Energy Transitions Commission

Navigating Low-Carbon Technology Trade – Local vs. Global Supply Chains
and
Key Priorities in the ETC's 2025 Regional Programme

ETC Commissioners Meeting
20th March 2025

Aims of the regional program translate into…

1 Accelerate the local energy transition

- **Produce insights** to set the vision of a Net Zero region, show pathways to decarbonize hard to abate industry sectors, and provide solution set to implementation barriers
- **Influence strategy** via local partners and ambassadors

2 Enhance ETC's global perspectives & credibility

- **Diversify the perspective** of the global ETC vision and key messages
- **Stress test ETC global analyses** to address analytical gaps
- **Create bottom-up vision** of global transition

3 Grow ETC membership

- **Attract new members,** considering both firms with global activities and organizations with business in specific regions

key focus areas for 2025

Expand insights to new, key regions

Enhance networks in existing key regions

Enhance local priorities in existing regions

Expand insights across all regions

A reminder of the ETC regional network

Est.	2017	2018	2018	2019	2020	2021	2021	2022	2023	2024
Knowledge Partner(s)	teri, CEEW THE COUNCIL, RMI	ENERGY FOUNDATION 能源基金会, Tsinghua University, RMI	SYSTEMIQ, European Climate Foundation	Climateworks CENTRE, MISSION POSSIBLE PARTNERSHIP	Duke NICHOLAS INSTITUTE for ENERGY, ENVIRONMENT & SUSTAINABILITY, WORLD RESOURCES INSTITUTE	The Transition Accelerator, IVEY foundation	東京大学未来ビジョン研究センター Institute for Future Initiatives The University of Tokyo	WORLD RESOURCES INSTITUTE	IESR Institute for Essential Services Reform	SYSTEMIQ
Initiative	Energy Transitions India		Energy Transitions Commission	Australian Industry Energy Transitions Initiative	Energy Pathways USA	ELECTRIFYING CANADA, AN INITIATIVE OF THE TRANSITION ACCELERATOR	CENTER FOR GLOBAL COMMONS	African Energy Dialogues		
Insights									In-progress	In-progress

Primary focus on Brazil, Canada, India, and Indonesia

Brazil

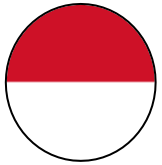
- Systemiq Brazil, ETC, iCS
- Re-examination of Brazil's latest NDCs
  - Interrogation of bio-centric decarbonization pathways
  - Framing of Brazil within the global context, rather than as a standalone country
- Run up to COP30

Canada

- Transition Accelerator + ETC
- Canada specific look at grids + bio
  - Focus on types of forests for bio-supply, comparing higher latitude countries like Canada with Brazil
  - Integration of high shares of renewables into Canadian grid

India

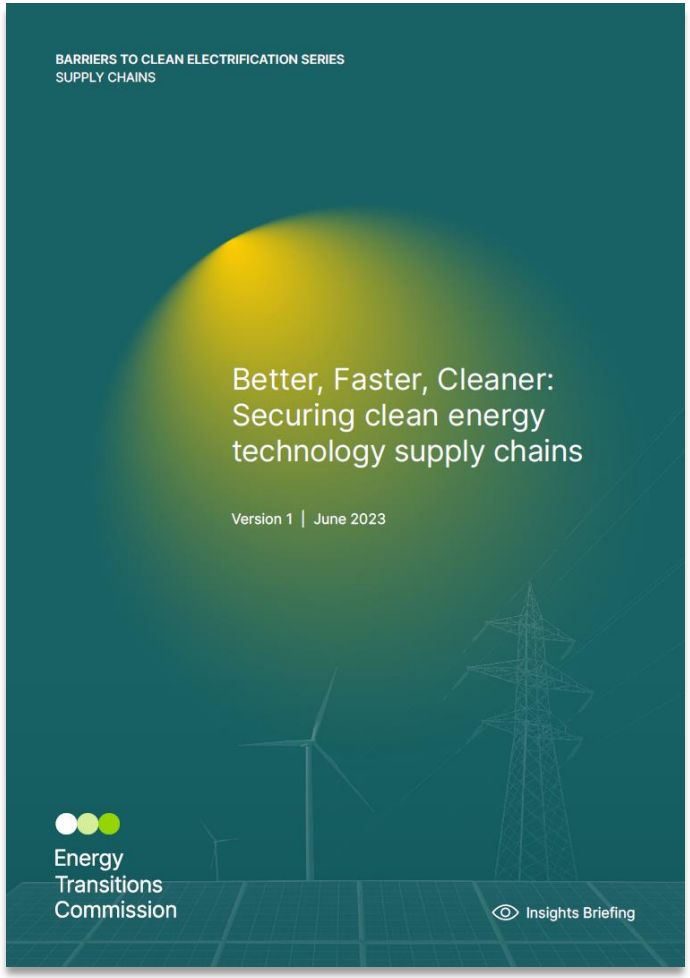
- TERI and ETC
- Examination of agriPV pilots in India
  - Land availability for solar generation
  - Interaction with distrubtion networks
  - Best practices around agriculture
- 8-10 months, starting end Q2



