

Supply Chain Risks and the Energy Transition

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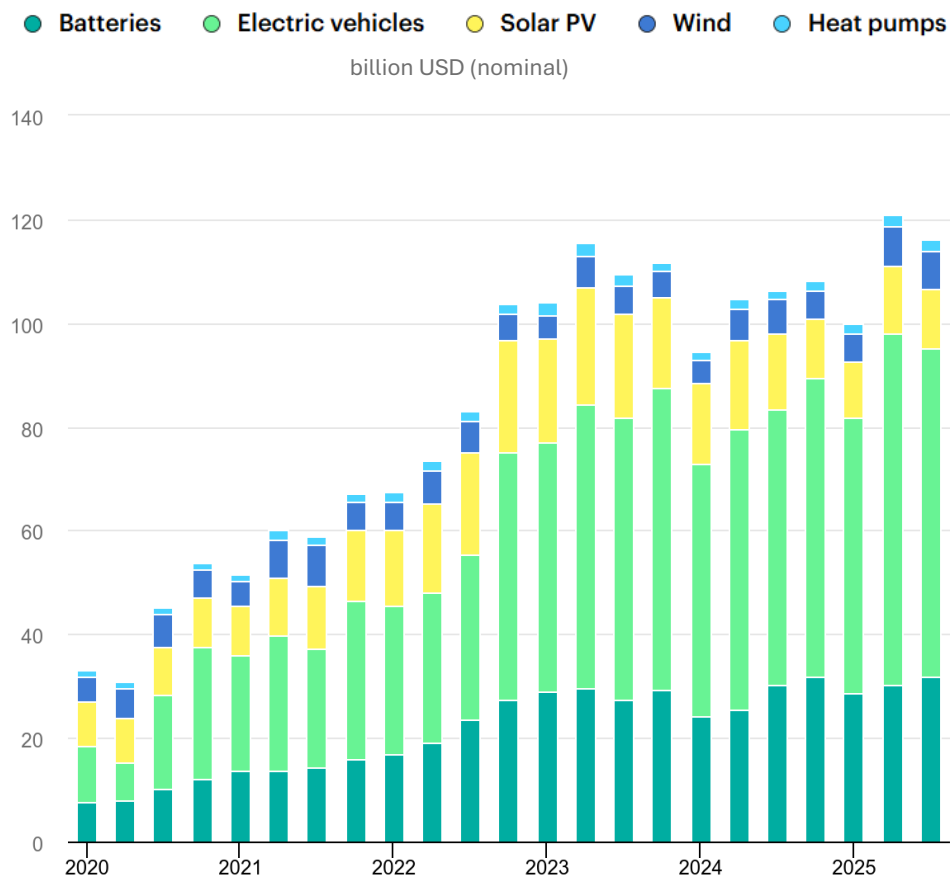
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Focus today on energy transition and trade

Value of international trade for selected energy technology products



- The clean energy technology market is growing faster than fossil fuels.
- Annual growth ~20%/y (2015-25), value 2025 USD 1.2 tr.
- Trade in clean technology products also grows fast; ~USD 290 bln in 2025.
- It is trade in investment goods, not quasi-permanent flux of fuels.
- New suppliers have emerged
- ... traditional fossil fuel supplies will see slowing demand.



Clean energy supply chains are different

- New suppliers
- Access to **critical raw materials** - geographic concentration
- Production **scale** is critical for competitiveness
- Clean energy production is more **decentralized**
- More **services jobs**
- New supply chain **risks and dependencies**
- Decision to buy is an **investment decision under uncertainty**
- Government **policies** have been trying to absorb part of the uncertainty – both on demand and supply side – with border and behind-the border policies
- **Reducing foreign dependencies** has all but replaced reducing emissions as main driver behind policies



Challenges for modeling – to discuss

Theory

- Map decentralized energy generation in the production structure.
- Model investments in clean energy capacity; aggregate ‘energy sector’ and at household level.
- Scale effects, and ‘first-mover advantage’
- Map demand and supply side policies to model parameters.

Data

- Detailed estimates for cost structures of clean energies.
- Accounting for clean energy capital goods in trade statistics, national IOs and in ICIOs?
- Where are investments in decentralized energy generation in existing data?
- Energy use of AI.
- Policy information; how to make comparable between jurisdictions?

Modeling mechanics

- Combine bottom-up and economy-wide (CGE)?
- Realistic scenarios with different regional speeds.

