



Global Hydrogen Review

H2LAC, 05-Dec-24

Amalia Pizarro Alonso

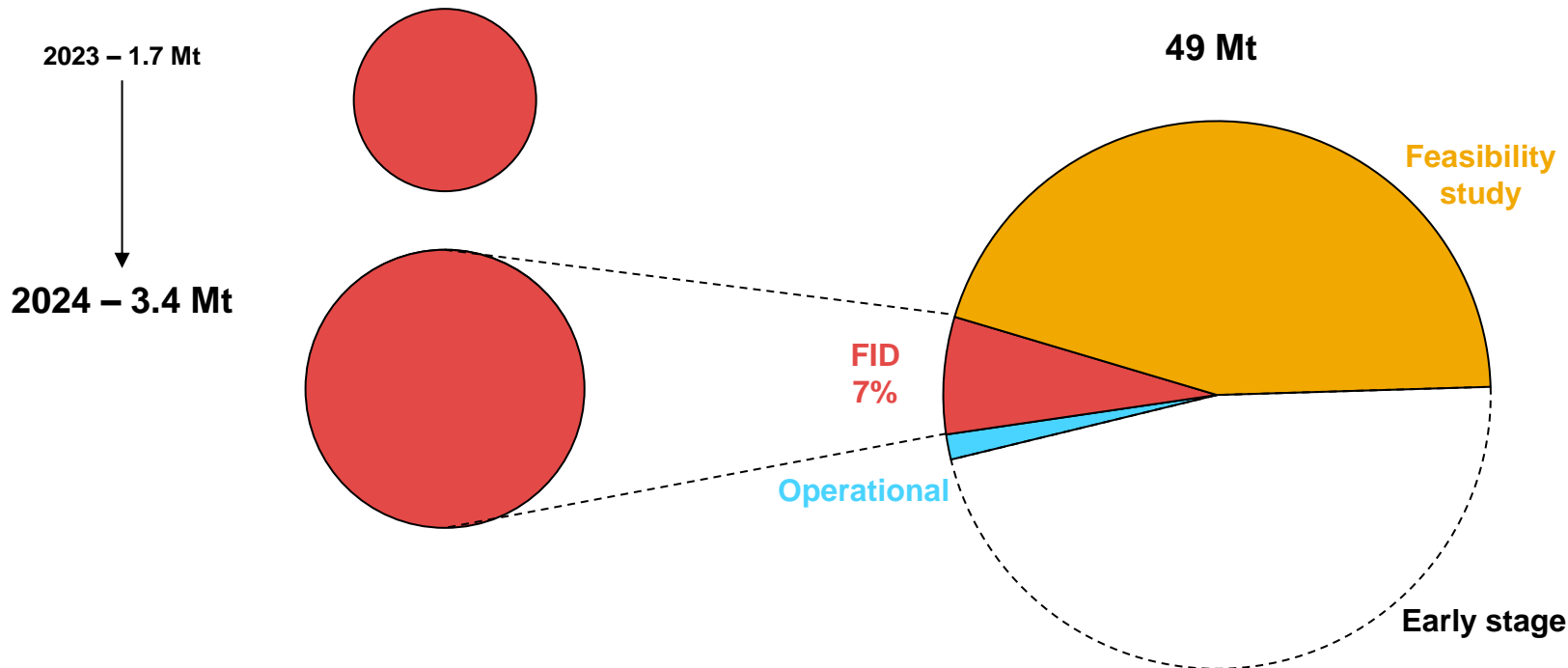
Herib Blanco



Investment decisions doubled in the last year and pipeline expanded

Low-emissions hydrogen production at FID

Announced projects for low-emissions hydrogen production, 2030

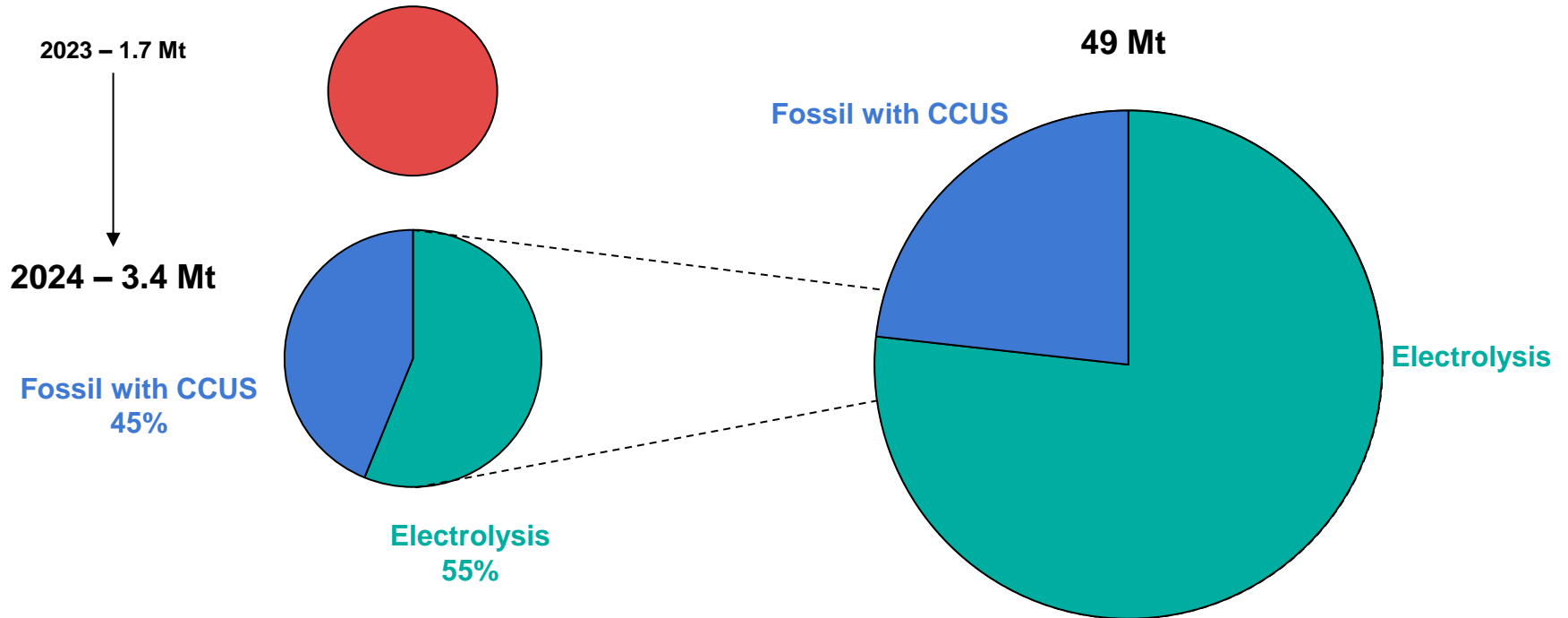


Low-emissions hydrogen of 4.1 Mt could be produced by 2030 from projects in operation today and those that reached FID, 6 times larger than in 2023

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Low-emissions hydrogen production at FID

