Energy Technology Perspectives 2023

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International Energy Agency

Energy supply chains between transition and disruption

Risk assessment framework:

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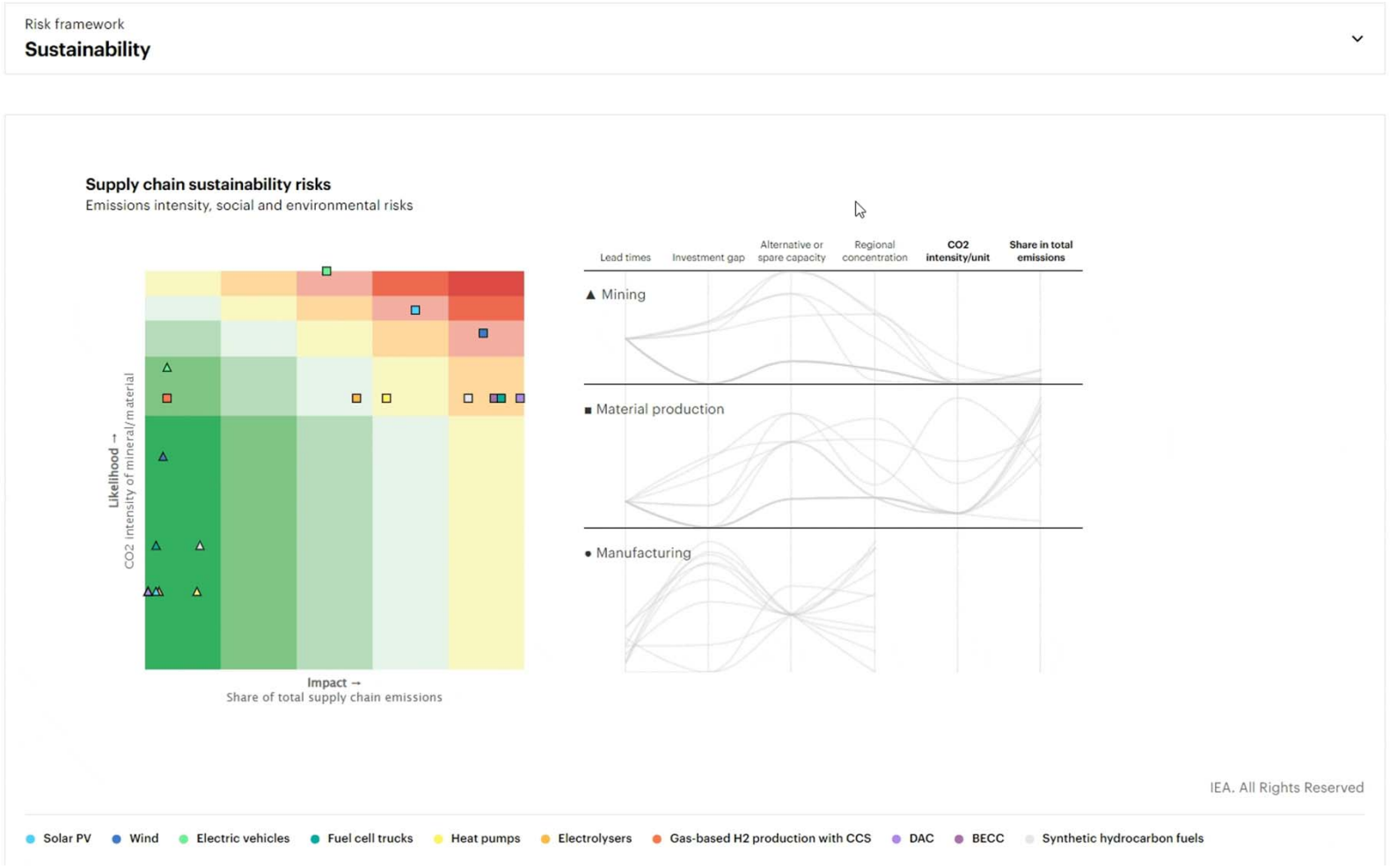
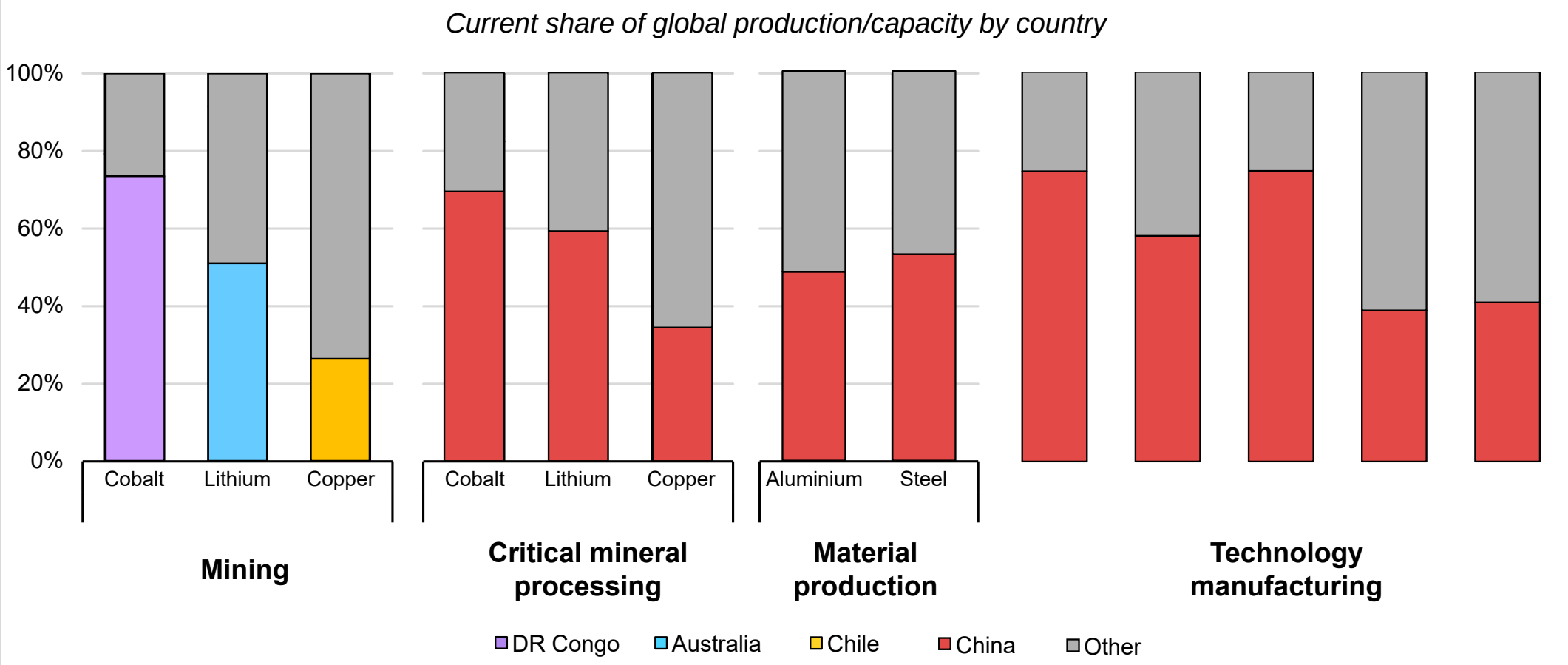
- Vhfxulw|#
- Uhvlohqfh
- Vxvwdlqdeldw|