Indonesia

- IESR and ETC done under Indonesia Climate and Growth Dialogue (ICGD) platform of IISD
- Systems-wide approach to Net Zero
  - Update of IESR power system analysis in light of latest solar and battery costs
  - Implications for energy security and economic growth

Reminder: the ETC looked at clean energy supply chains in 2023



June 2023

<u>Conclusion</u>: at the global level, there are no inherent barriers to the scale-up of clean energy supply chains.

However, three **cross-cutting risks** require **clear actions** from policymakers and industry:

1. There **could be tight markets for some key input materials**, notably for some raw materials (lithium, copper) as well as shorter-lived volatility or delays for some more complex components.

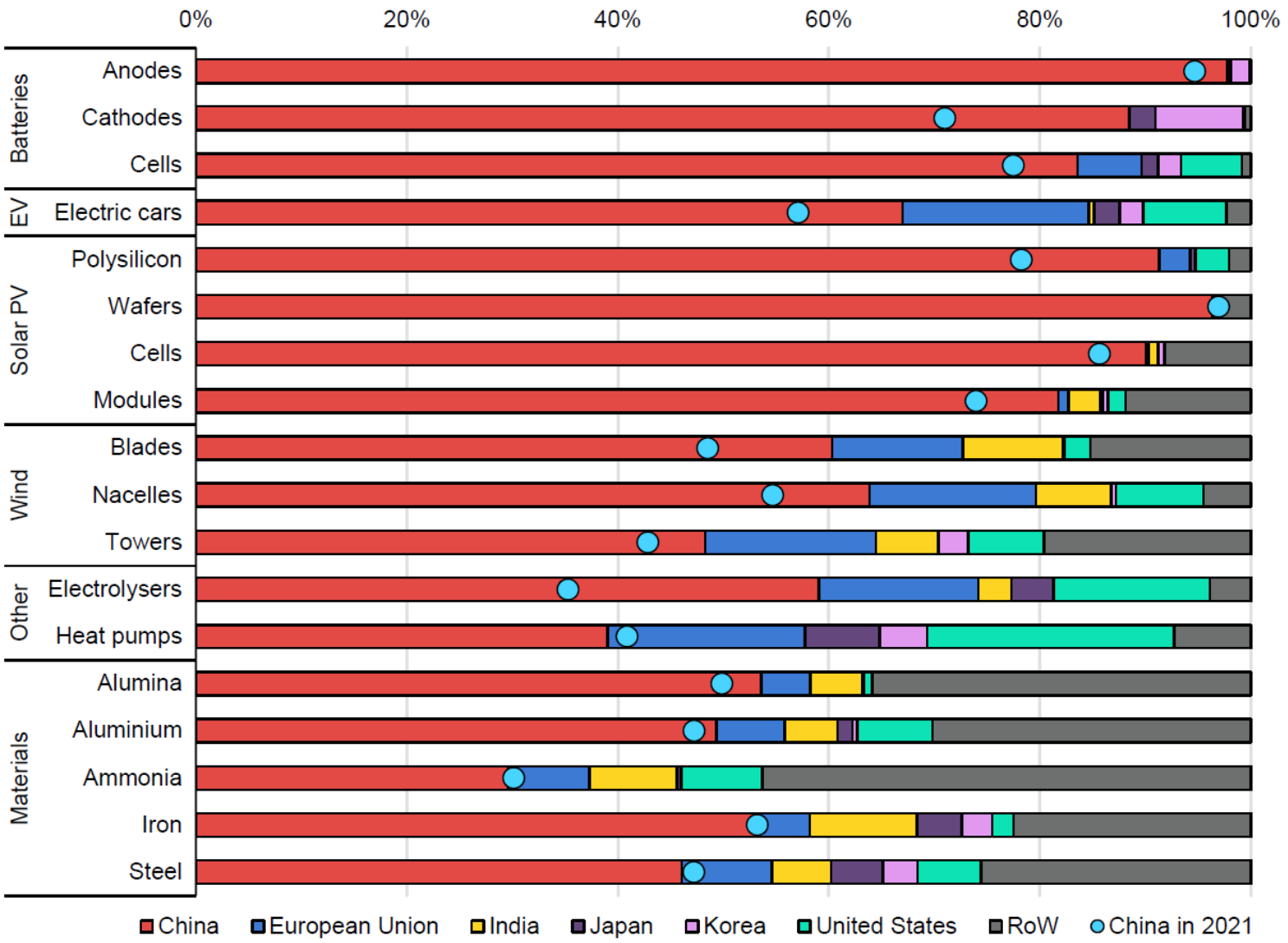
2. There are **specific environmental and social risks** especially relevant to solar PV and batteries.

