



Energy Technology Perspectives 2024

Dr. Uwe Remme, Head of Hydrogen and Alternative Fuels Unit, Energy Technology Policy Division

IEA Vernetzungstreffen „Klimafitte Industrie: Forschung und Entwicklung für die Industrie der Zukunft“

28 January 2025

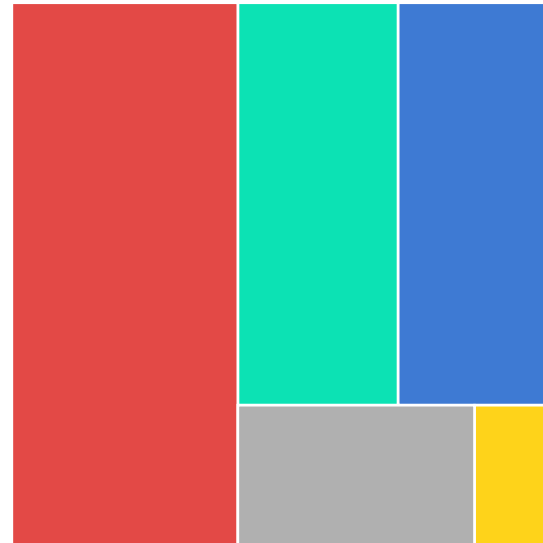
Clean & modern technologies are a sizeable economic opportunity

Global market value for clean energy technologies

2035 under current policy settings
USD 2.1 trillion

2015
USD 0.2 trillion

2023
USD 0.7 trillion



China
North America
Europe
India
Rest of the World

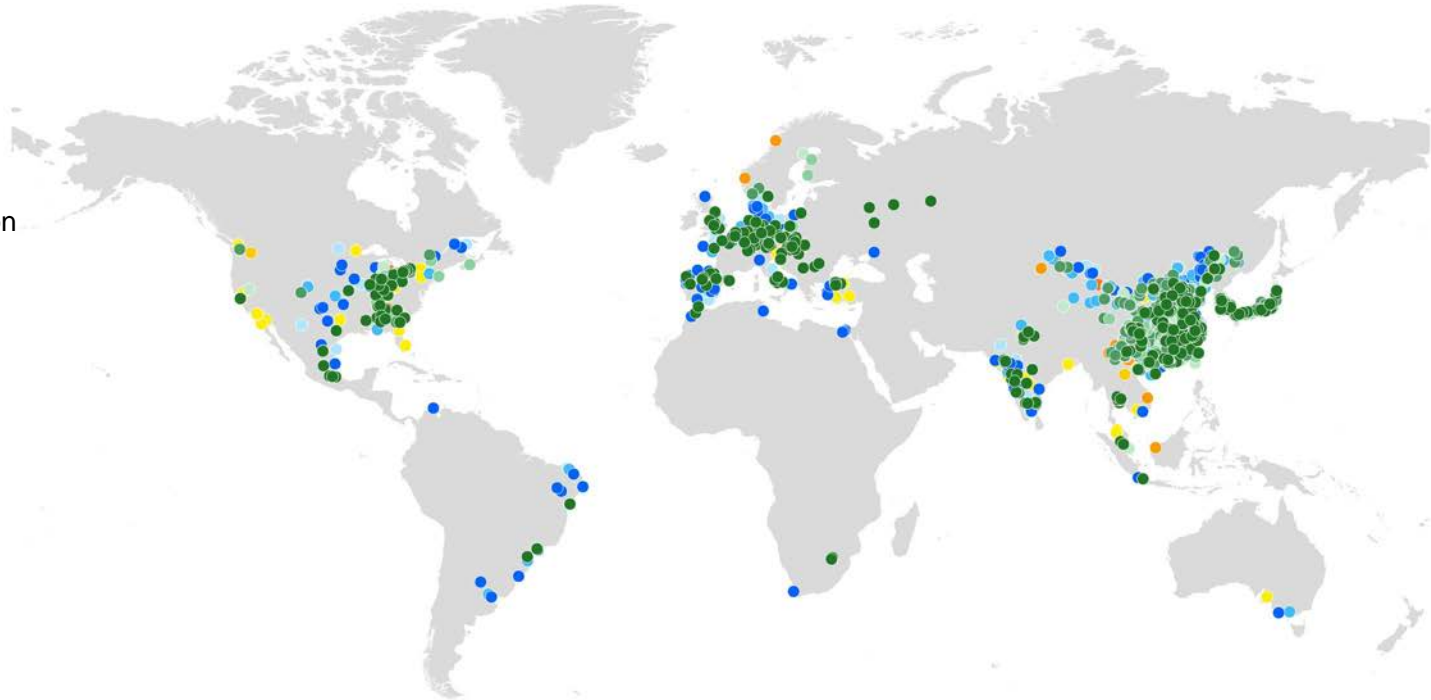
The market for clean technologies is set to triple to 2035 under current policy settings, close to value of the global crude oil market in recent years.