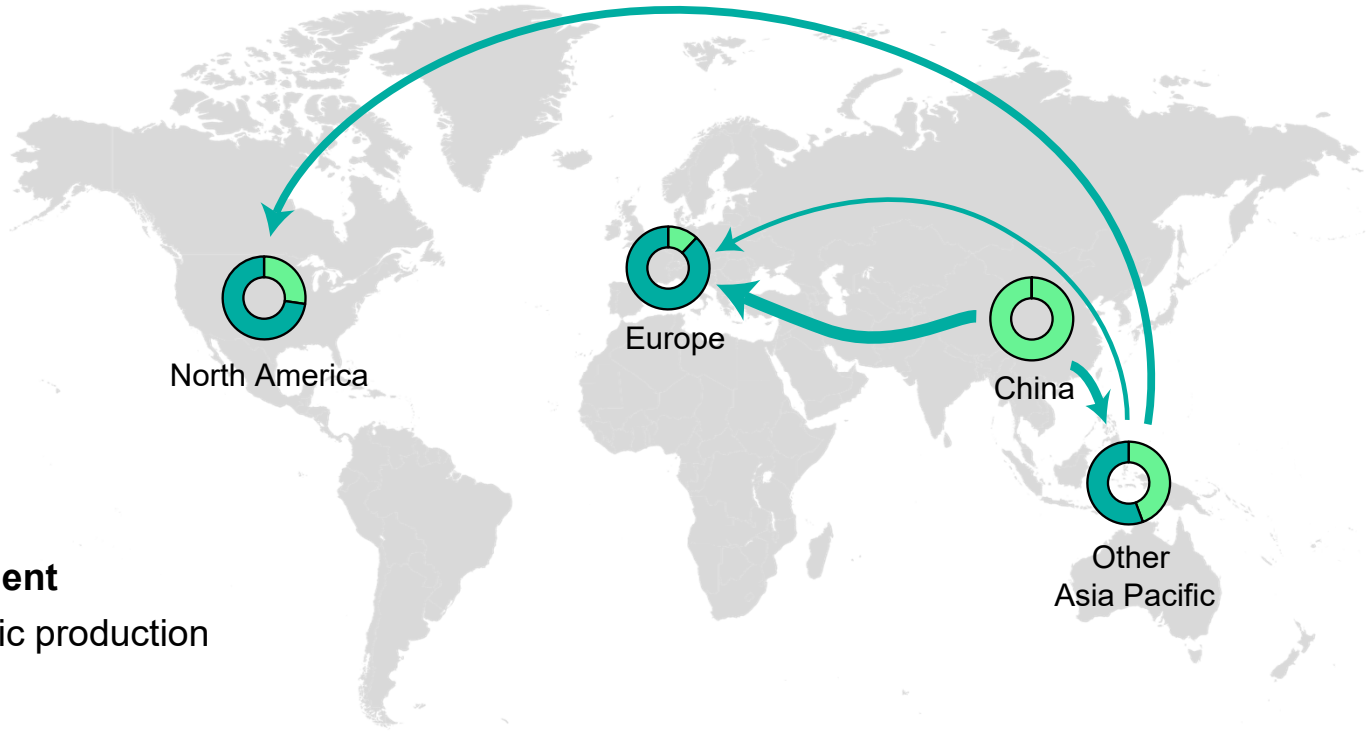


Clean technology supply chain concentration risks extend beyond mining



Clean technology supply chains benefit from international trade