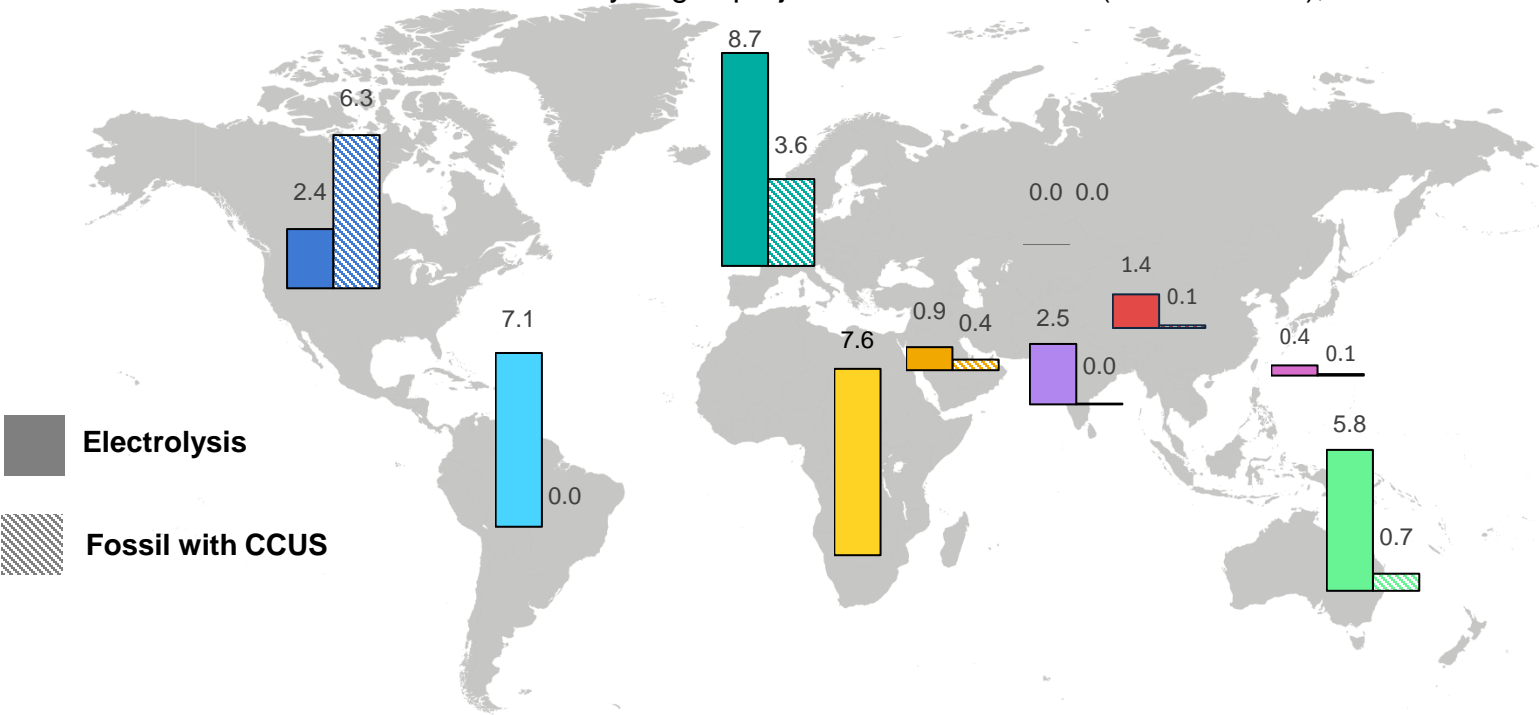
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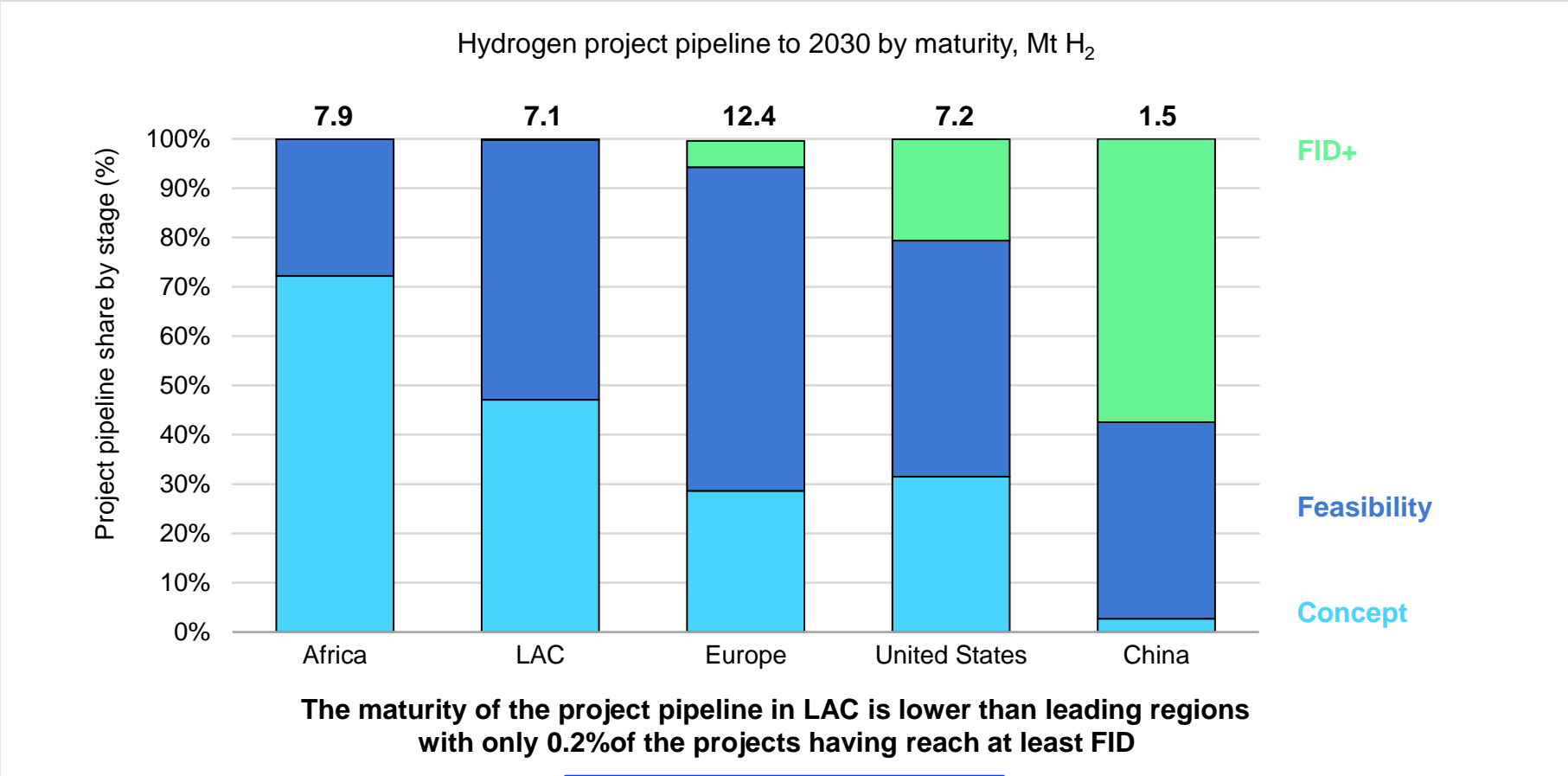
LAC has nearly 15% of the global project pipeline

Announced low-emissions hydrogen projects around the world (million tonnes), 2030

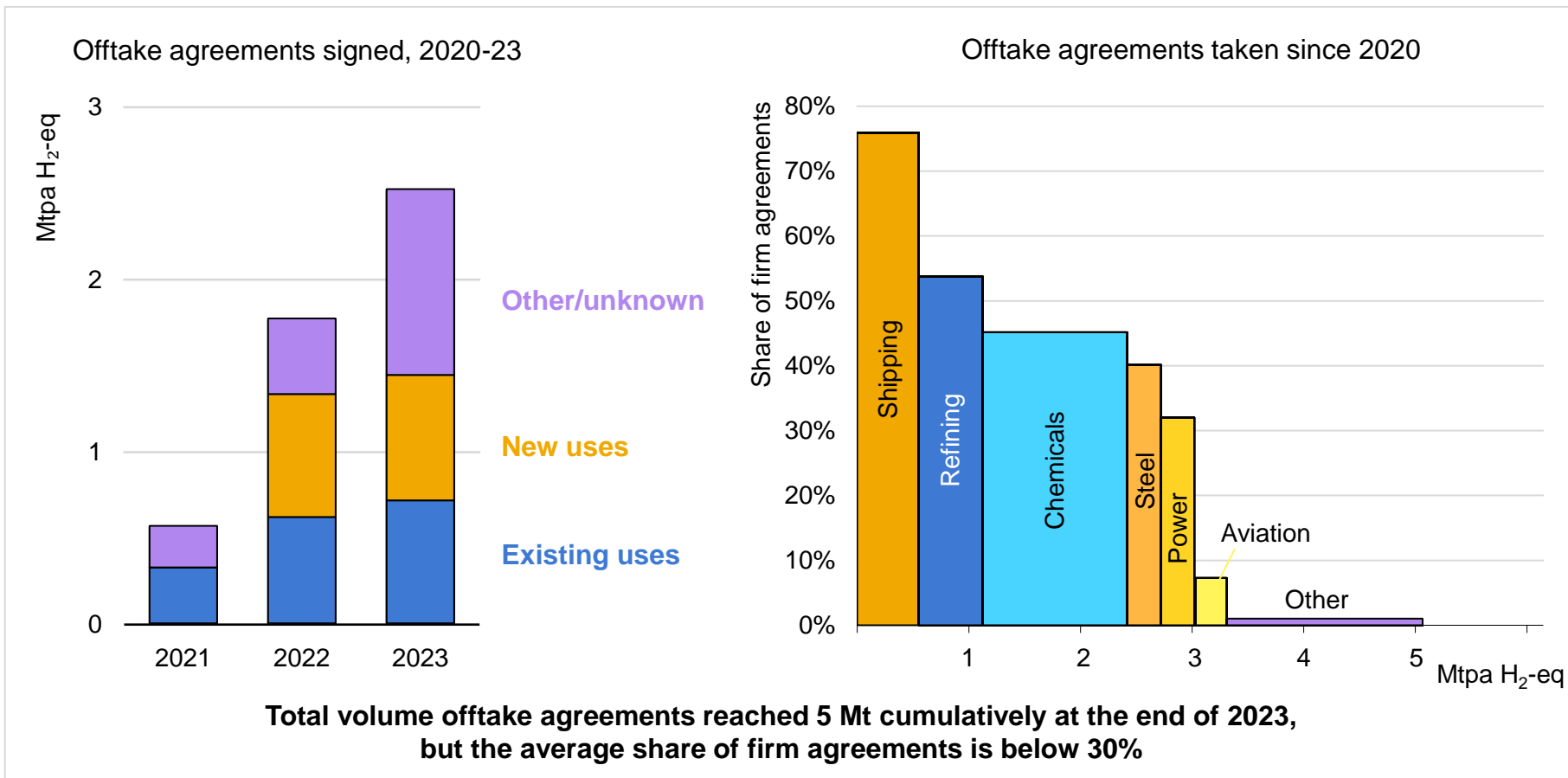


A larger number of projects have been announced in Africa, Latin America and India in the past year, while the majority of operational capacity is in China, Europe and the United States

