



CAF BANCO DE DESARROLLO
DE AMÉRICA LATINA
Y EL CARIBE

Critical minerals and Global Value Chains

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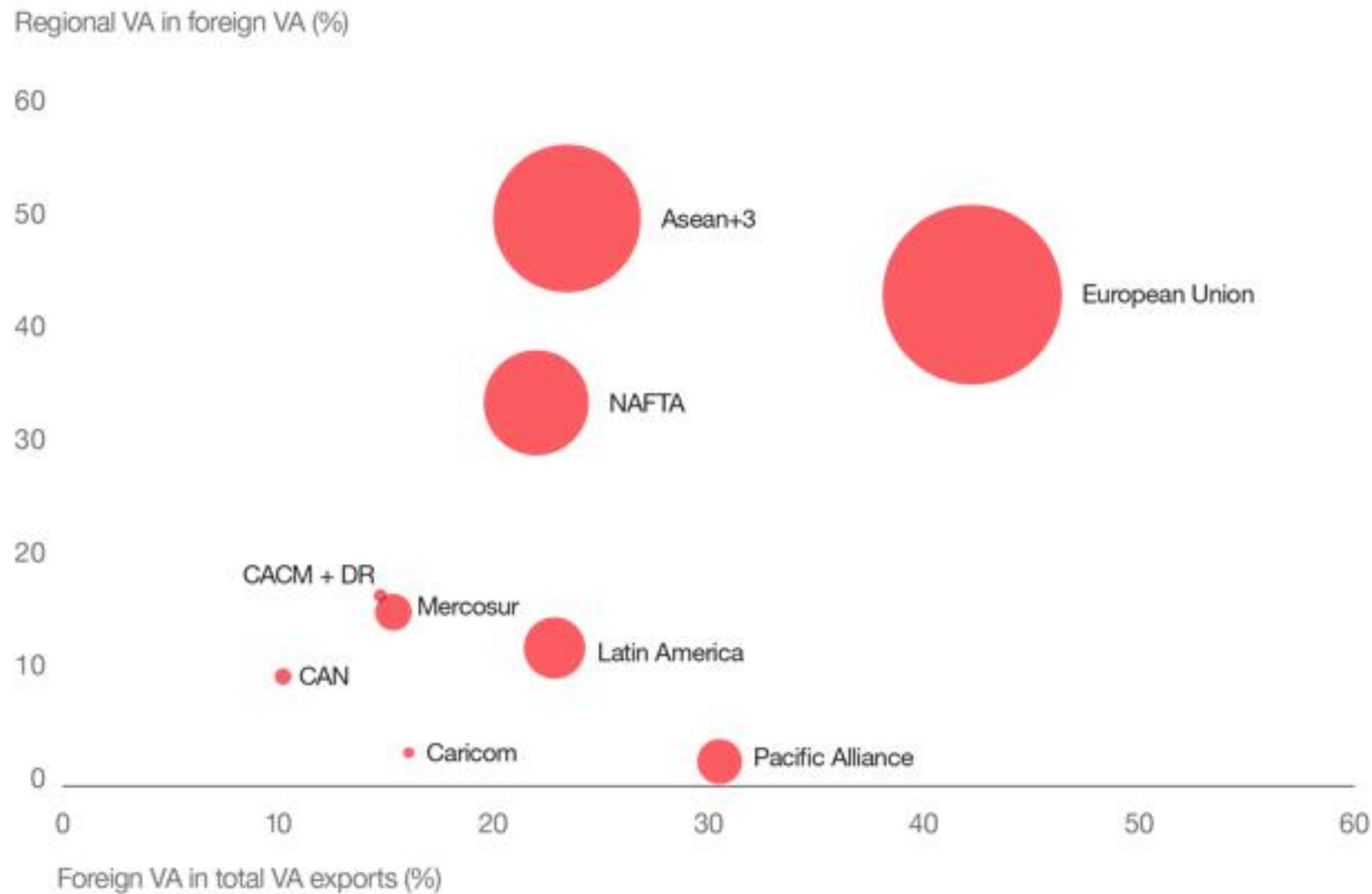
Río de Janeiro, Brazil

1. The structure of RVC and GVC in LA
2. The participation of LAC countries in the reserves and production of critical minerals
3. The demand for critical minerals by different green technologies
4. Powershoring

Part I: The structure of CRV and CGV in LAC



GVC have an important regional component and stimulate intraregional trade



The share of foreign value added in exports is used to measure the share of foreign value added in GVC.