Main net trade flows for selected clean technologies, 2021



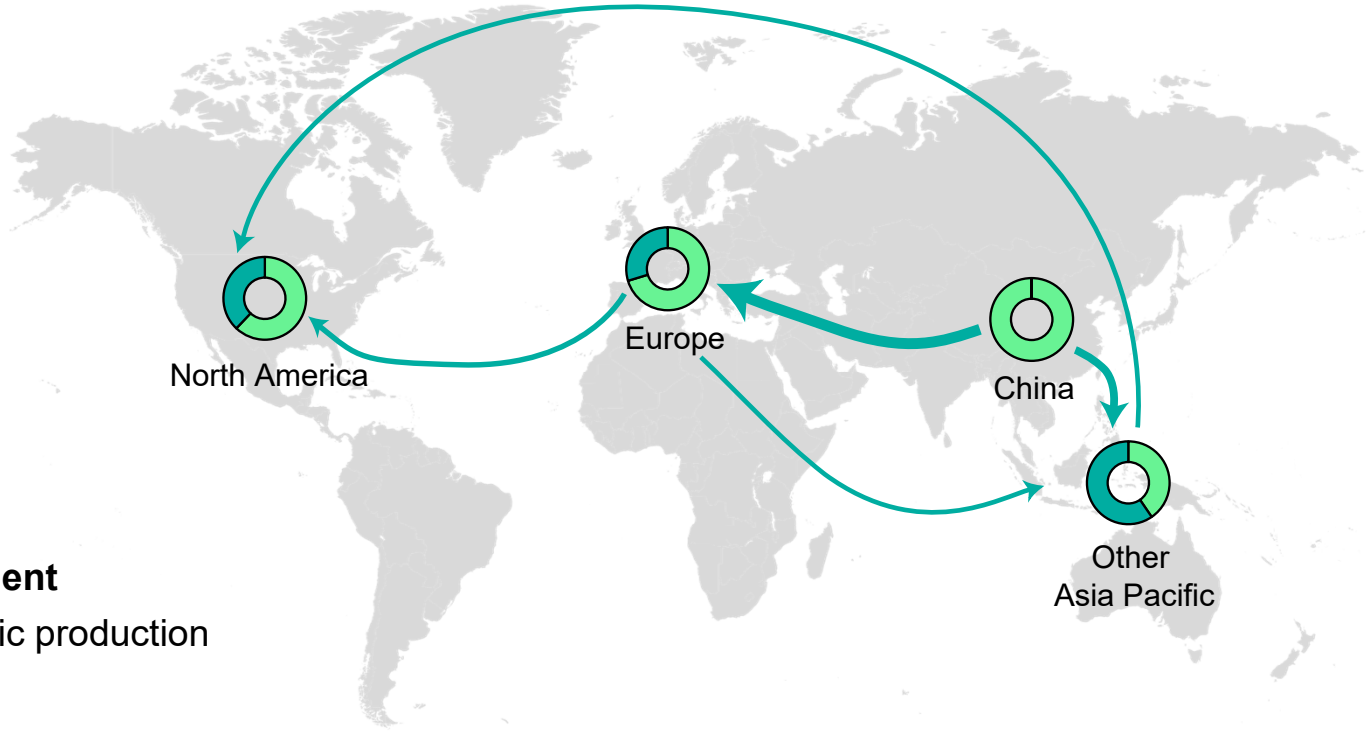
Solar PV modules

Share of trade in global deployment:

