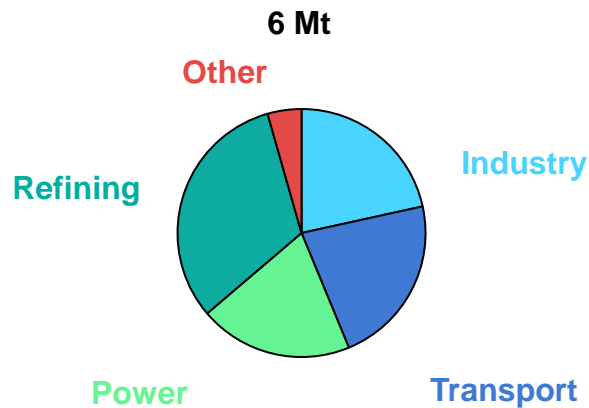
Over USD 100 billion of public funding announced in the past year



Over 95% of the public funding comes from developed economies, support for the demand side is 1.5 times the support for the supply side, and almost two thirds of the funding is not yet into legislation.

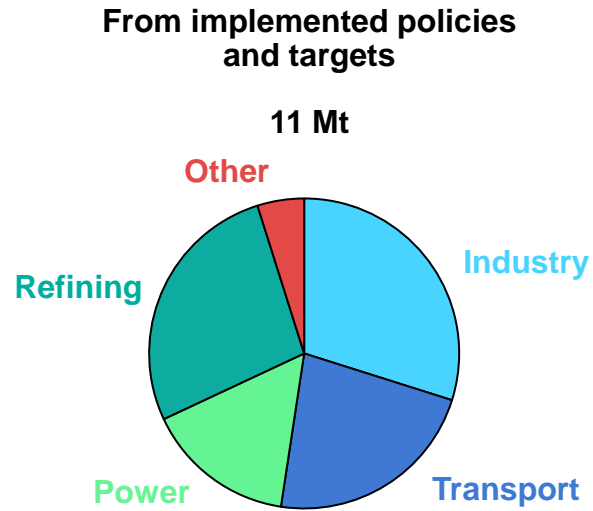
Potential annual demand for low-emissions hydrogen created by policy action, 2030

From implemented policies



Growing gap in policy ambitions between production and demand

Potential annual demand for low-emissions hydrogen created by policy action, 2030

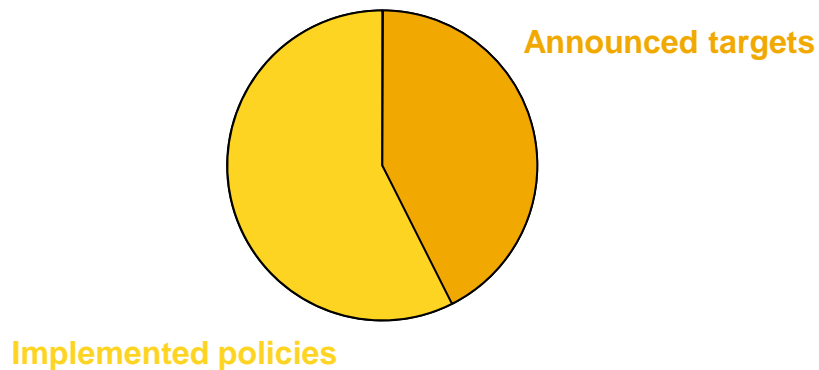


Growing gap in policy ambitions between production and demand

Potential annual demand for low-emissions hydrogen created by policy action, 2030