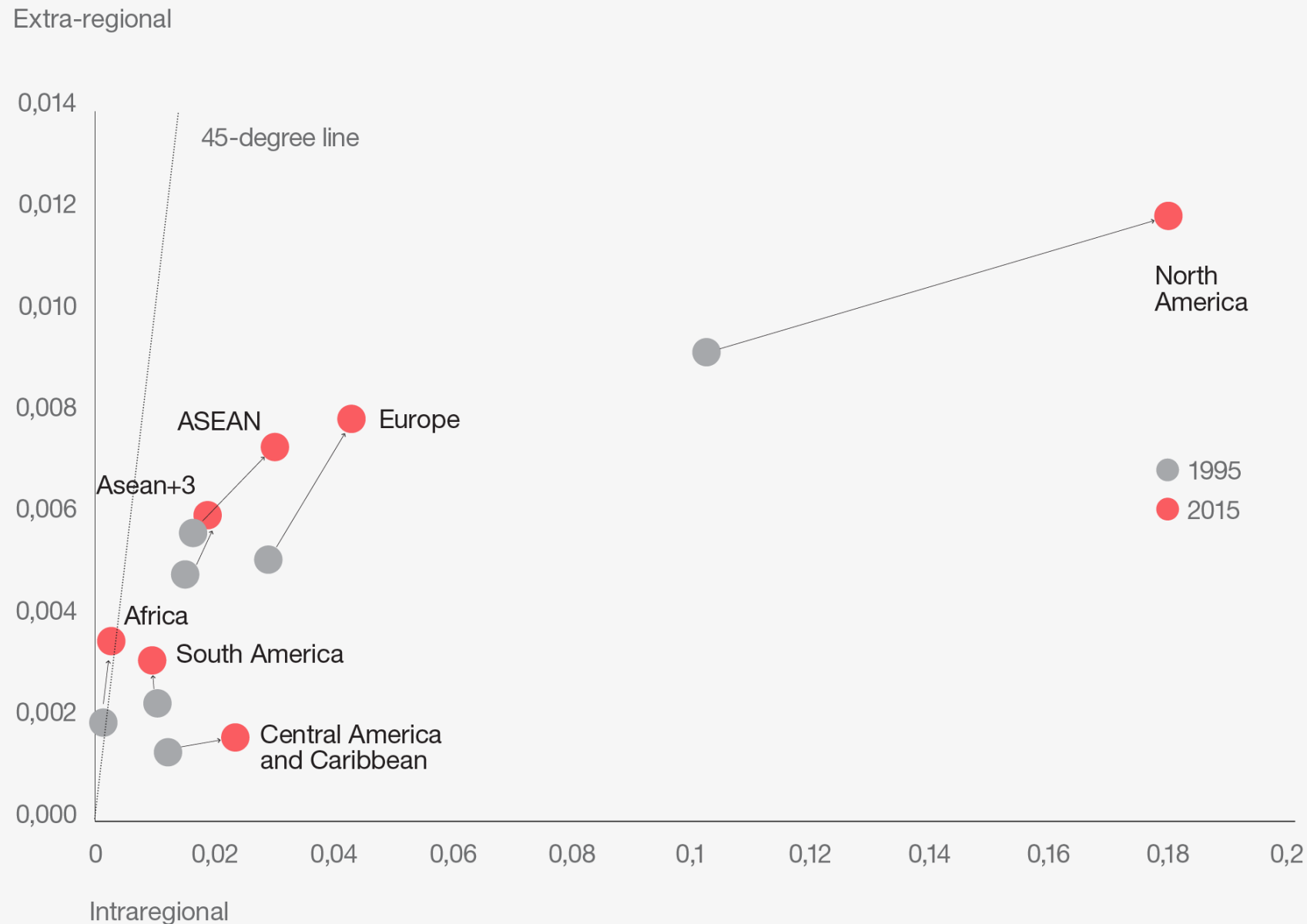
The three "world factories" have a high degree of global openness driven by regional productive integration.

Latin America has a low level of integration in regional value chains.