~60%

Clean technology supply chains benefit from international trade

Main net trade flows for selected clean technologies, 2021



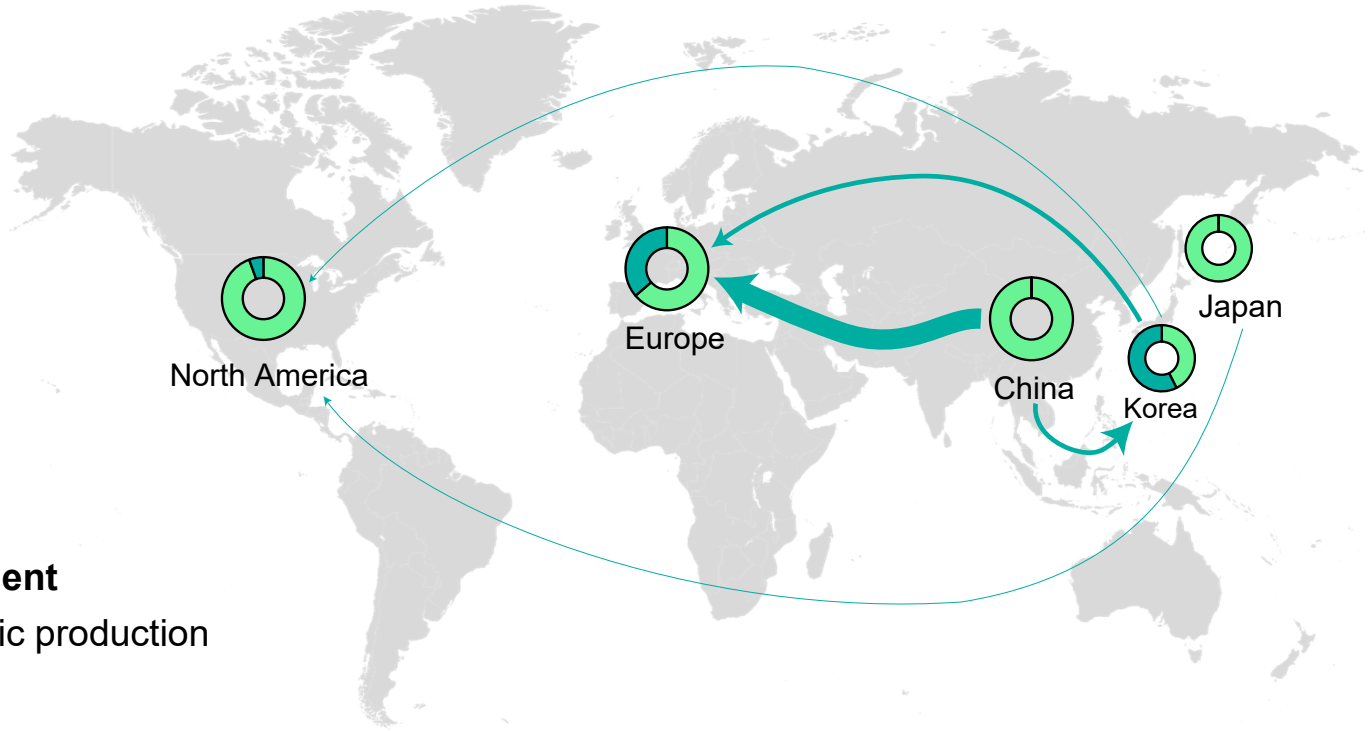
Wind

Share of trade in global deployment:

~20%

Clean technology supply chains benefit from international trade

Main net trade flows for selected clean technologies, 2021



EV batteries

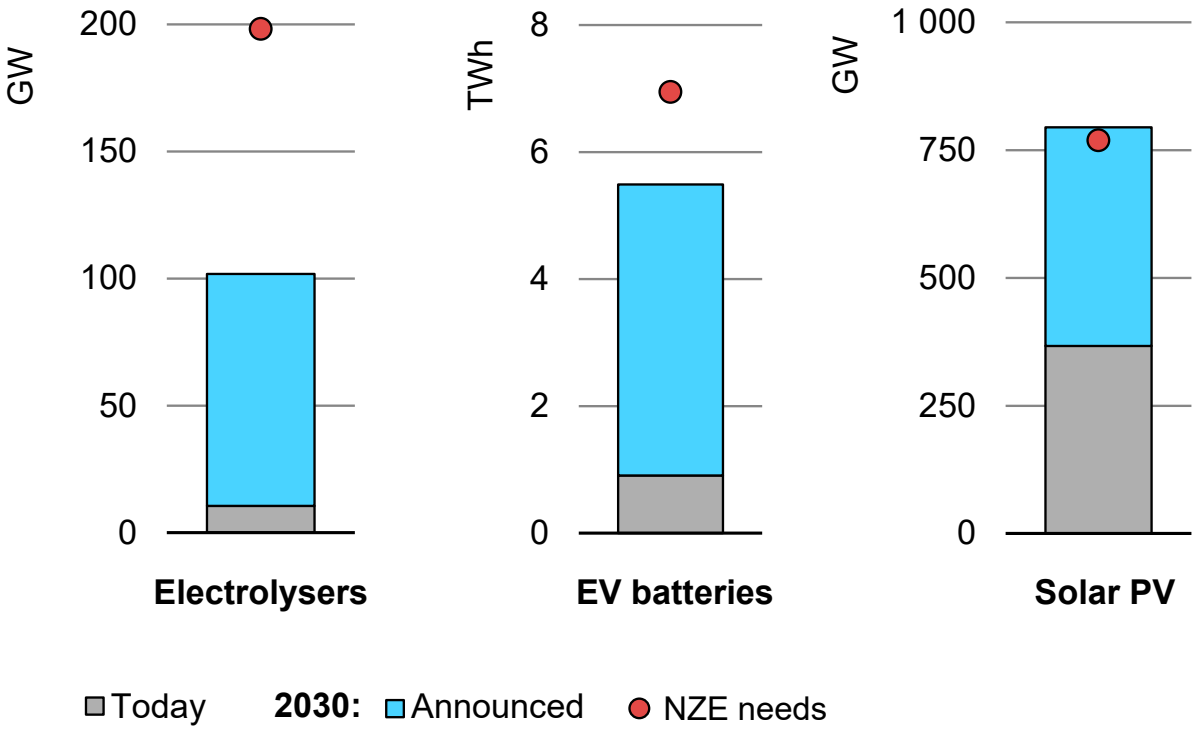
Share of trade in global deployment:

~10%

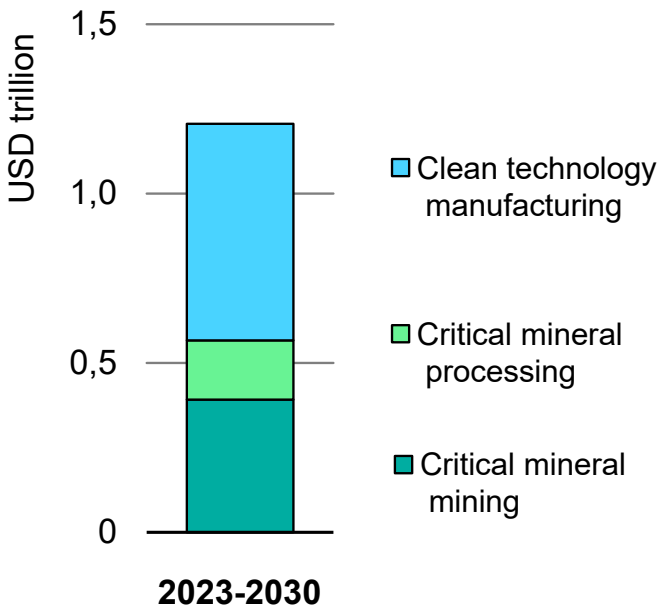
A large domestic market created by rapid clean technology deployment, combined with concerted industrial policy, have made China the dominant player in global clean technology manufacturing and trade.

Investment in clean technology supply chains is on the rise

Annual manufacturing capacity for selected clean technologies



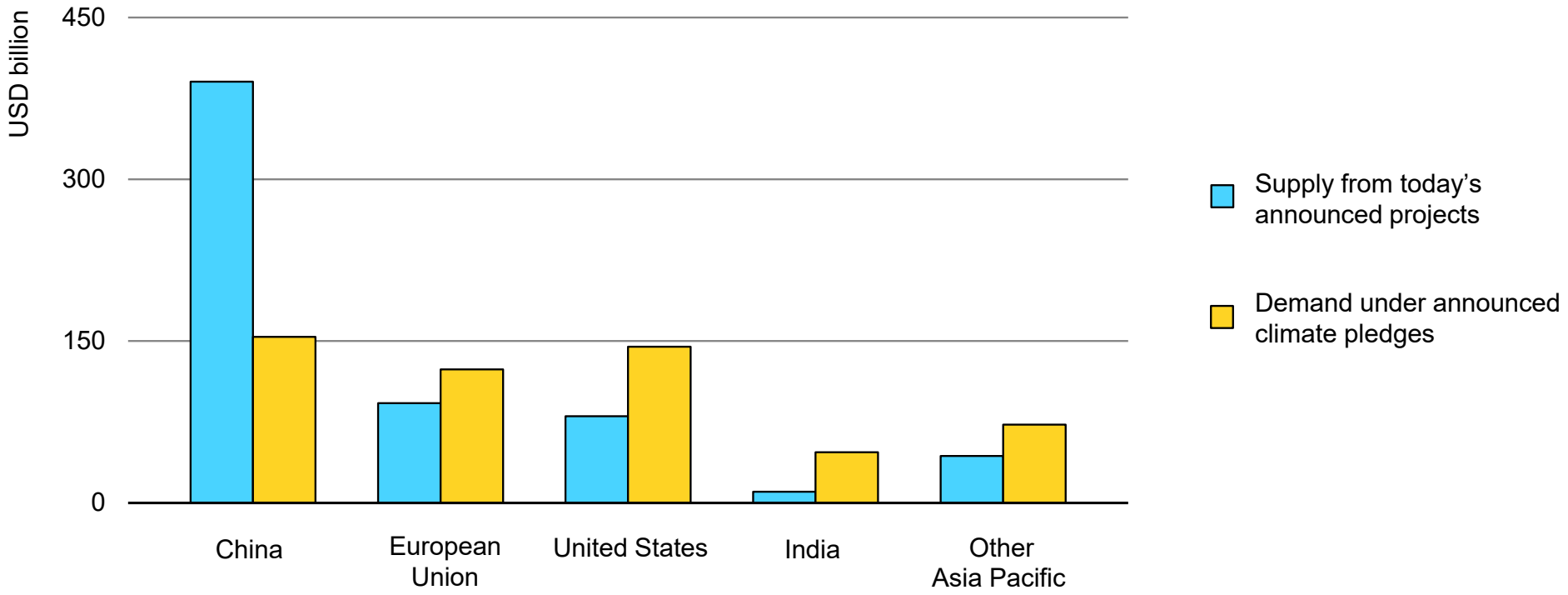
Cumulative investment needs in key clean technology supply chains in the NZE



Clean technology manufacturing is increasing rapidly, owing in part to short project lead times. If they materialise, announced manufacturing projects would fulfil two-thirds of the investment needs to 2030 in the NZE.