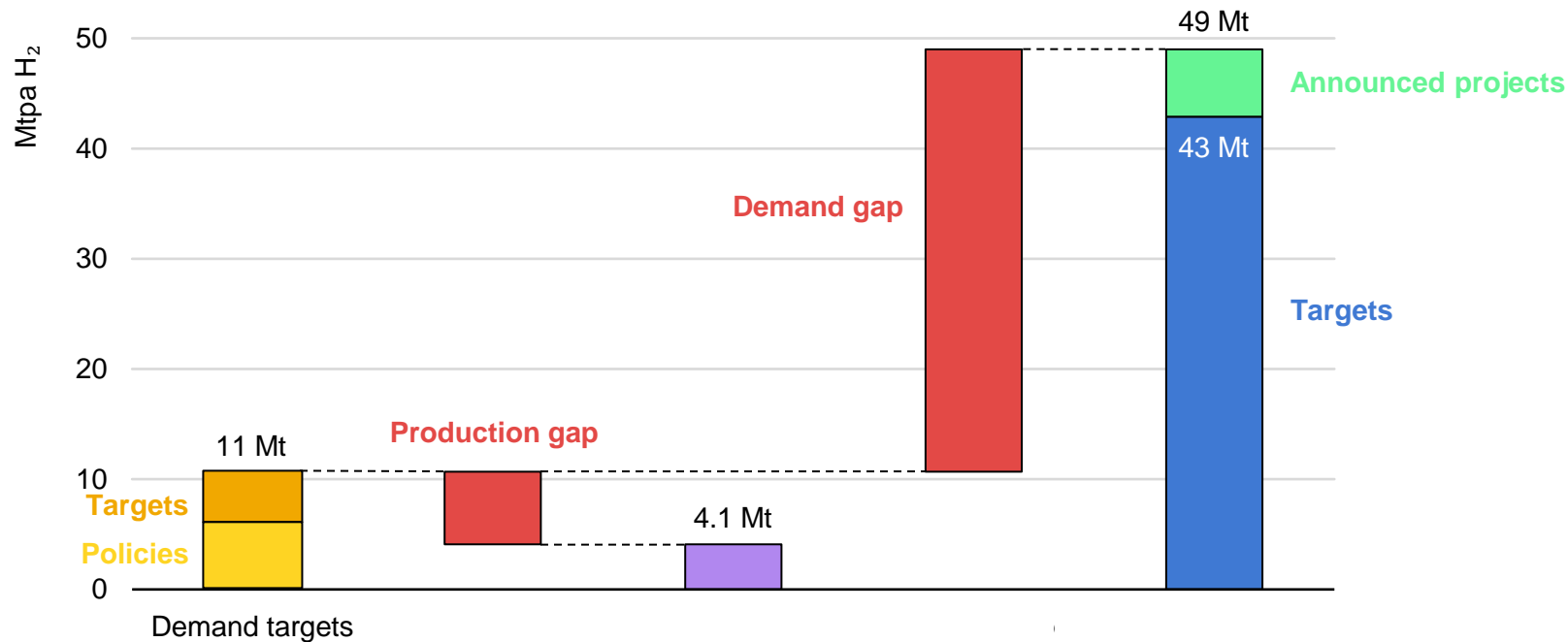
From implemented policies
and targets

11 Mt



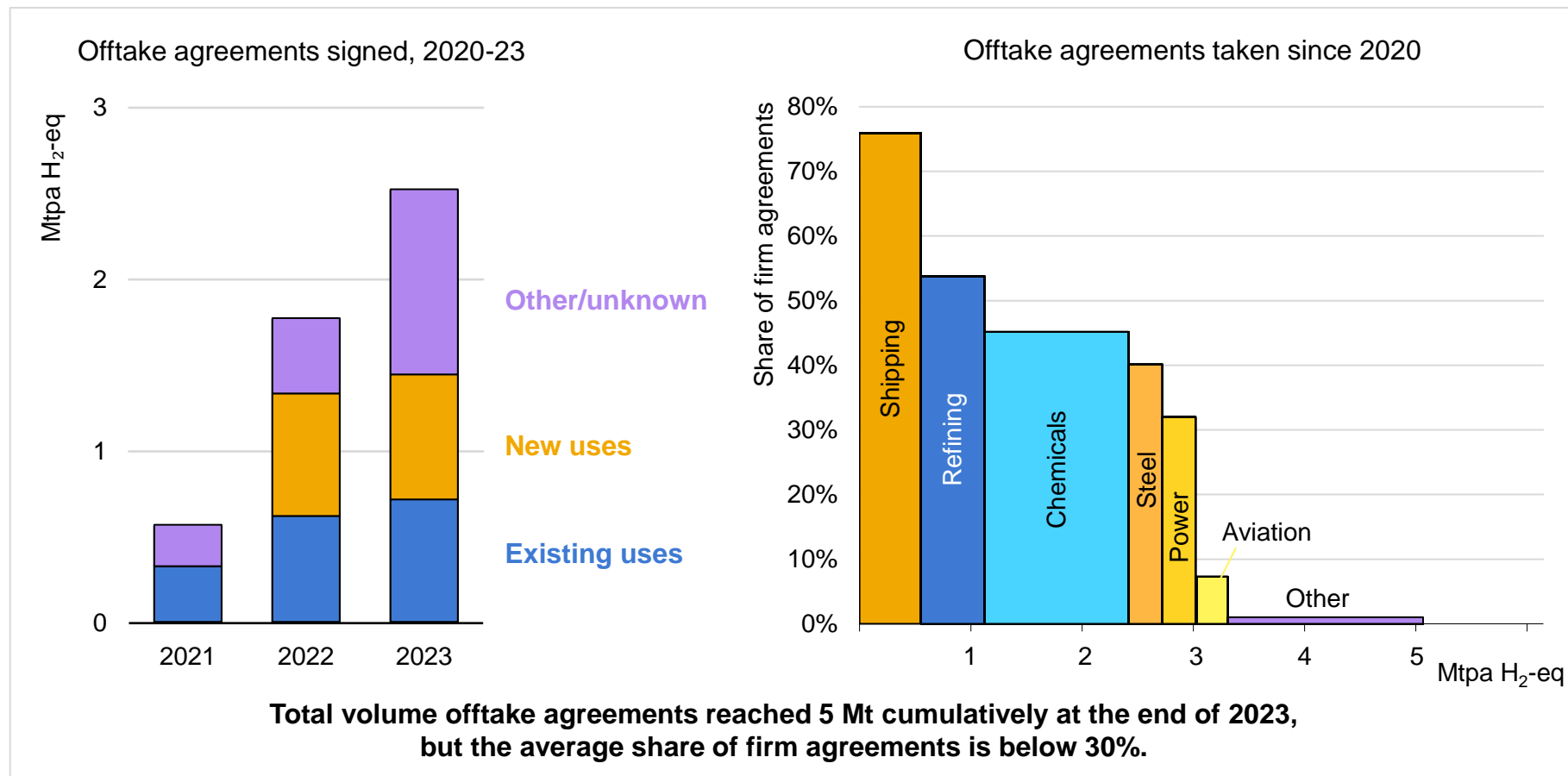
Growing gap in policy ambitions between production and demand

Potential annual demand and production for low-emissions hydrogen created by policy action, 2030