LAC has one of the lowest shares of projects in FID+

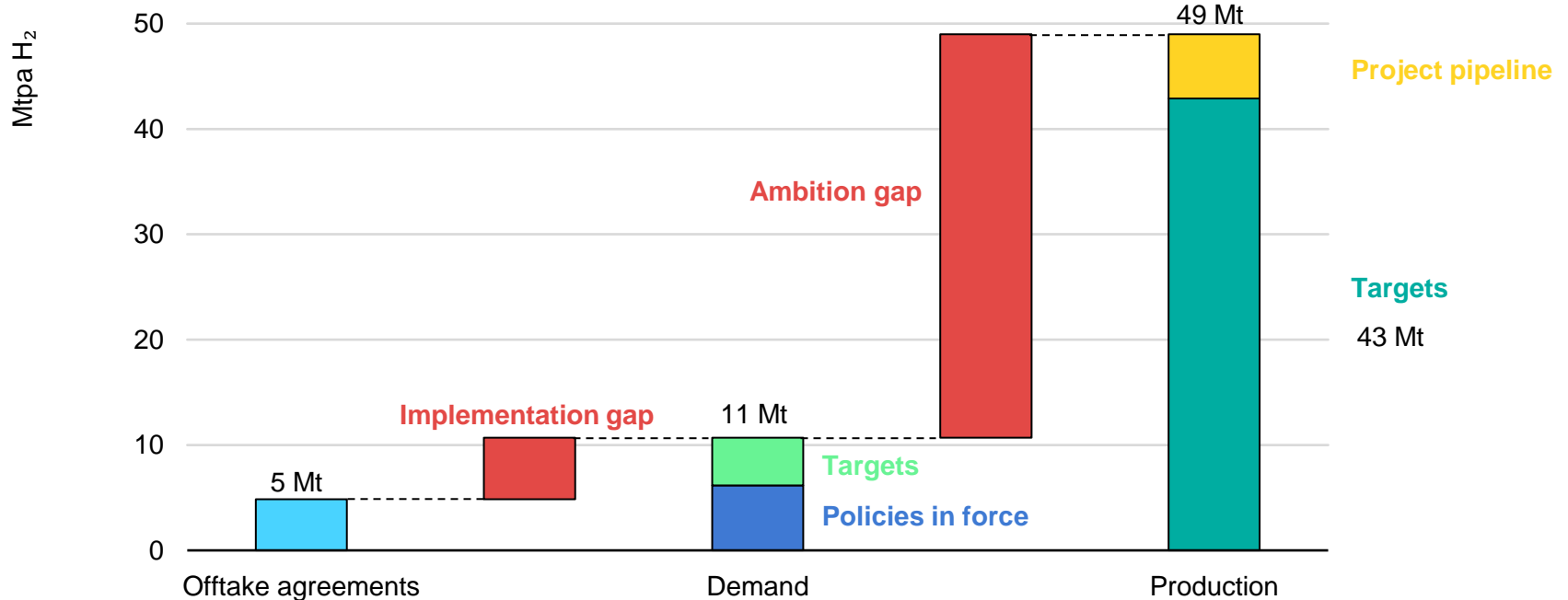


Offtake, a key pre-condition for FID, remains a critical global barrier



Growing gap between reality and targets

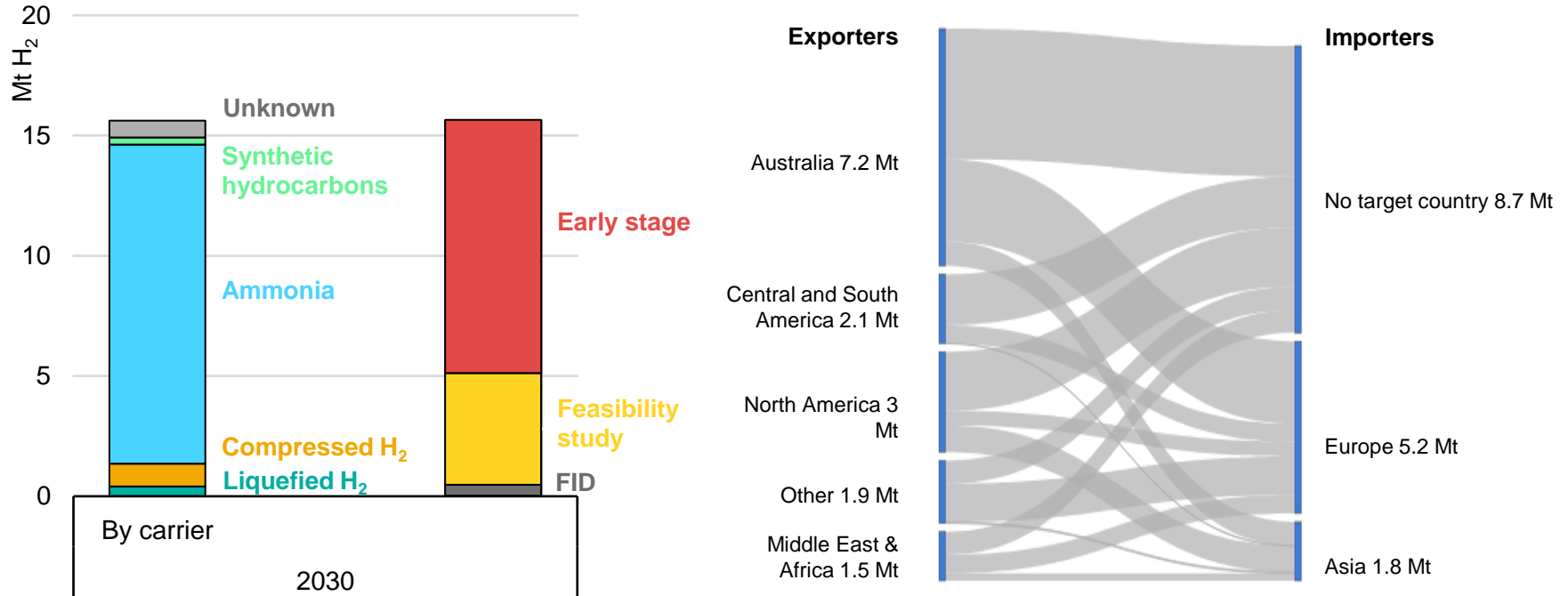
Potential annual demand and production for low-emissions hydrogen created by policy action, 2030



Projects with offtake agreement only represent about 80% of the hydrogen demand from policies in force and about 10% of the production targets that governments have set

Interest in hydrogen trade remains high, but uncertainty persists

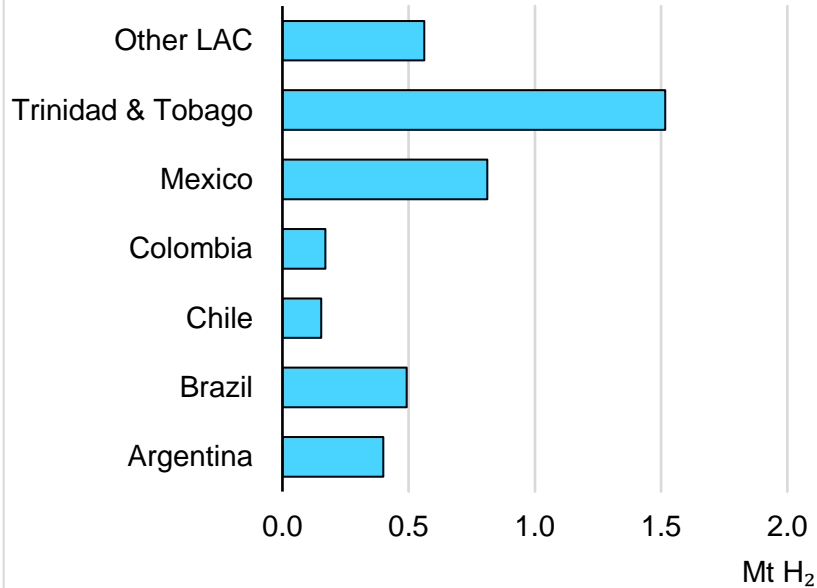
Announced low-emissions hydrogen trade flows in 2030