Investment in clean technology manufacturing is booming

Clean technology manufacturing facilities in operation, 2023

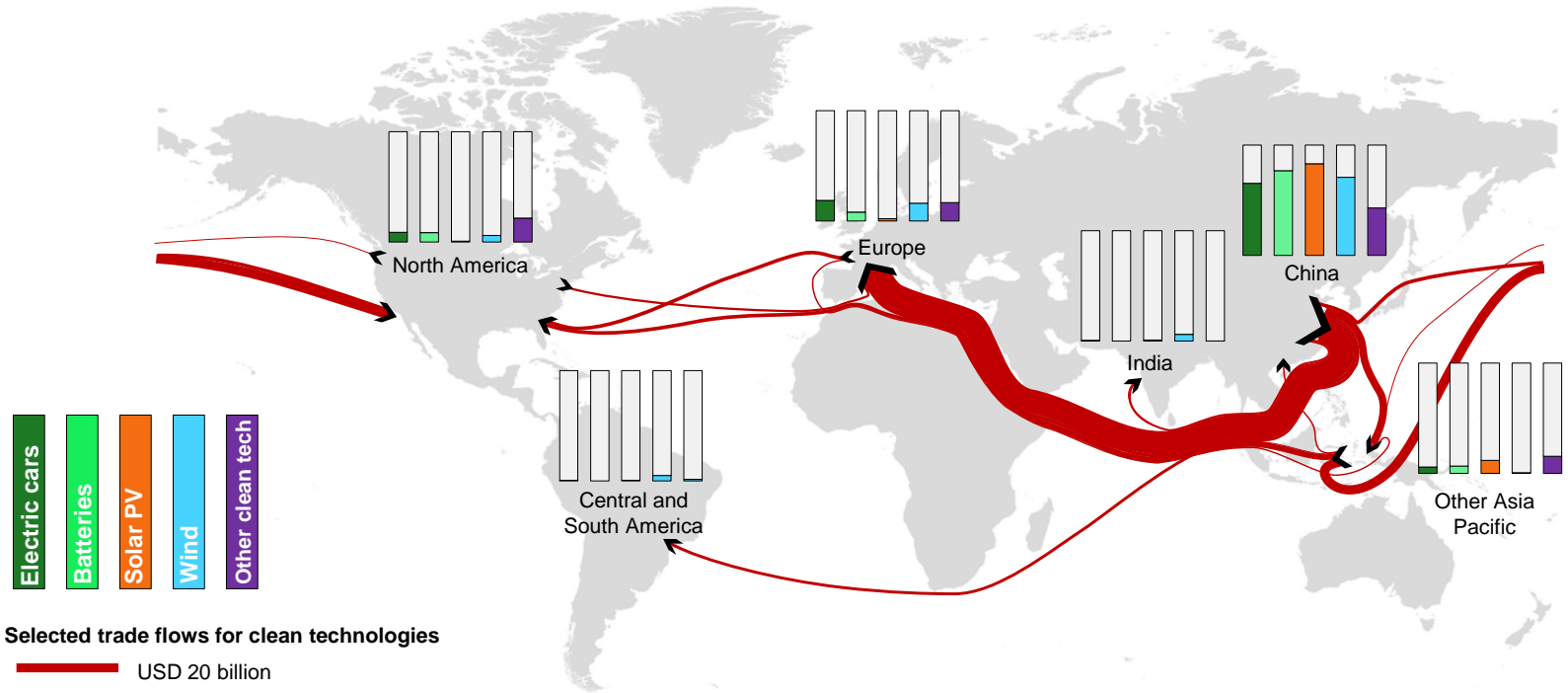