Markets for clean technologies constitute a major opportunity

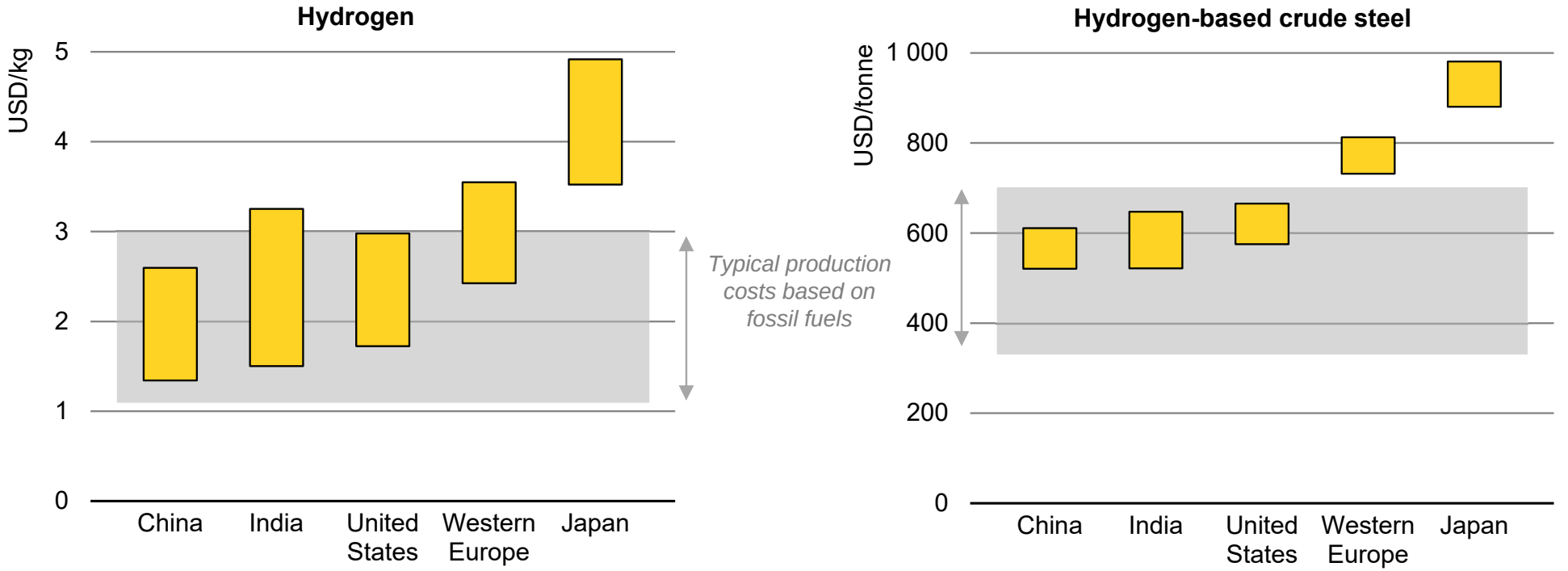
Market sizes for supply from announced projects and demand under announced pledges for key clean technologies, 2030



Committed projects in the United States and the European Union account for less than 20% of domestic expansion plans, leaving significant opportunity to increase production in fulfilling announced climate pledges.