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

Hydrogen in LAC today

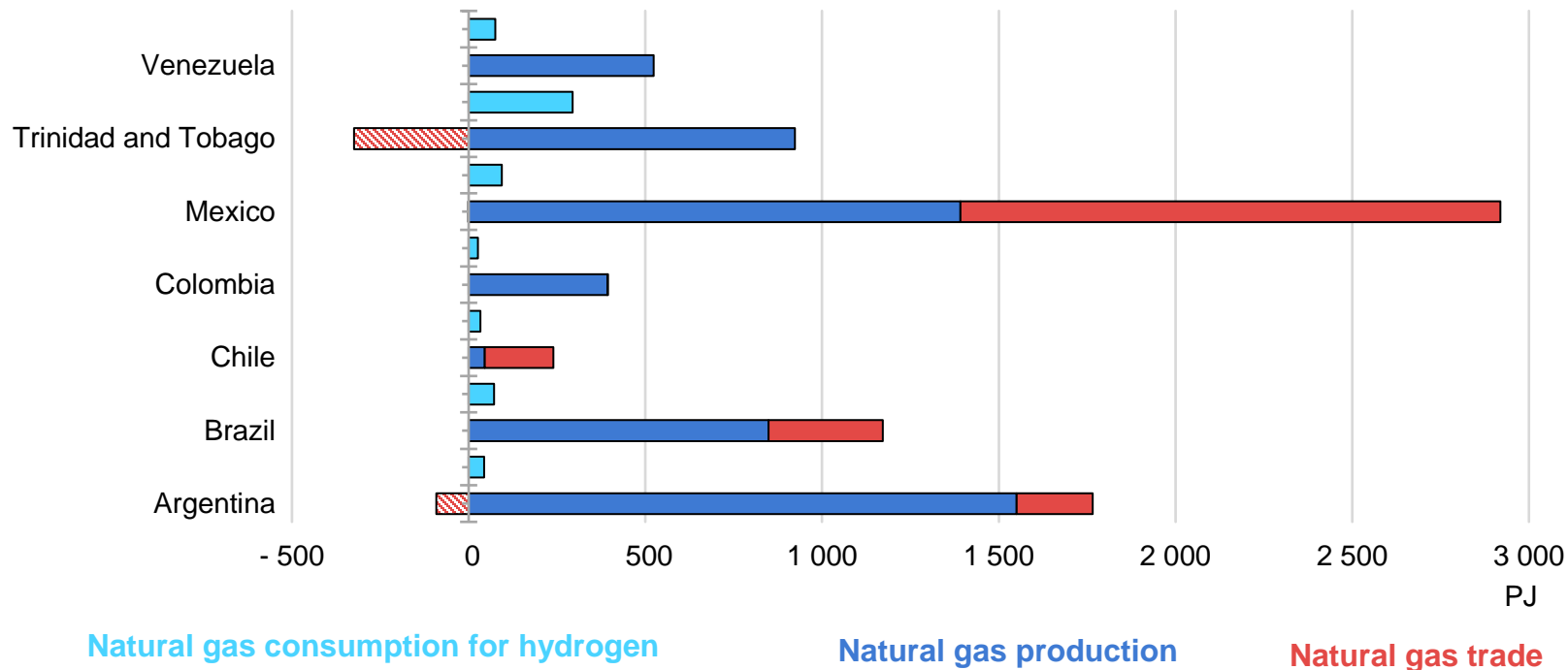
Hydrogen and natural gas production and trade by country in Latin America and the Caribbean, 2022/2023



Hydrogen demand reached 4 Mt in LAC in 2023, about 4% of the global total, mostly for oil refining or – especially in Trinidad and Tobago – for chemicals manufacturing

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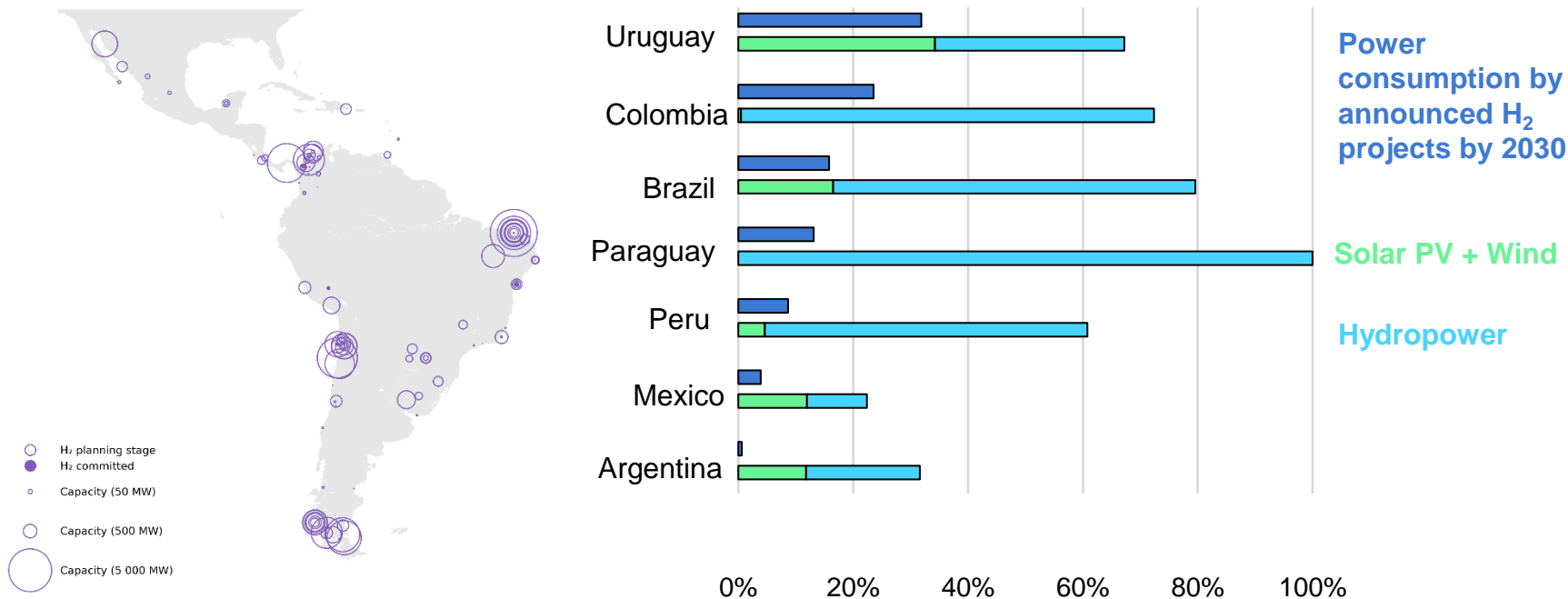
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Hydrogen project pipeline is equivalent to 20% of electricity demand

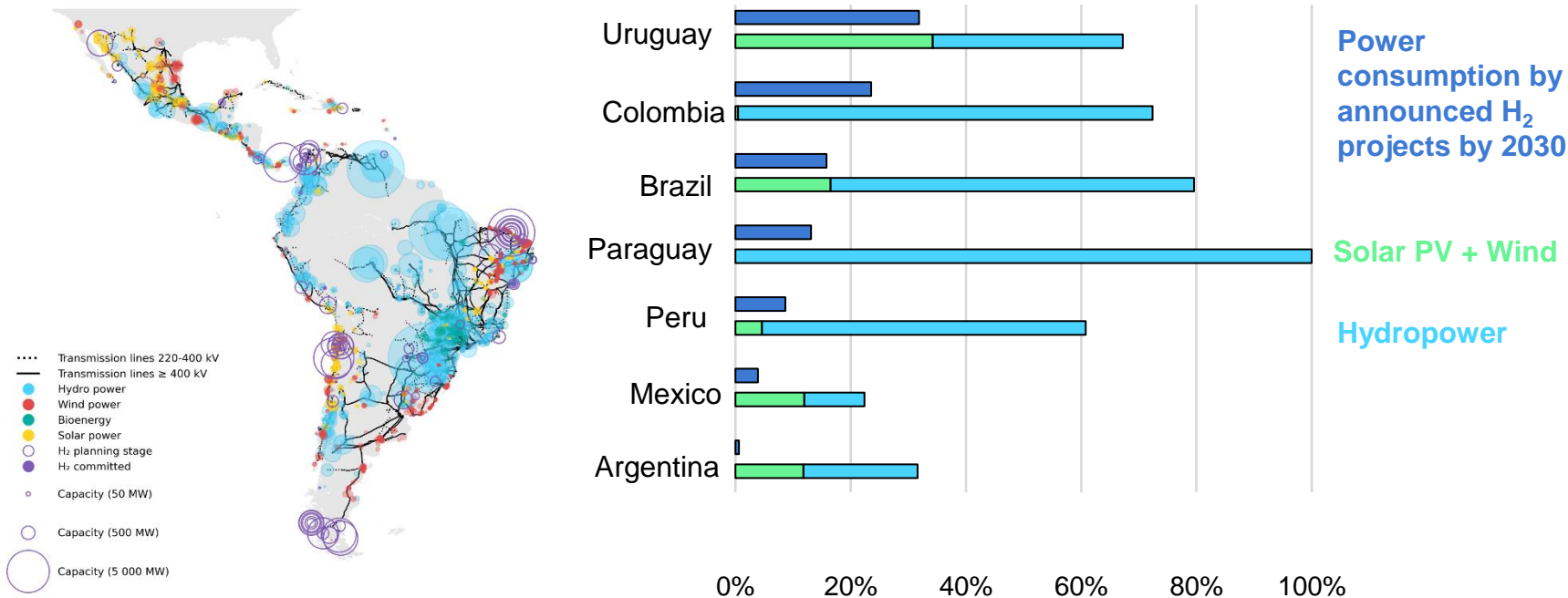
Renewable share in power (2022) and equivalent electricity demand from hydrogen projects to 2030