Solar PV

- Polysilicon
- Wafer
- Cell
- Module



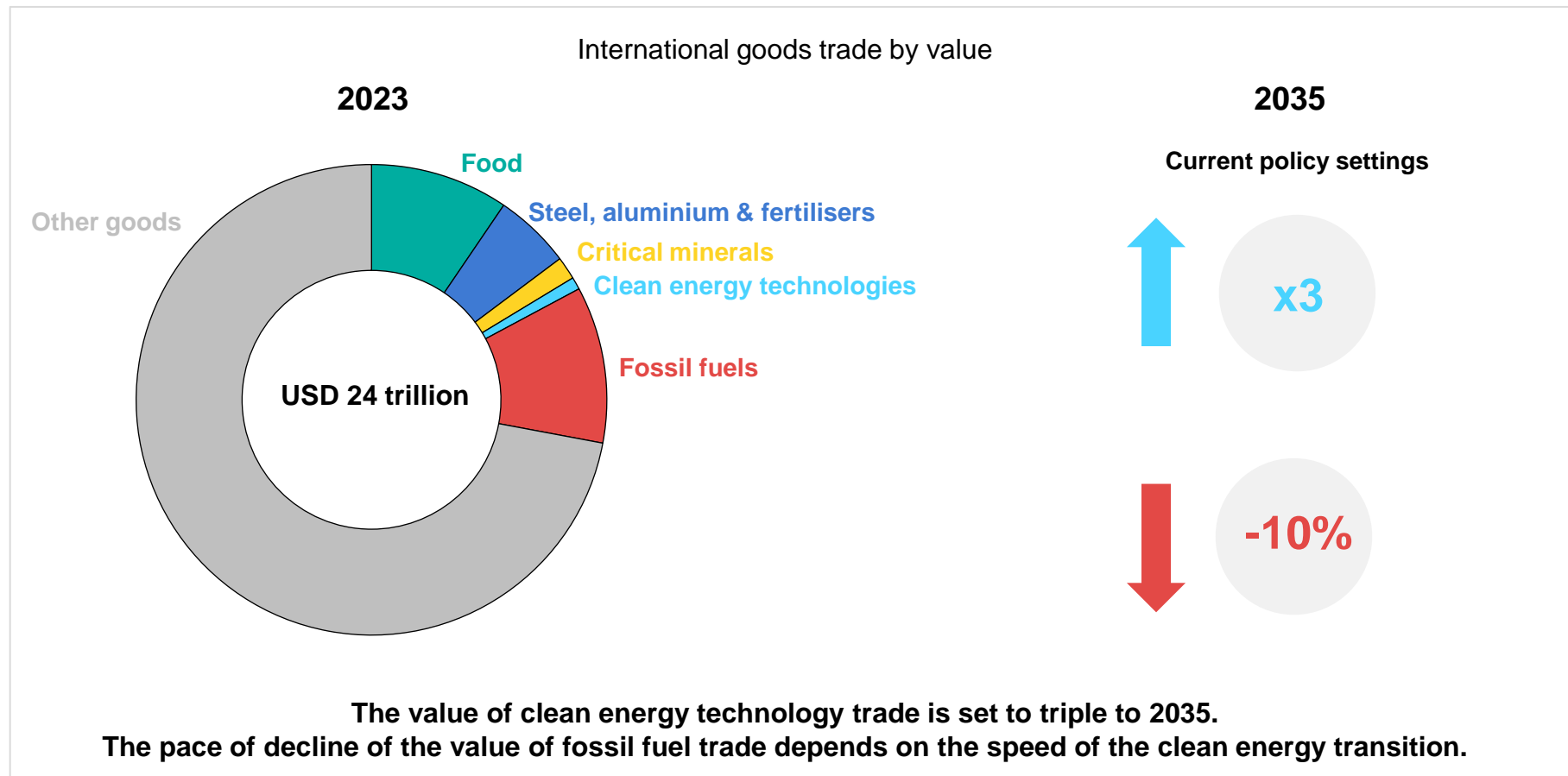
Investment in clean technology manufacturing is booming