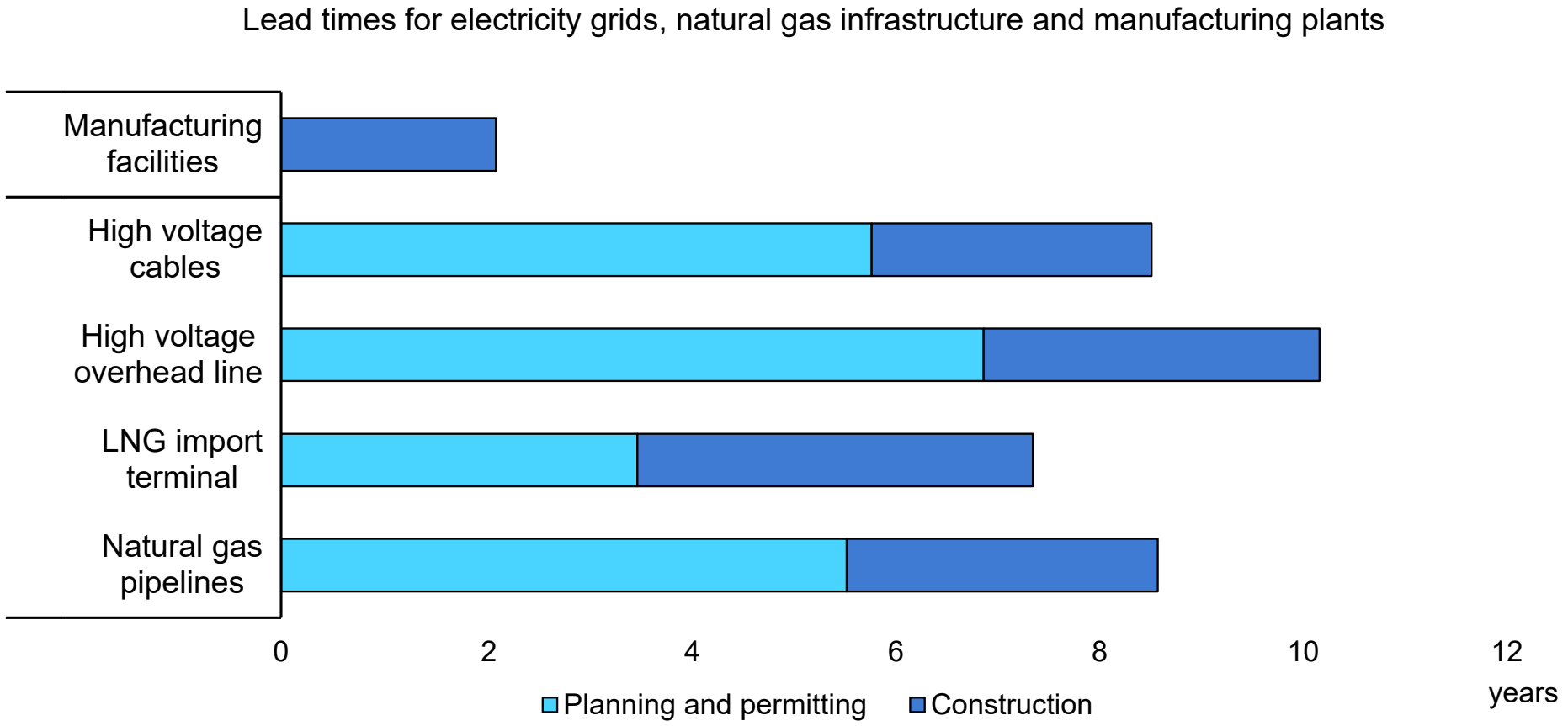
Competitiveness is a key consideration for industrial strategies

Production costs using electrolysis and variable renewables under announced climate pledges, 2030



Climate goals and innovation policy are driving new project announcements for energy intensive commodities, but persistent cost competitiveness gaps indicate the need for strategic partnerships and international collaboration.

Developing infrastructure takes considerable time



Construction is in most cases a relatively efficient process, taking 2-4 years on average, but planning and permitting can cause delays and create bottlenecks, with the process taking 2-7 years,

Key takeaways

- The energy world is in the early phase of a new industrial age – the age of clean energy technology manufacturing; reaping the benefits requires an **all-of-government approach**.
- High geographical and market concentrations threaten **supply security;** the policies to deal with such threats differ by supply chain, and must build on competitive advantages and strengths.
- Boosting **supply chain resilience** and **sustainability** is crucial; market disruptions and input price fluctuations can have profound cost implications.
- Participating in the emerging new energy economy requires **industrial strategies** that build on a **mapping of domestic opportunities** and **identify strategic partnerships**.
- **Time is of the essence** for clean energy technology supply chains; governments hold the key to accelerating deployment and tapping into economic opportunities.