Realising the full hydrogen project pipeline would translate into a significant share of electricity demand reaching on average 20% in Latin America

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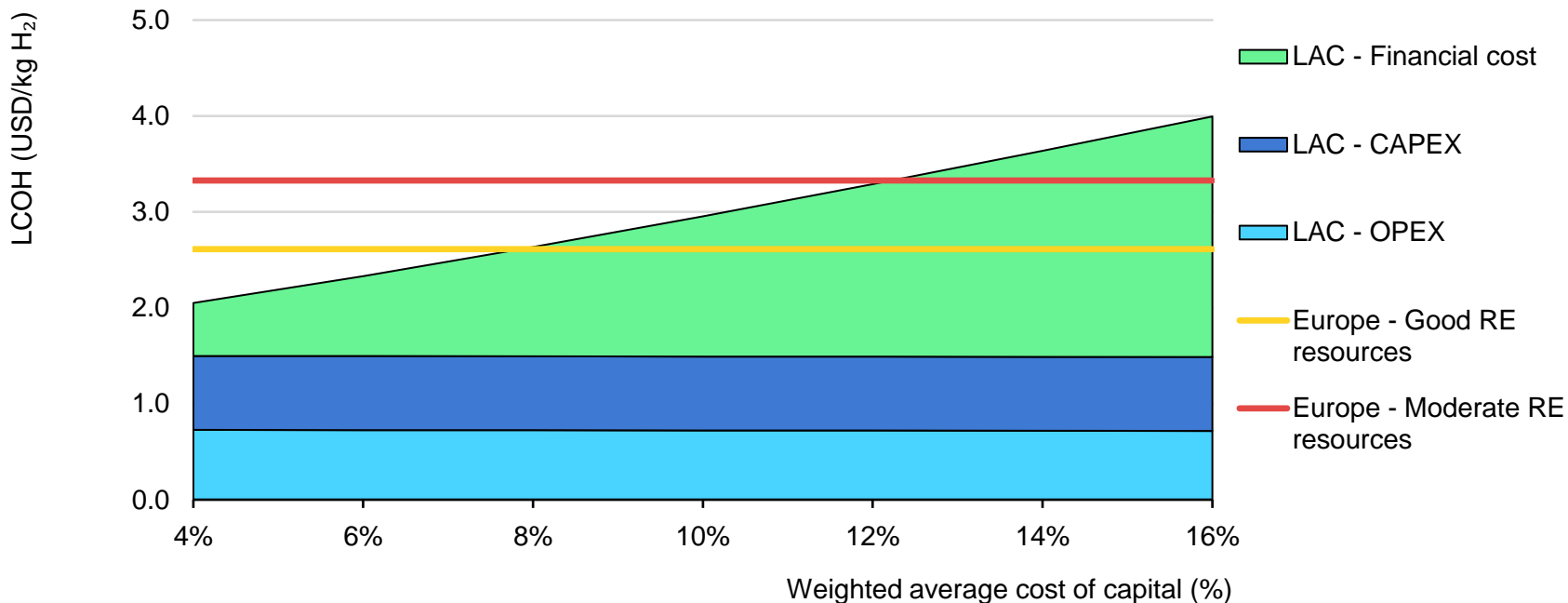
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High capital costs undermine good renewable energy potential

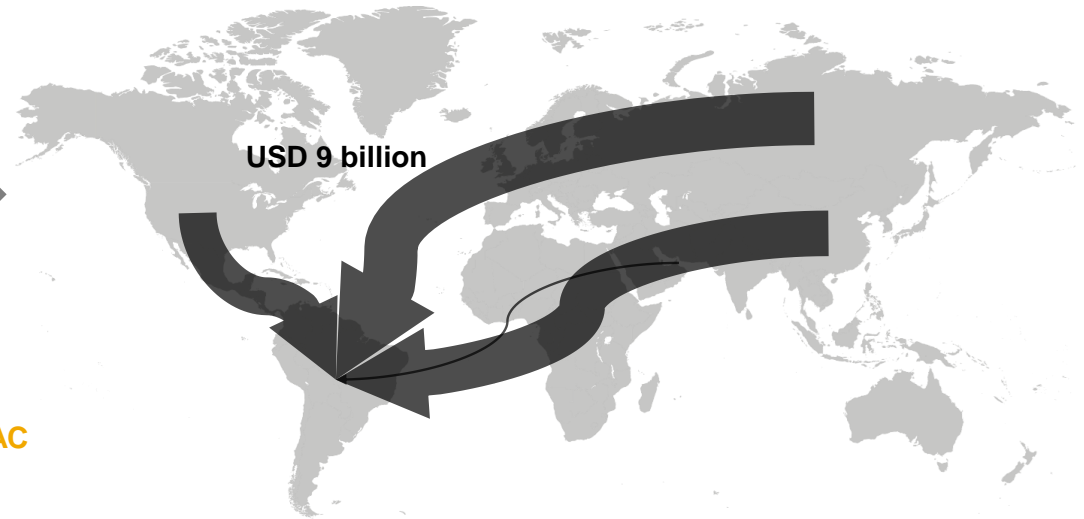
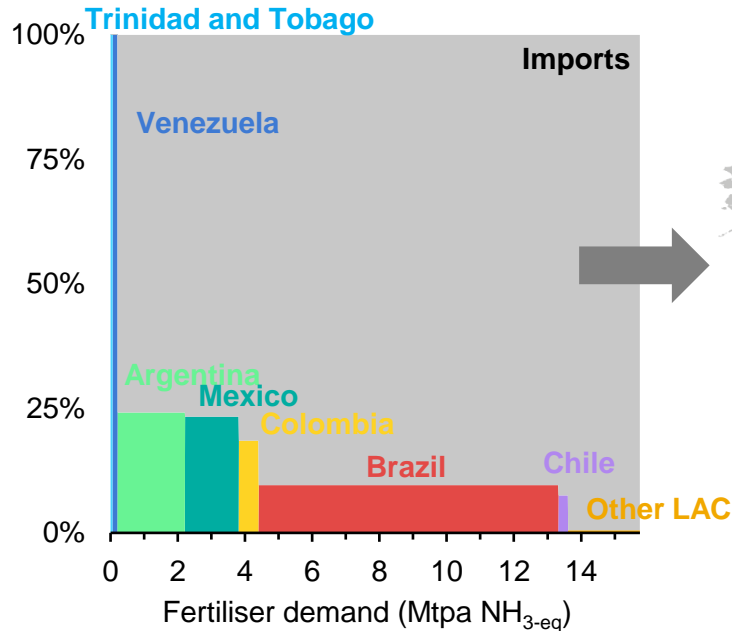
Levelised cost of hydrogen production with different cost of capital in the Announced Pledges Scenario, 2030



A cost of capital premium of 4-8 percentage points could result in higher hydrogen production costs in LAC than in advanced economies, despite better quality renewable resources