Share of global clean technology manufacturing output by technology, 2023

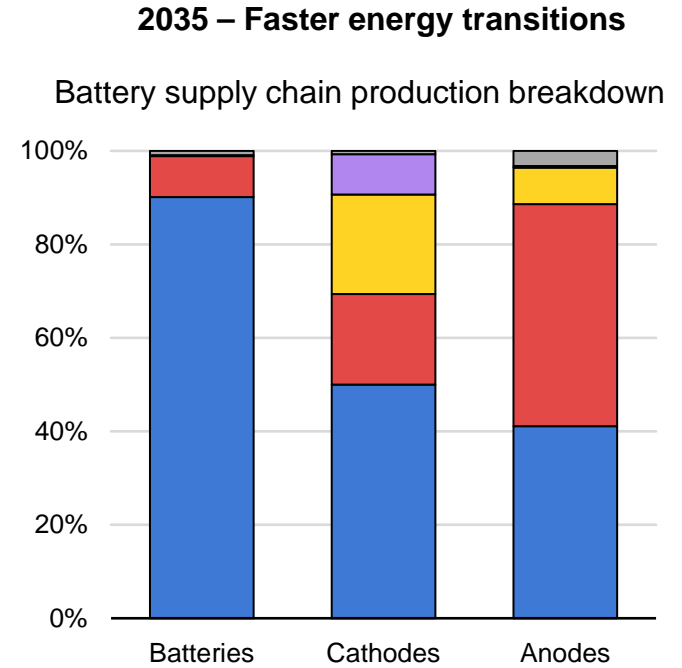
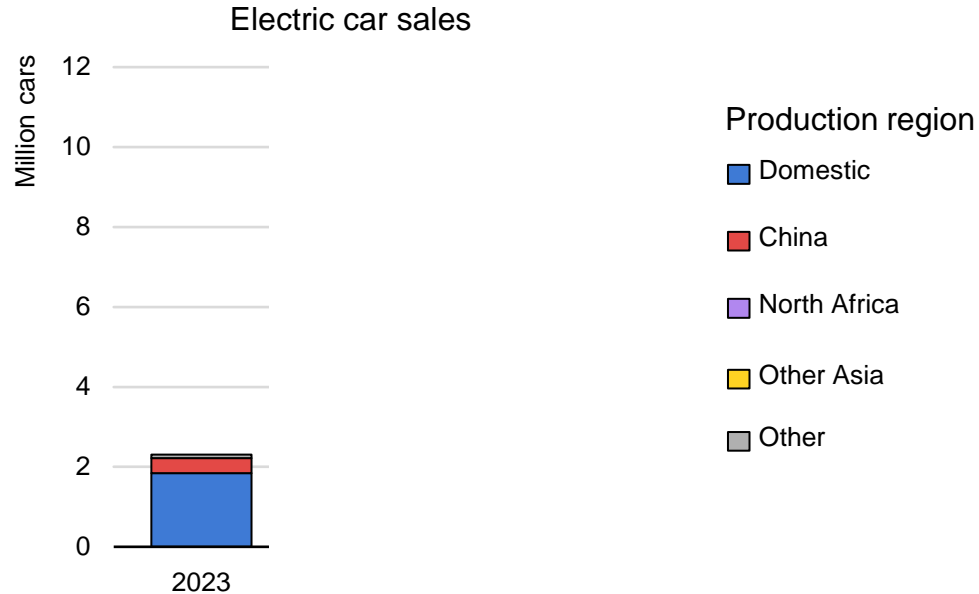


The manufacturing of clean technologies is highly concentrated geographically, with China accounting for around 70% of the global manufacturing output value for the six key clean technologies.