Unclear demand signals remain as one of the most important barriers to unlock investment on low-emissions hydrogen production.

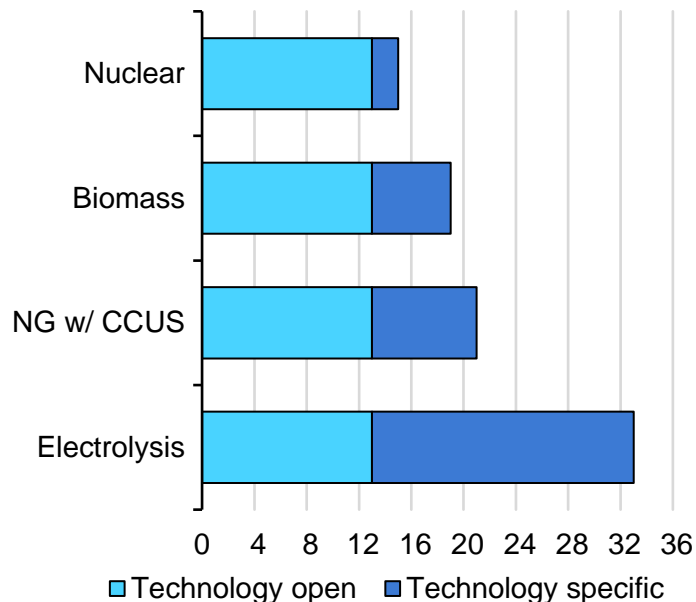
Offtake agreements are growing, but remain mostly preliminary