3. There is a **high degree of concentration of production** across many steps of clean energy technology supply chains.

Focus of new briefing

China's dominance of clean technology supply chains has grown since 2021

Installed global manufacturing capacity by country/region 2023

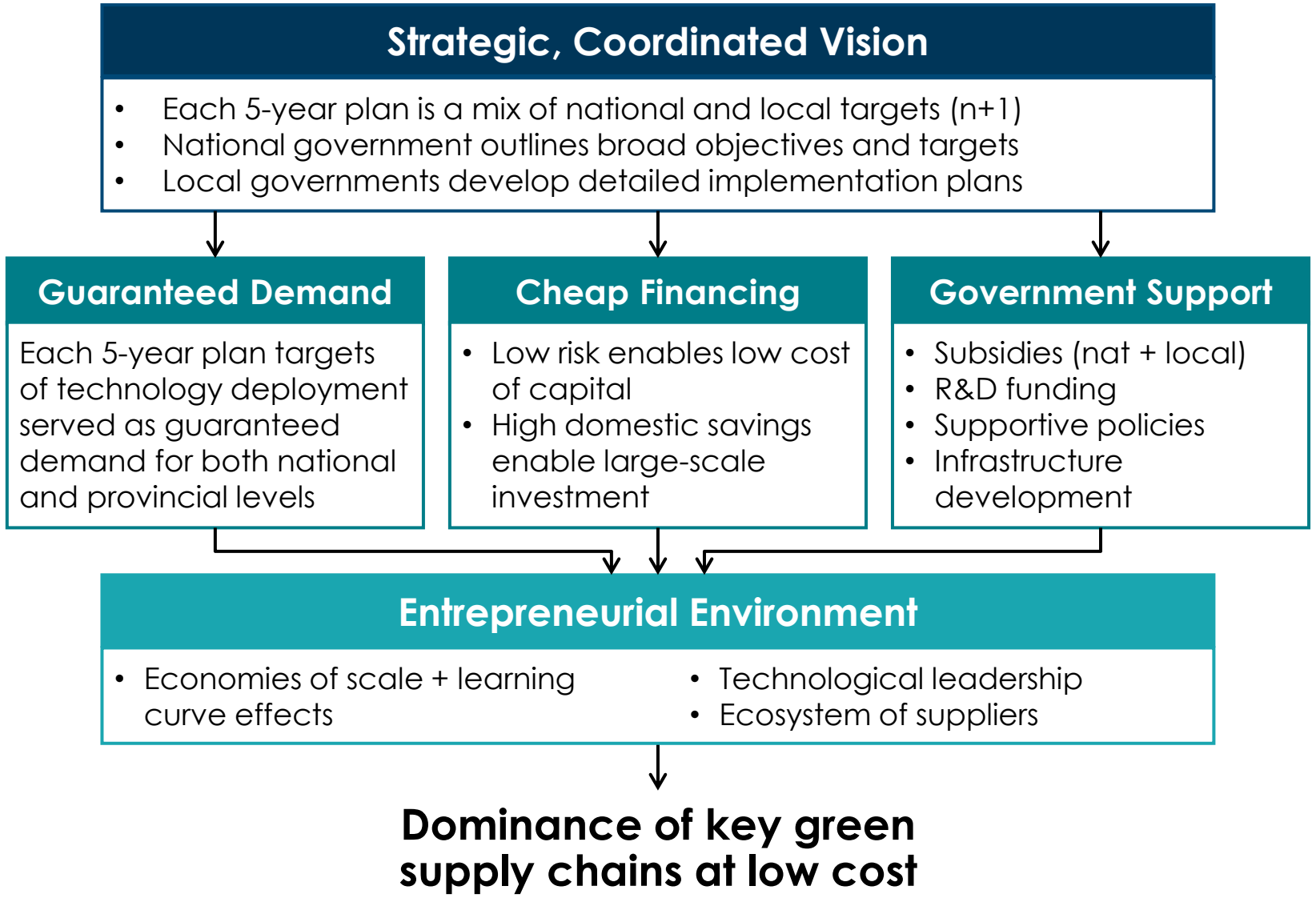


Source: IEA (2024) *Clean Technology Perspectives*

Common beliefs are that low prices are due to **low environmental standards and lower labour costs.**

But the **importance of these have declined** with rising environmental standards and increasingly automated manufacturing

Key drivers of China's clean tech advantage



Principles for building diversified or local supply chains

Diversifying supply chains is a legitimate, rational objective

Major countries will not accept near 100% supply of key clean technologies from any single country, China or other

100% autarky is neither realistic nor desirable

Countries must aim for significant local know-how and capacity

- EU Net Zero Industry Act, India Production Linked Incentives, and US IRA (today)
- Brazil local content requirements (early 2000s)
- China inward investment (1990s)

There will remain a major role for imports and trade

Welcome foreign products where there are no local substitutes at a good price, or where low cost is particularly important at this stage of the transition

Thinking straight about “security”

ENERGY SECURITY

- Risks of clean tech imports much smaller than for fossil fuel imports
  - Fossil assets require continuous supply via ships, pipelines
  - Once installed, clean tech assets provide energy services over asset lifetime

INTELLIGENCE / MILITARY SECURITY

- Need for analysis-based approach
  - Semiconductors are militarily important, solar panels are not
  - Extent of remote software control of technology remains important factor

Potential for European supply chain development: considering the fundamental economics for two technologies

SOLAR PV

- Standardized, mass-produced commodity with minimal variation, customization needed for different markets
- Trivial existing workforce in Europe