International trade is essential to the global economy



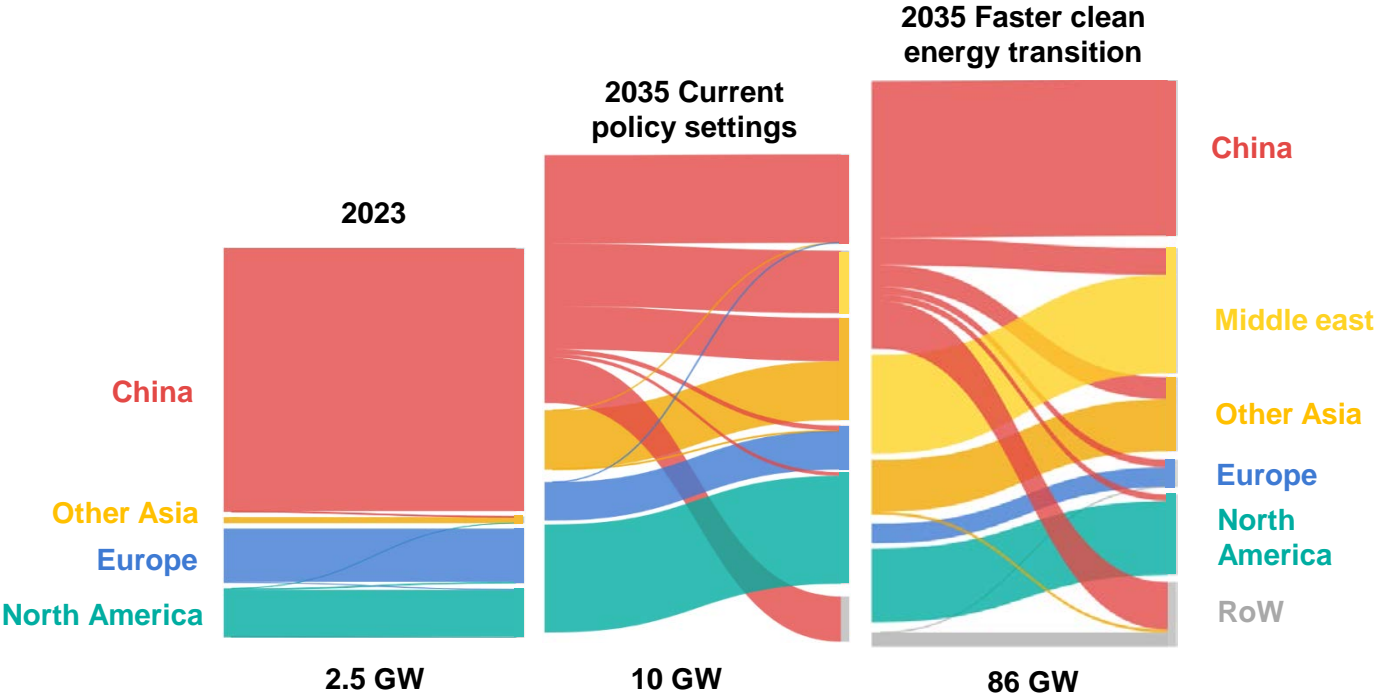
Industrial policy in the EU can shape the future of EV manufacturing



Innovation and investments along the supply chain can improve the competitiveness of EVs made in Europe.