Ammonia's trade deficit is a low-emissions opportunity for the region

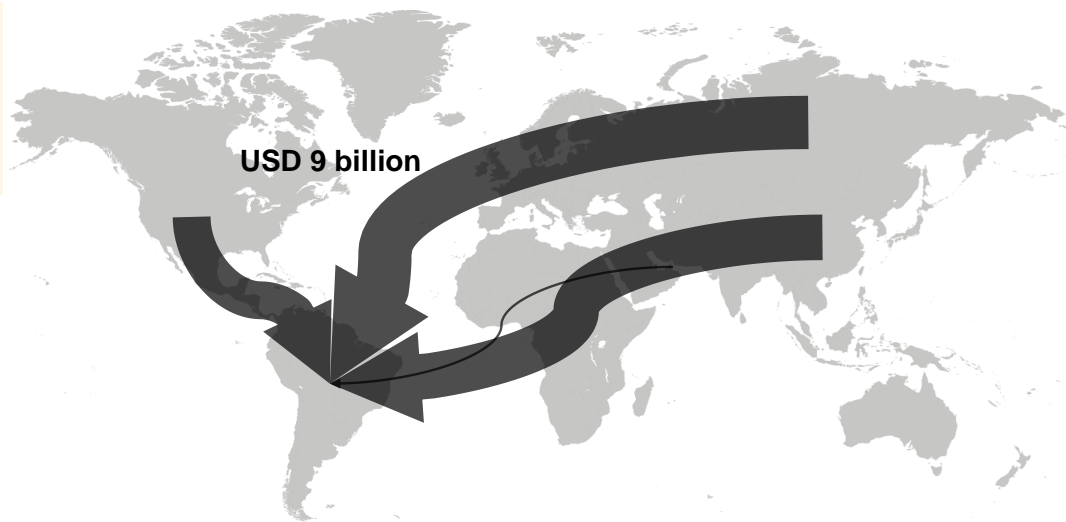
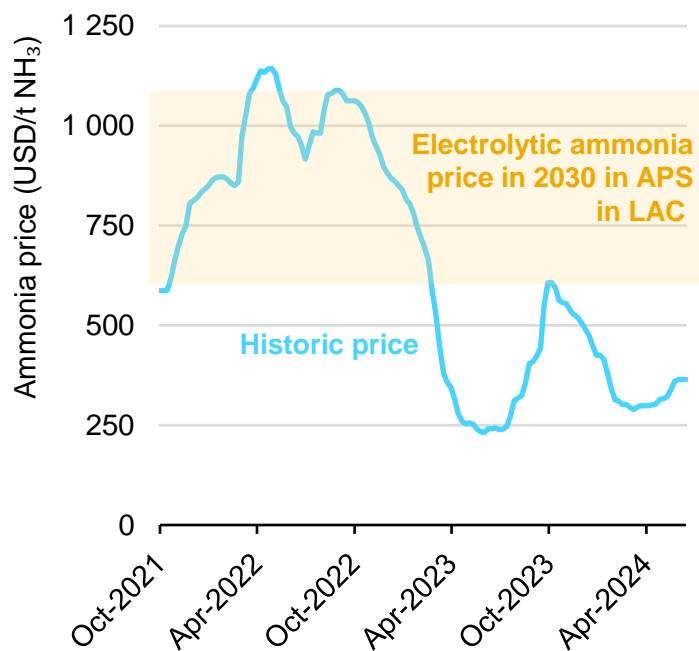
Nitrogen-based fertilisers demand in Latin America and the Caribbean and ammonia price, 2022



LAC meets nearly 80% of its nitrogen-based fertiliser demand with imports, whose trade deficit represents 0.1-0.4% of the GDP for the largest economies in Latin America

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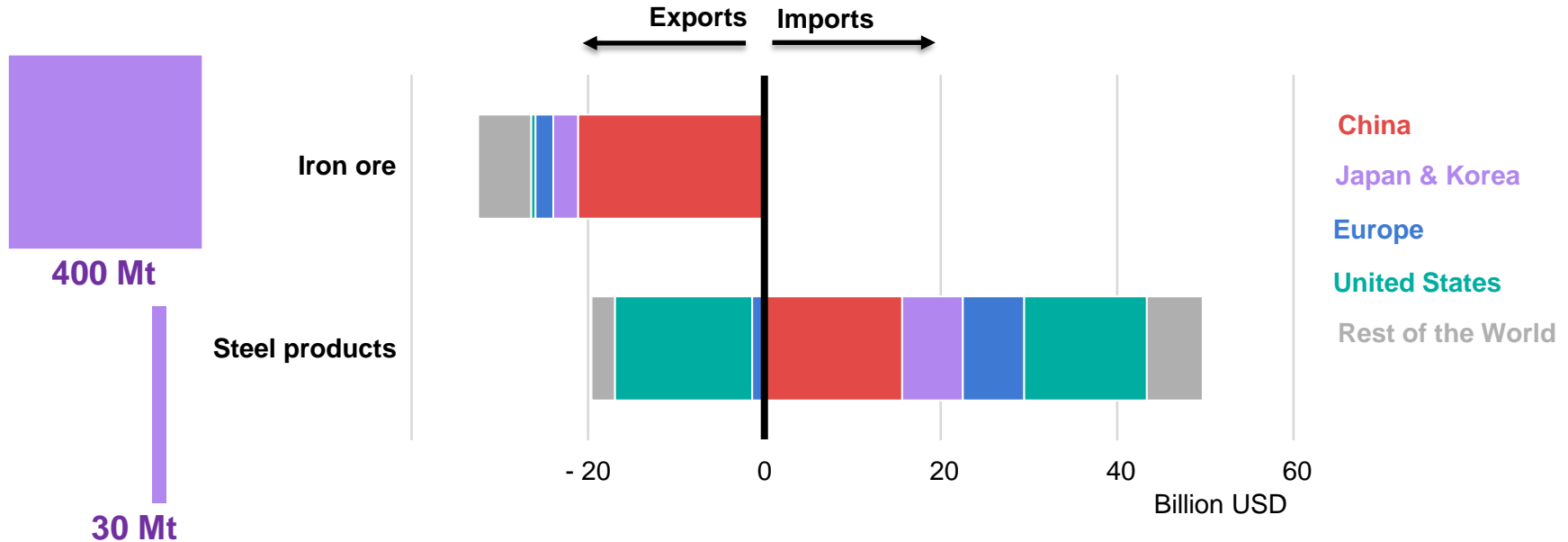
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Moving up in the steel value chain, shifting from iron ore exports

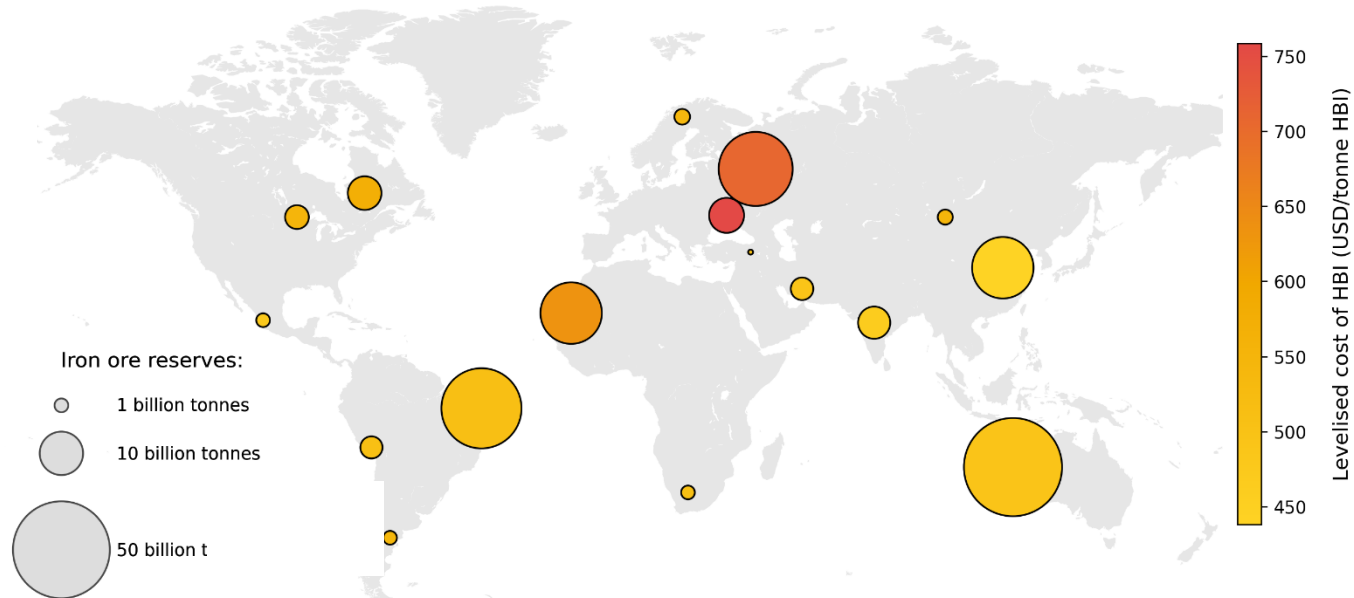
Trade balance of iron ore and steel products from and to Latin America, 2022



LAC can produce HBI cost-effectively compared to other regions of the world, as a result of its vast iron ore reserves and high-grade ores suitable for 100% H₂ DRI