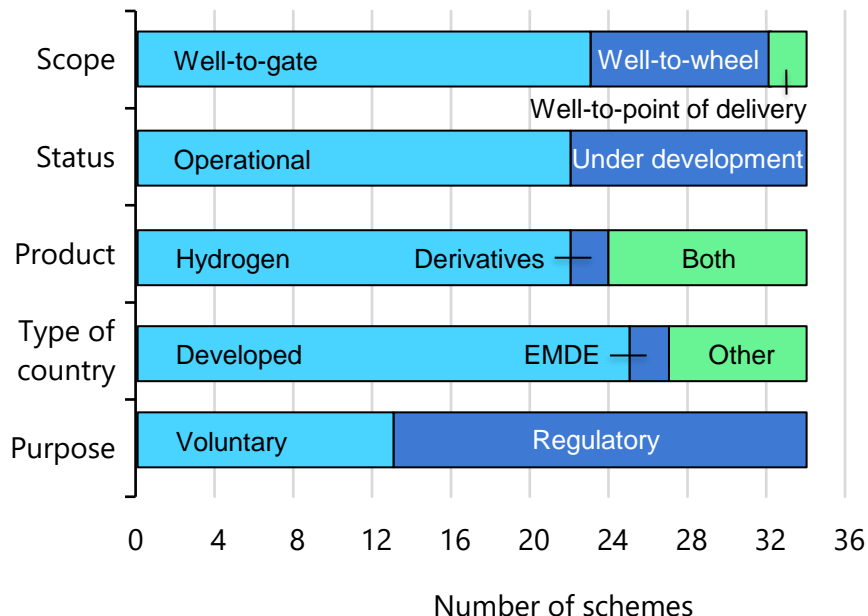
There is a wide range of schemes, standards and regulations