- Current cost of 9 cents/watt in China v. 25 cents/watt in the US/ EU
- Current manufacturing capacity in China greater than total global demand

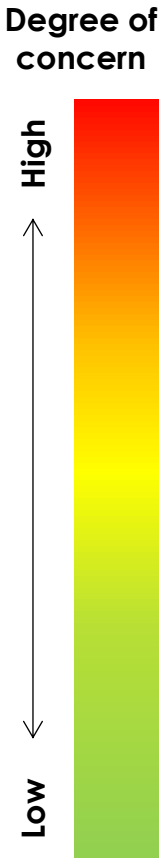
Buy from the cheapest source to keep transition costs as low as possible

Electric Vehicles / Batteries

- Highly customizable, with variations in design, regulation, and consumer preference across different markets
- Large EU auto industry with 13.8m employees
- Strong economic case for producing batteries closer to vehicle assembly plants

Highly desirable to develop European EV and battery industry **if cost effectively**

Intelligence / military security concerns: a spectrum of issues



- Grid control software
- Autonomous vehicles
- Remotely controlled battery management systems
- Electric vehicles
- Battery cells and packs
- Electrolysers
- Solar PV

Issues need to be assessed on a case-by-case basis

Risks can be managed by having specific conditions included in government policies, e.g. CFIUS regulation in US limited Chinese controlled battery companies to pack manufacture, excluding remote battery management

Focus on location, not ownership

Foreign owned companies can provide employment and valued added within country

Foreign-owned auto companies in the UK (e.g., Toyota, Nissan, BMW) provide over 70,000 jobs

Inward investment can be key driver of technology transfer and skills development

Successfully used by China starting in the 1990s

- Difficult to catch up from far behind without learning from leading companies

- Failure of BritishVolt and Northvolt

Multiple options to prevent assembly only operations and ensure supply chain and skill development, e.g. joint ventures, local content requirements, or technology license agreements

US Inflation Reduction Act made access to battery manufacturing subsidies dependent on gradually rising requirements for local content percentages

Clean tech manufacturing growing in Europe

electrive.com

BYD considers third European plant and battery factory

Chinese manufacturer BYD wants to build another plant in Europe since the EU now collects special tariffs on electric vehicle imports from...