Moving up in the steel value chain, shifting from iron ore exports

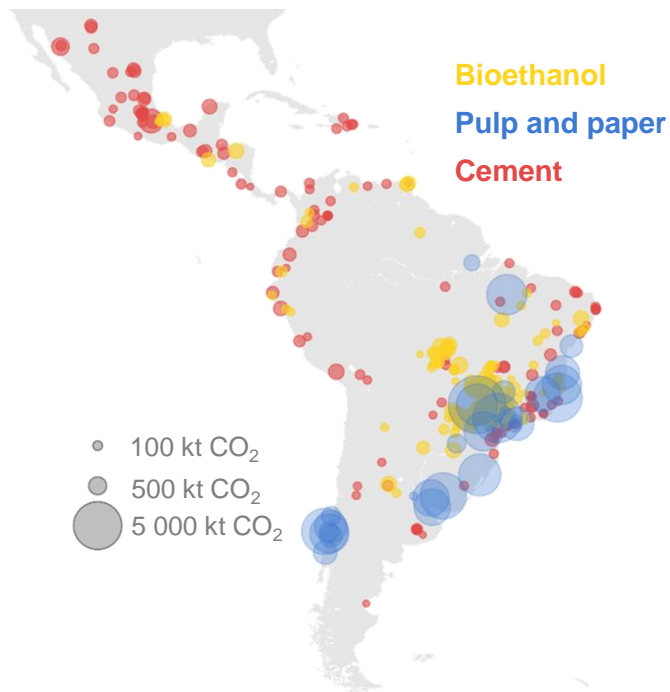
Levelised cost of producing hot briquetted iron in the Announced Pledges Scenario 2030 by iron ore reserves in 2022



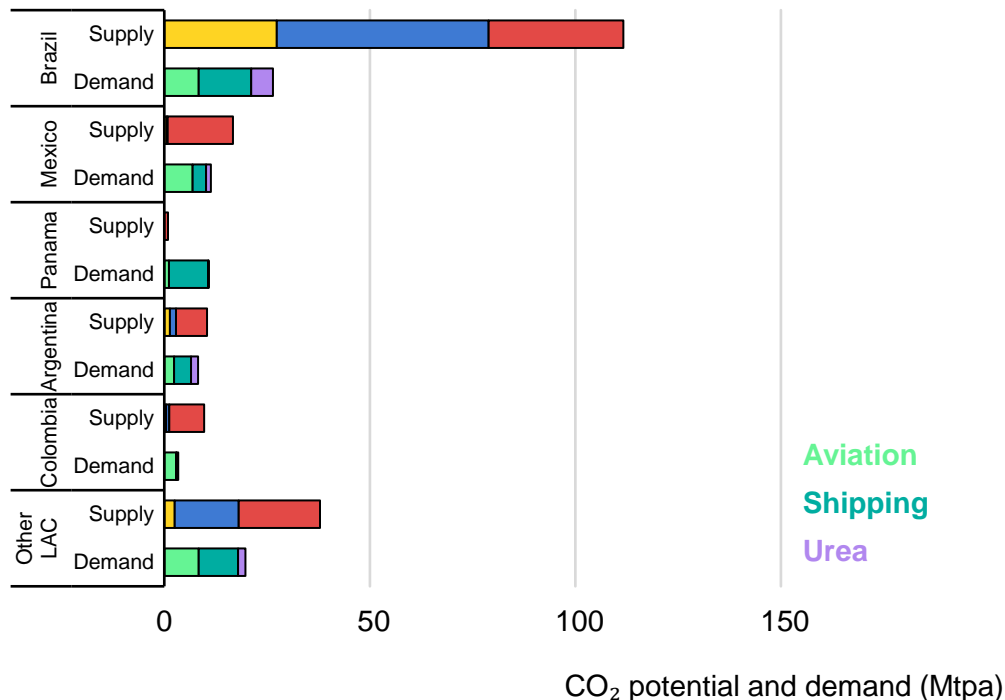
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An opportunity to use its biogenic CO₂ resources