Certification schemes for hydrogen and its derivatives

By pathway



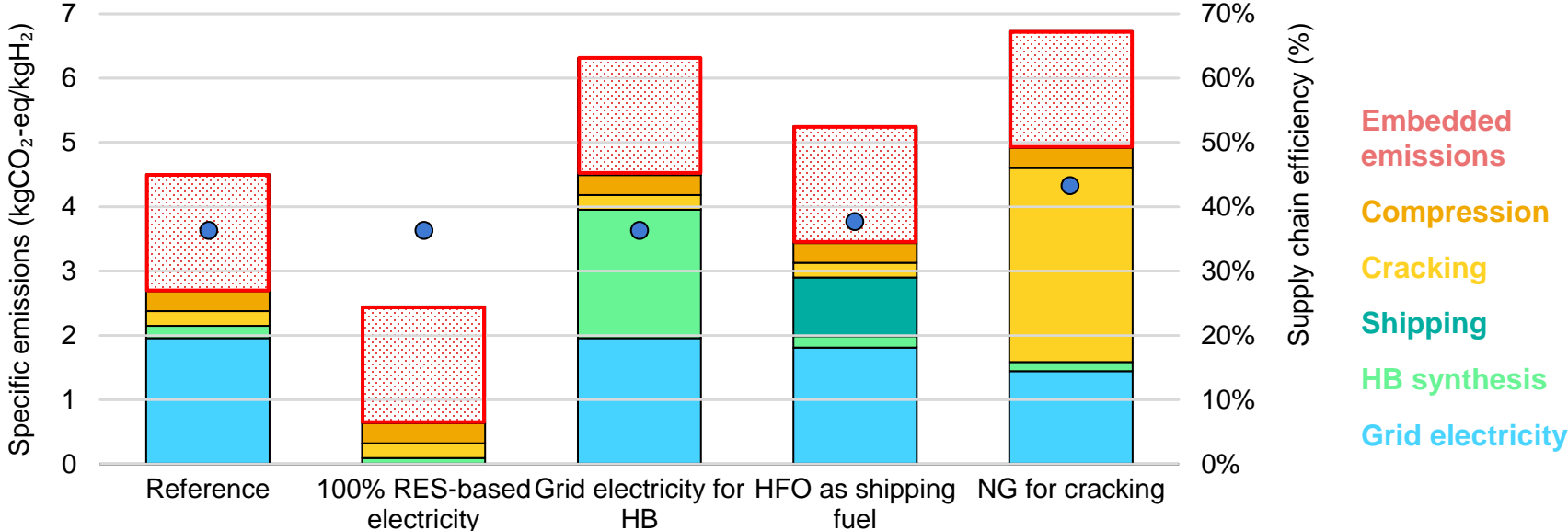
By other classification parameters



Nearly three quarters of the schemes exclude emissions from transport and reconversion, cover only hydrogen, and are from developed economies.

Emissions from construction and transport can be significant

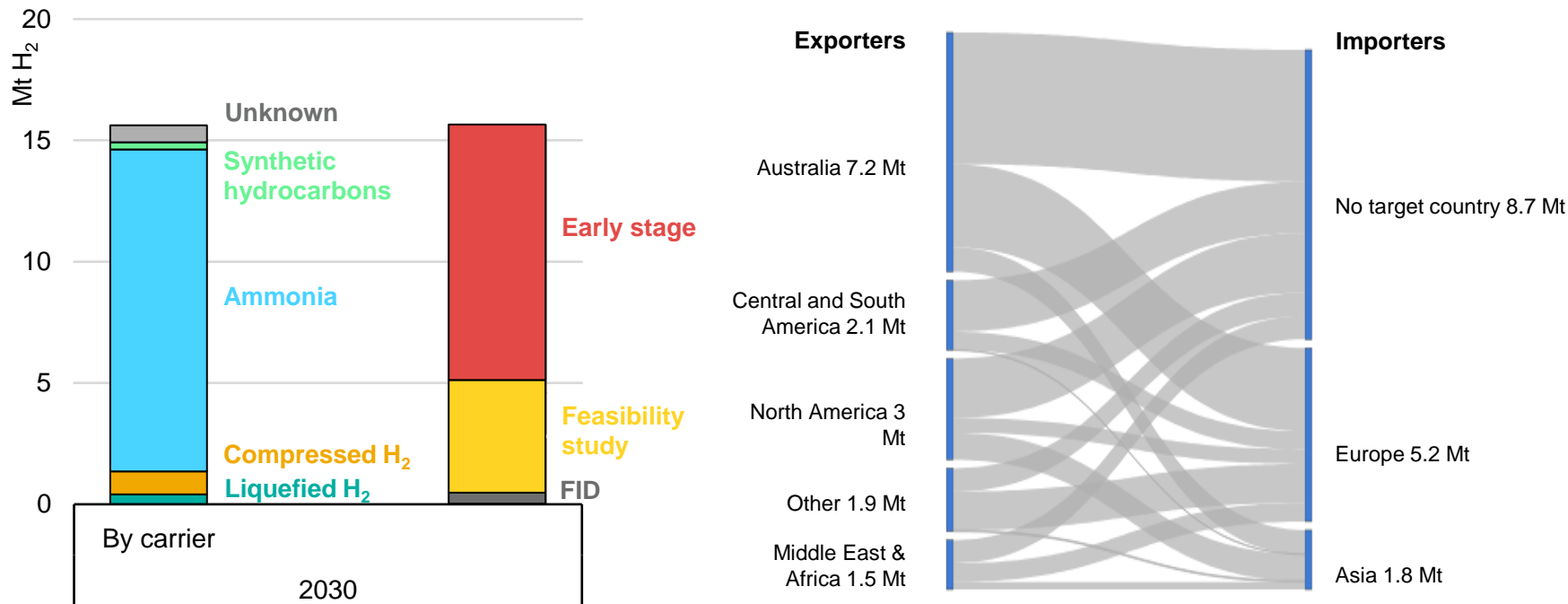
GHG emissions intensity for the ammonia supply chain



Conversion steps introduce efficiency losses which increase the specific GHG emissions when expressed in terms of the hydrogen delivered.