Batteries News

CATL – German battery plant powers up local green transition

CATL - German battery plant powers up local green transition A new plant set up by China's leading battery maker Contemporary.

ESG Today

Stellantis, CATL to Build $4.3 Billion Battery Plant for Affordable EV Models

The new plant will enable the company to offer more high-quality, durable and affordable battery-electric passenger cars, crossovers and SUVs.

eeNews Europe

Europe approves €48m for Envision AESC French battery gigafactory

The European Commission has approved a €48 million grant for a second battery gigafactory in France to supply car maker Renault.

The role of tariffs and subsidies

Time-bound subsidies to build local industries, not permanent tariffs

- Permanently protecting structurally higher-cost industries increases consumer costs and slows energy transition

WTO compliant approach to setting tariff level based on analysis of apparent scale of current subsidy

Tariffs on EVs imported from China:

- Following detailed analysis looking at the level of current subsidy, EU tariffs set between 17% and 45%
- UK not imposing tariffs
- US tariffs increased from 25% to 100%
- Canada increased from 6% to 100%
- Australia has 5% tariffs

Source: https://www.weforum.org/stories/2024/09/major-economies-are-taking-aim-at-china-s-ev-industry-here-s-what-to-know/

It is technically and economically feasible to reach by 2050 net-zero carbon emissions from the so called "hard to abate" sectors of the economy without minimal reliance on the purchase of offsets

While there will only be a minimal impact on most end consumer prices most cases will see significant impact on intermediate product costs

		Impact on final product cost US$ / % price increase		Impact on intermediate product cost US$ / % price increase	
Industry	Cement	+$15,000 on a $500,000 house	+3%	+$100 per tonne of cement (+$30 per tonne of concrete)	+100% (+30%)
Industry	Steel	+$180 on the price of a car	+1%	+$120 per tonne of steel	+20%
Industry	Plastics	+$0.01 on a bottle of soda	<1%	+$500 per tonne of ethylene	+50%*
Transport	Heavy-road transport	No price impact	None	No price impact	None
Transport	Shipping	+$0.03 per kg of imported sugar	<1%	+$4 million per annum on typical bulk carrier voyage	+110%
Transport	Aviation	+$40-80 on a 6,500-km economy flight	+10-20%	+$0.3-0.6 per liter of jet fuel equivalent	+50-100%

Implications of harder-to-abate (HTA) sector economics

Significant green cost premium at business-business level, either

- in perpetuity (e.g cement)
- for several decades (e.g steel)

Decarbonisation will not occur without carbon pricing or equivalent regulation / quantitative targets

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Several HTA sectors either:

- internationally traded (e.g. steel, chemicals)
- inherently international (e.g. shipping)

- Unless there are **globally agreed carbon prices** covering harder-to-abate sectors
- Domestic carbon prices or equivalent regulation / targets must be accompanied by **CBAMs or regulations which apply to imports**
- Otherwise, production will move to other countries and **decarbonisation will not occur**

CBAMs are not protectionist by an incentive to clean development

Relative competitive position	Neutral. If we start with no domestic carbon price and no CBAM • Domestic price alone destroys domestic competitiveness • CBAM alone would be protectionist • Domestic price + CBAM leaves level playing field we started with
Imported "consumption based" emissions	CBAMs are a means (the only means ?) for rich countries to take responsibility for imported "consumption based" emissions – increasing costs (slightly for domestic consumers to reflect emissions in other countries
Revenue transfer	Overt objective is not to raise revenue – ideal result is that other countries impose carbon prices → Make this explicit by devoting any tariff revenues to climate finance flows to low income countries?
Costs in developing countries	Minimal impact on consumer costs in developing countries … and fully offset by revenue flow to developing country government …. **If** developing countries respond by themselves imposing carbon prices