Available biogenic and unavoidable CO₂ sources, 2023

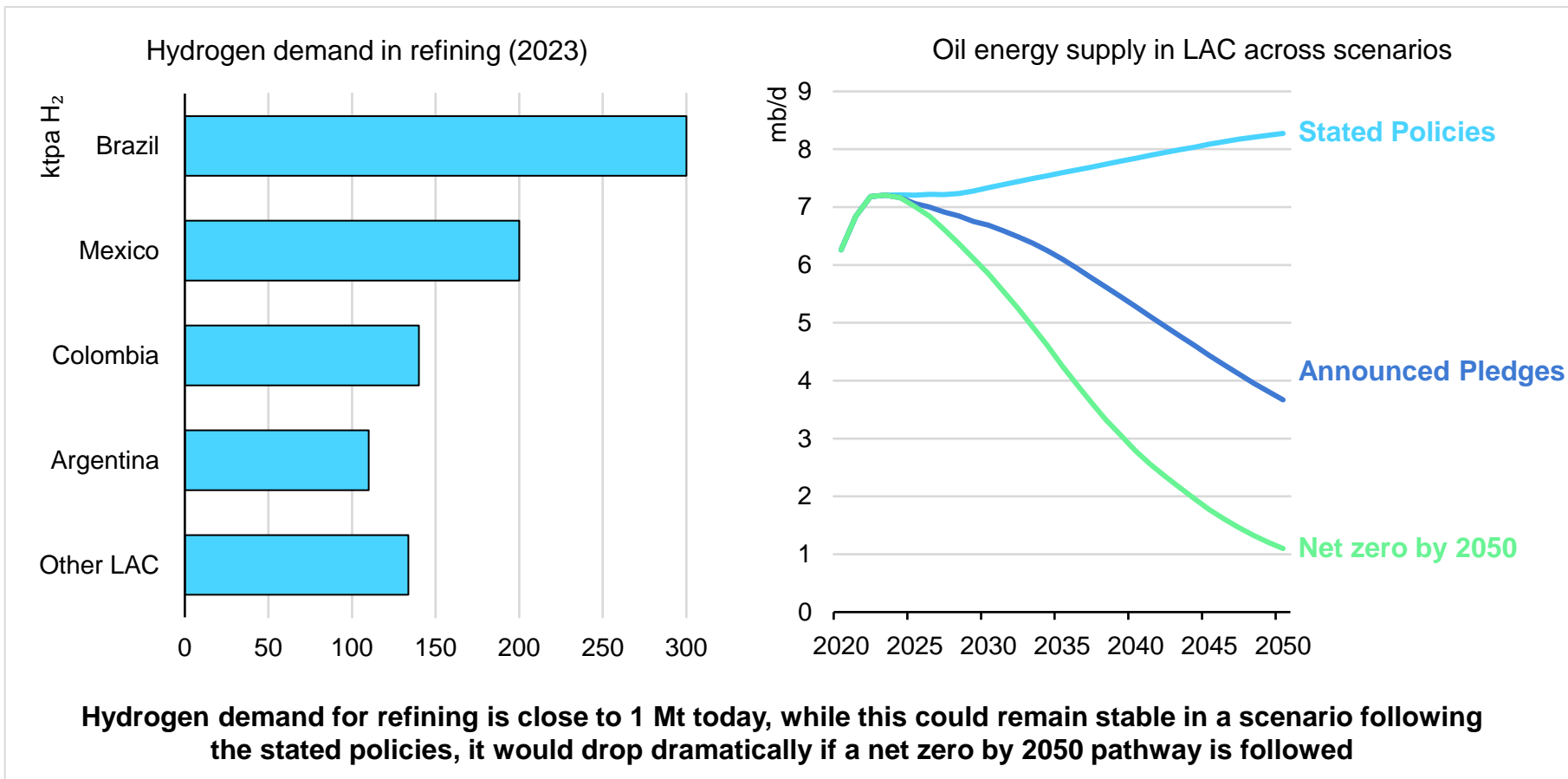


CO₂ supply potential and CO₂ demand for synthetic fuels and urea, 2023

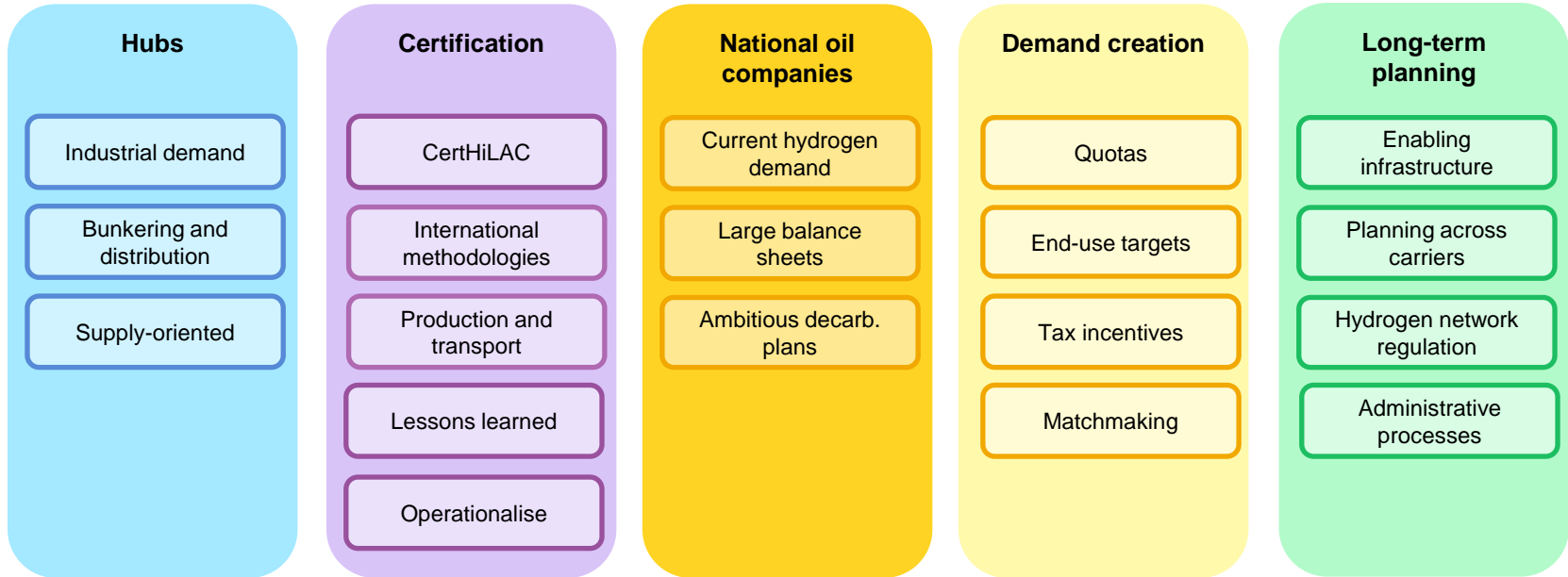


Biogenic CO₂ is plentiful in Brazil, while other countries might need complementary CO₂ sources like cement to satisfy CO₂ demand from aviation and shipping

Hydrogen demand for refining will depend on the pathway followed

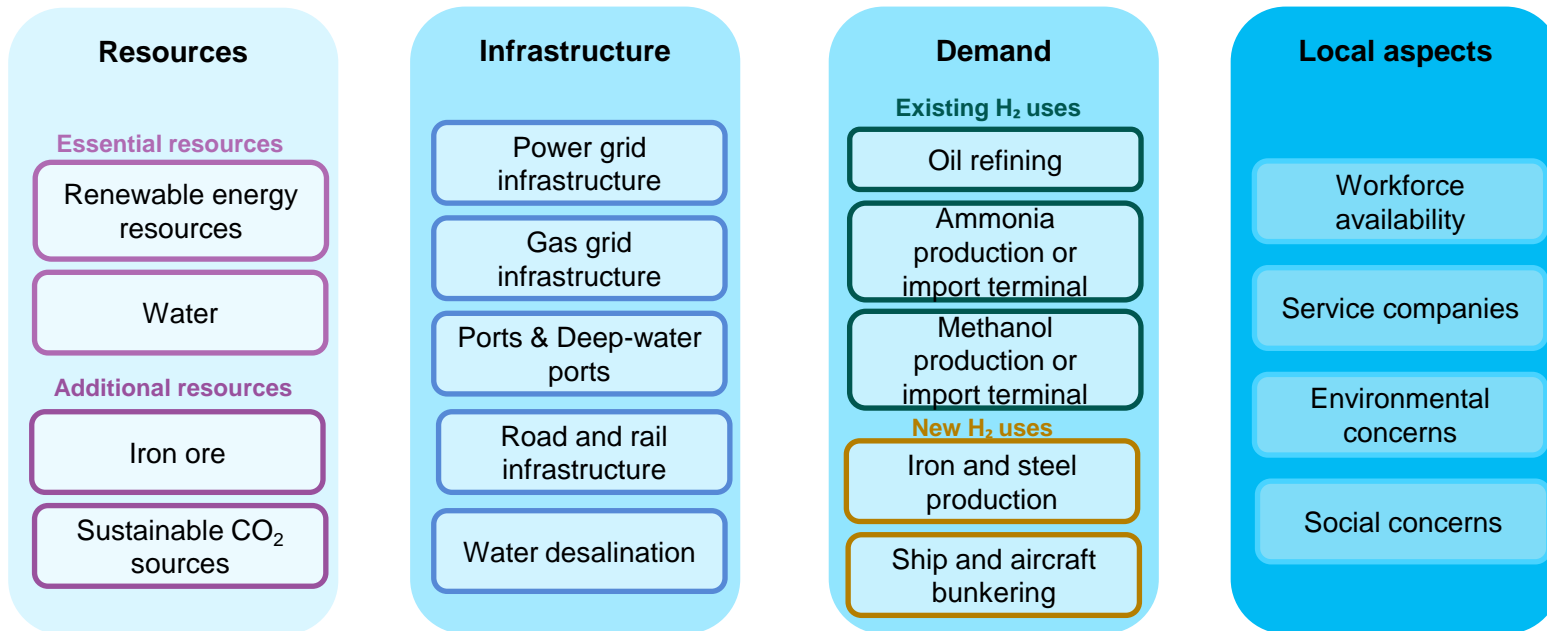


Moving towards implementation requires identifying enabling factors



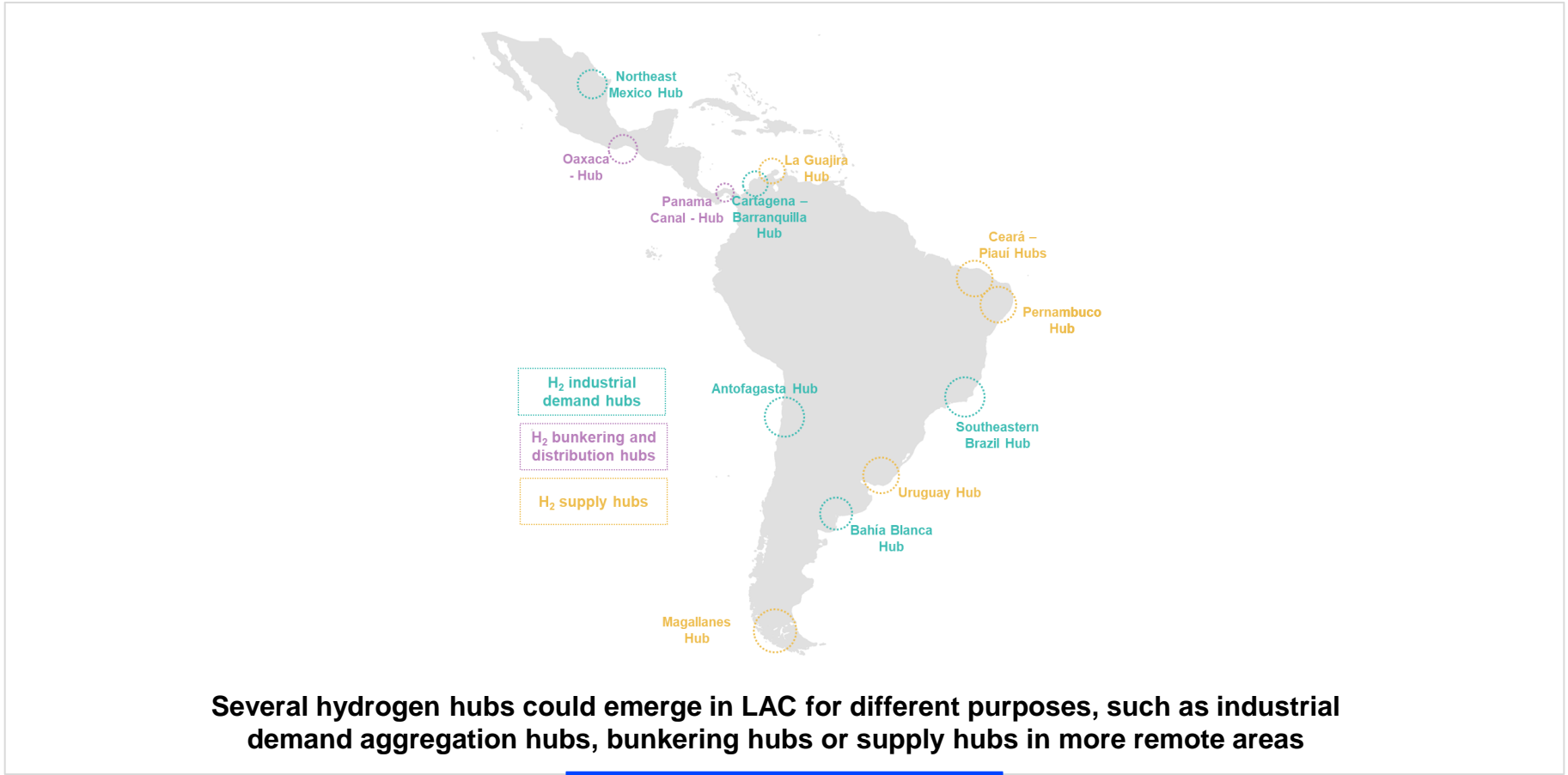
Hubs can be the starting point, but several enabling factors are needed to realise their potential

There are different factors to ponder when selecting hub locations



The potential for hydrogen hubs in different locations is influenced by a combination of resources, infrastructure and existing and scalable demand, as well as other local factors

Hubs are essential to unlock opportunities for LAC



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

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