Electrolysers: A blank canvas for trade

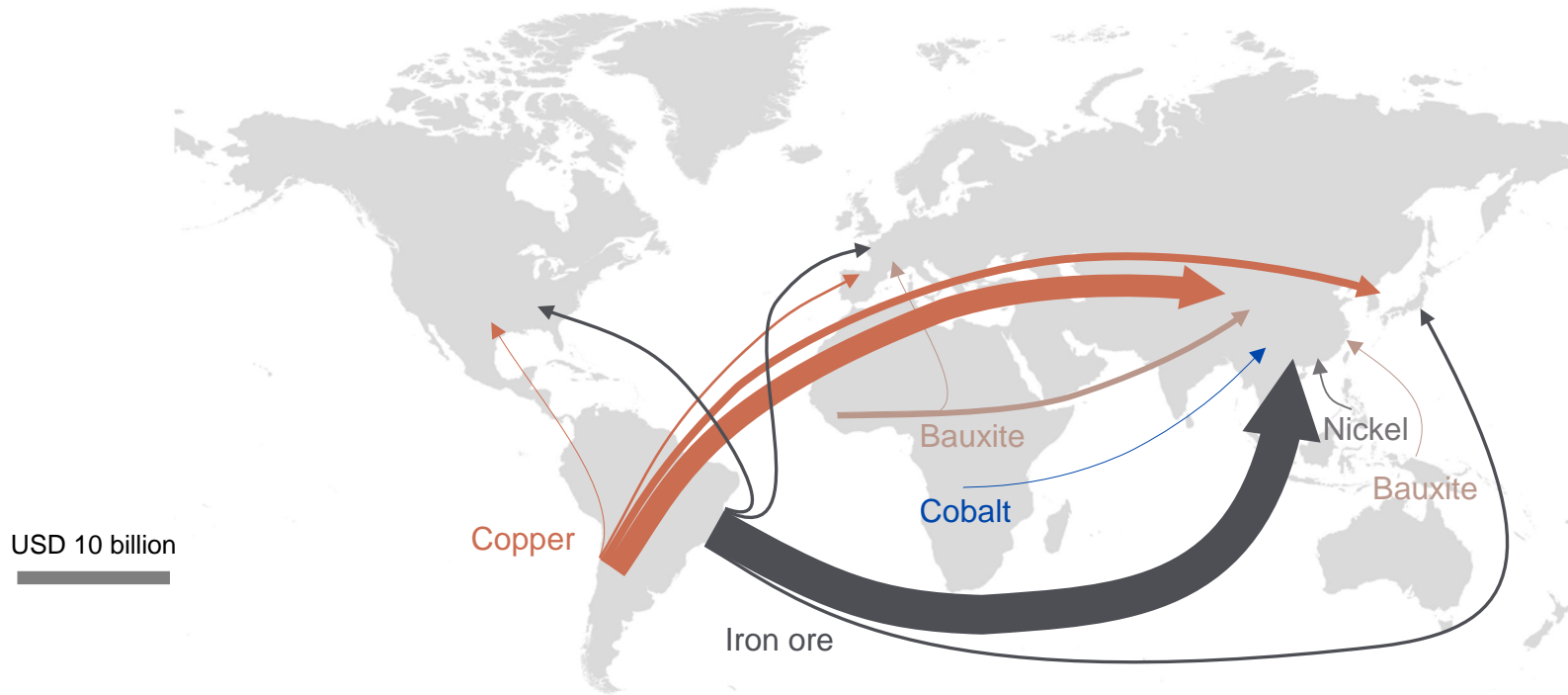
Global trade flows of electrolysers in 2023, and in the STEPS and APS in 2035



Electrolysers trade grows from virtually zero today to represent 45% of global demand in STEPS in 2035, almost entirely from China. It grows 4-fold in APS, although in parallel with domestic production in other regions.

The door of the new energy economy is still open to emerging markets

Trade flows of raw materials from emerging markets and developing economies, 2023




A fair and just transition requires enabling more regions to reap the economic benefits from growing supply chains for clean and modern energy technologies.

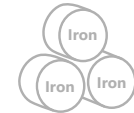
The door of the new energy economy is still open to emerging markets

Key manufacturing opportunities in the High Potential Case

- ✓ Good renewable resources
- ✓ Large cobalt reserves
- ✓ Existing large fertiliser production
- ✓ Available energy infrastructure (North & South Africa)



EV manufacturing accounts for 3% of North Africa's GDP by 2050



Iron exports x4 more value than iron ore exports



Africa meets all ammonia demand with domestic resources by 2050

A fair and just transition requires enabling more regions to reap the economic benefits from growing supply chains for clean and modern energy technologies.

iea