Interest in hydrogen trade remains high, but uncertainty persists

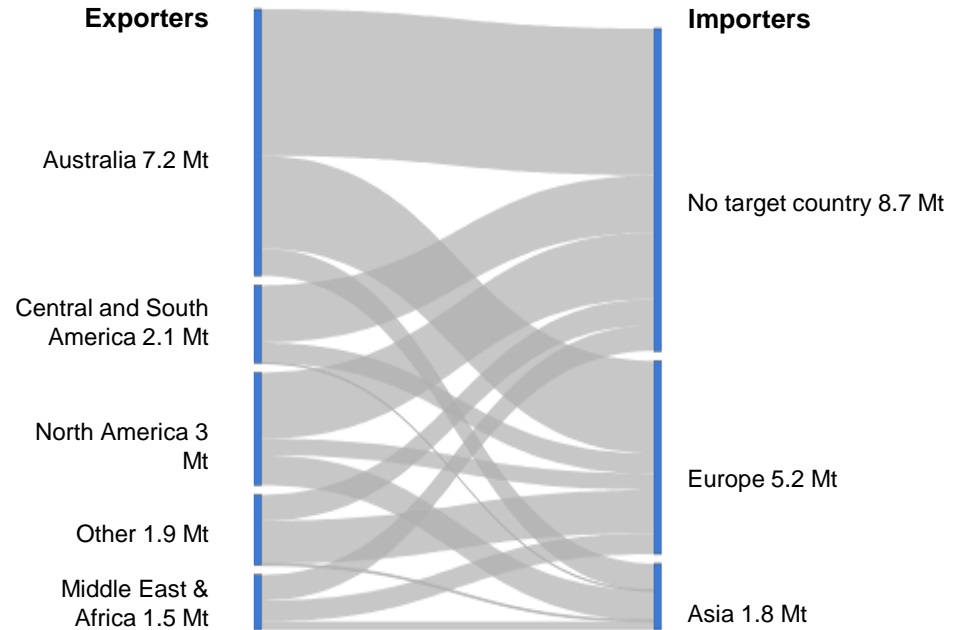
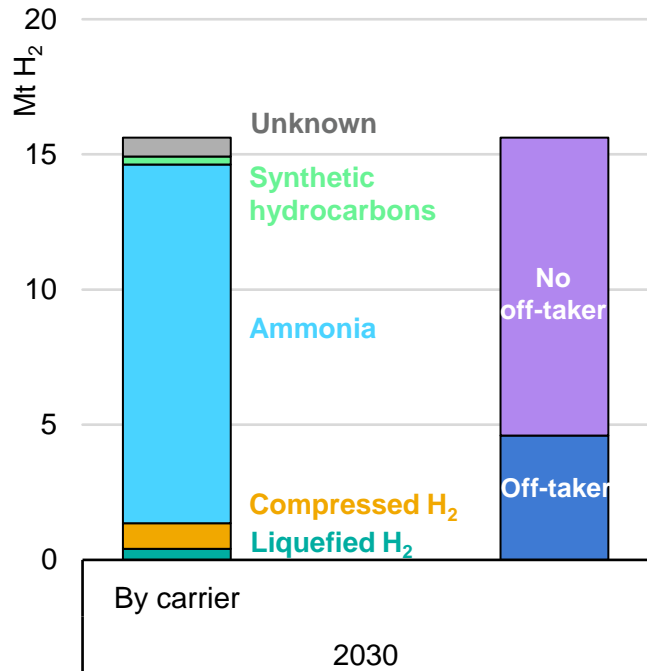
Announced low-emissions hydrogen trade flows in 2030



Planned hydrogen exports could reach 16 Mt by 2030, though almost all projects are at early stages and less than one-third have identified a potential off-taker.

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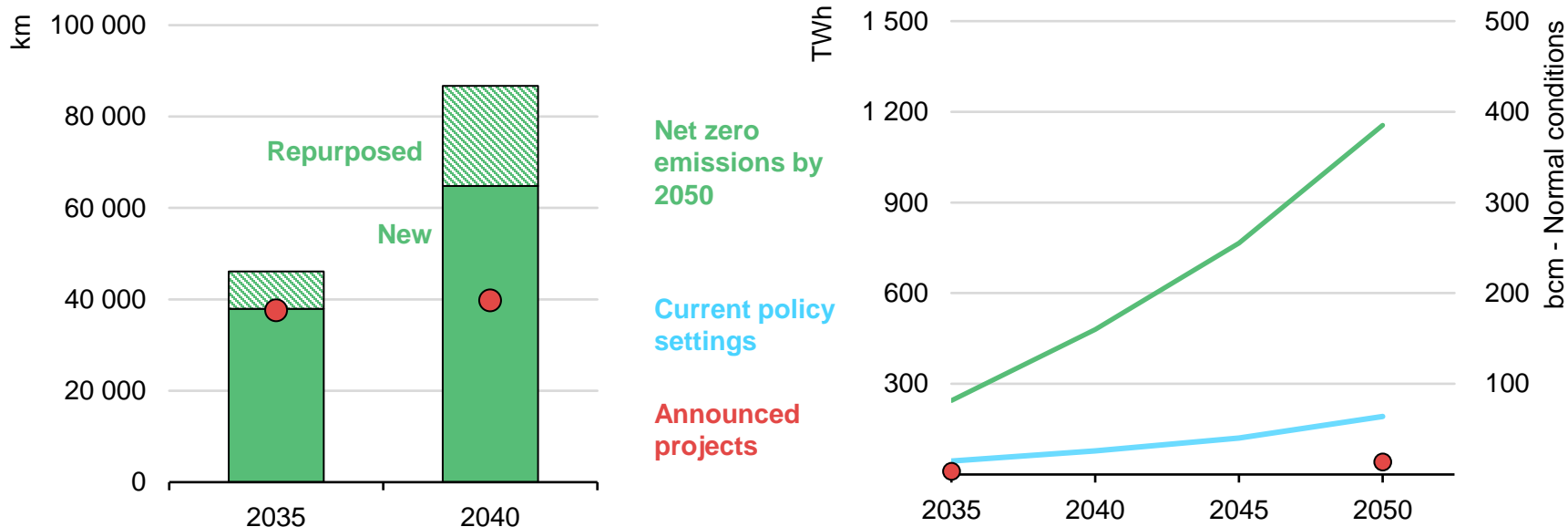
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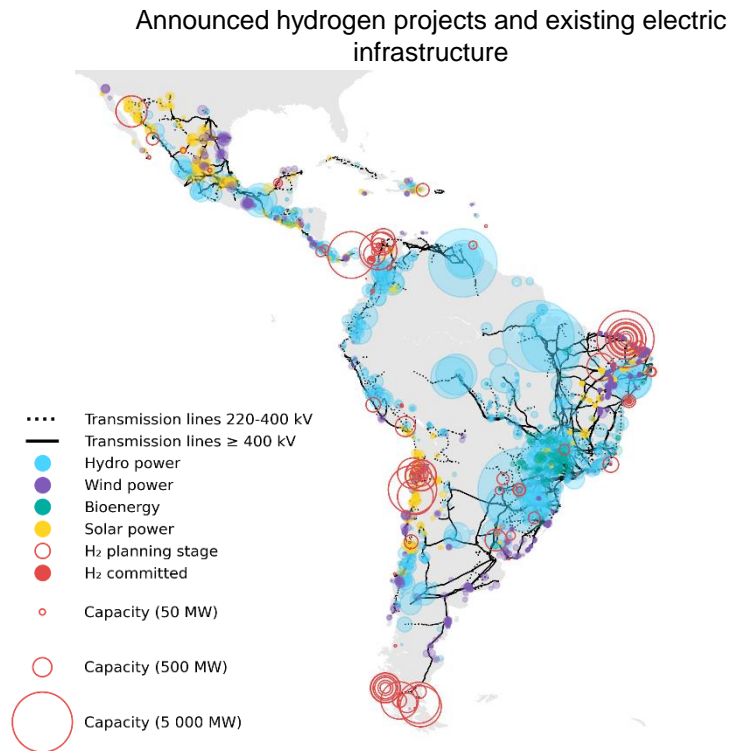
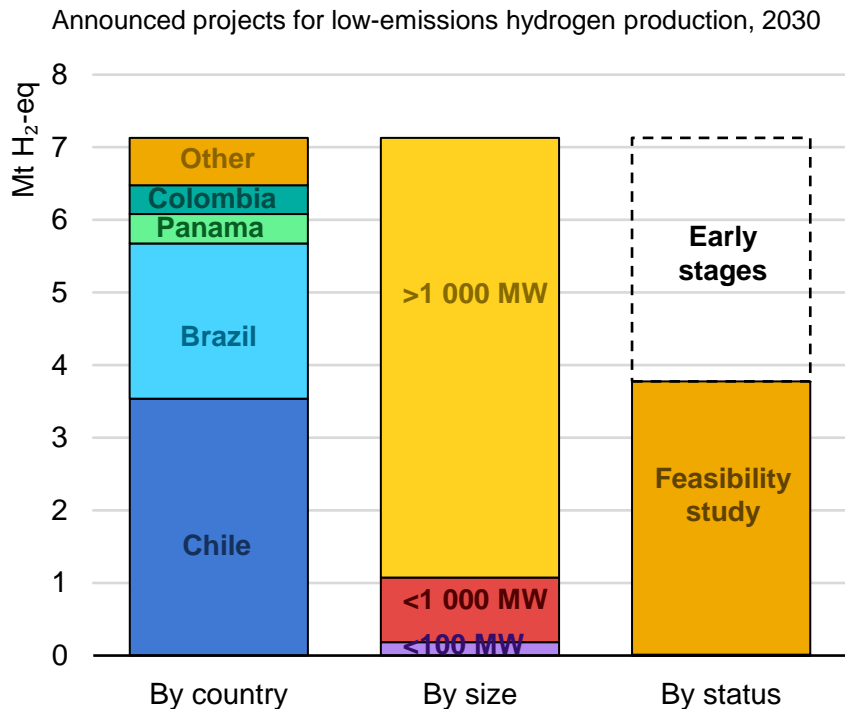
Infrastructure, the bridge connecting supply and demand

Hydrogen transmission pipelines and underground storage capacity, 2035-2050



The announced length of hydrogen pipelines is in line with climate pledges, but only 2% of projects have reached FID, underground storage announcements remain limited and demand uncertainty prevails.

Hydrogen - an opportunity for Latin America in the new energy economy



If all announced electrolytic hydrogen production projects materialise, LAC would account for 20% of global production by 2030, with over 85% of projects in the gigawatt scale.

Opportunities

- Massive renewable resources
- Large projects pipeline
- Domestic demands and large trade deficits
- Vast export potential

Challenges

- High cost of capital
- Infrastructure deployment
- Policy implementation
- Global market creation



1. Accelerate **demand creation** for low-emissions hydrogen, leveraging industrial hubs and public procurement
2. **Support project developers** to scale up low-emissions hydrogen production and drive cost reductions
3. Strengthen **regulation and certification** of environmental attributes for low-emissions hydrogen
4. Identify opportunities to start **developing hydrogen infrastructure**
5. Support **emerging markets and developing economies** in expanding low-emissions hydrogen production and use

Q&A Session

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