Even regions with a high degree of openness such as the Pacific Alliance, have a very low level of regional productive integration



High trade costs may account for low intraregional trade



Trade proximity indicators show the relationship between bilateral and domestic trade.

They are inversely related to trade costs.

EU, North America and ASEAN increased their intraregional proximity by a greater proportion compared to extra-regional destinations.

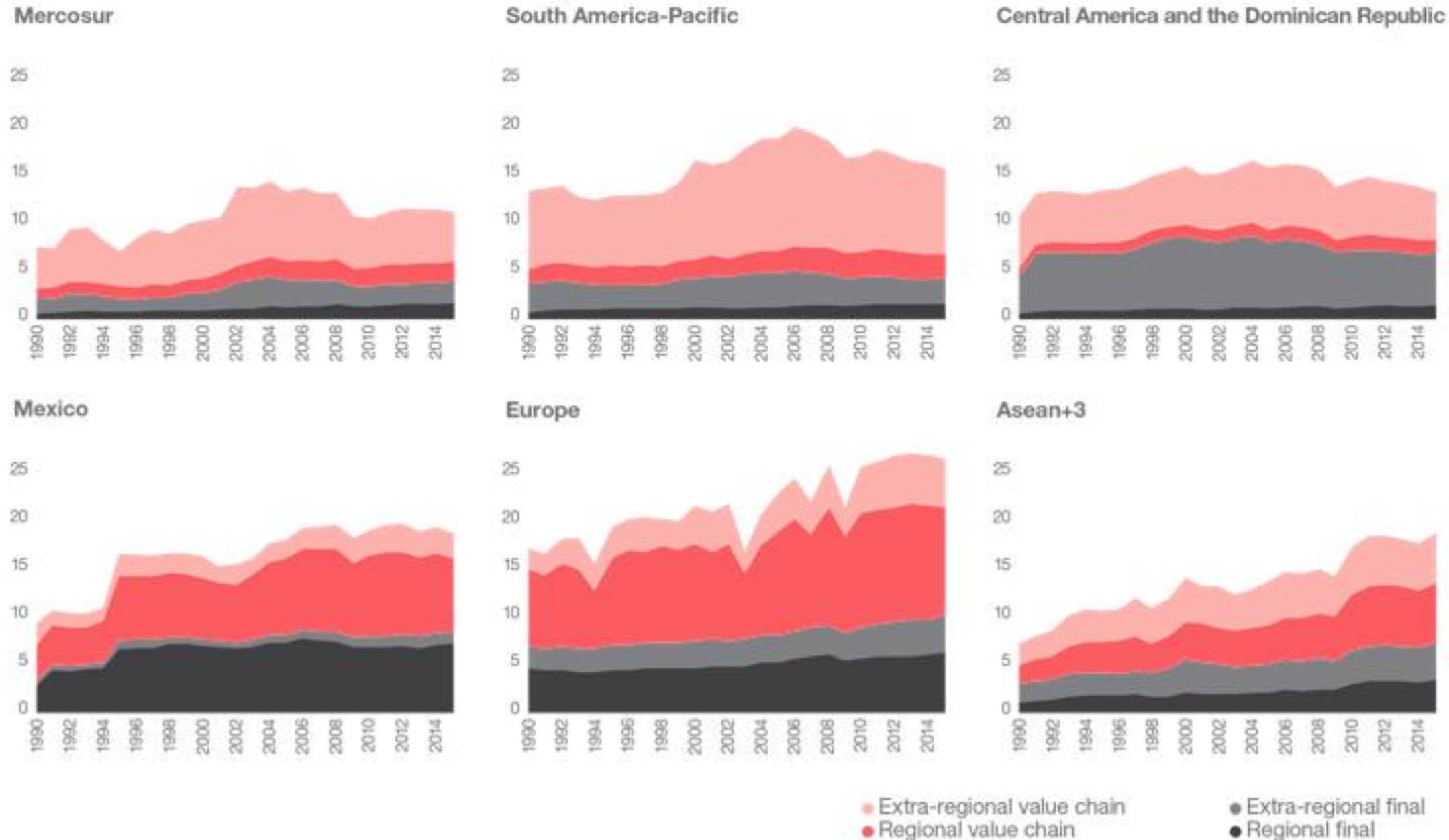
Central America and the Caribbean exhibited a similar pattern although to a lesser degree.

South America increased its extra-regional but reduced intraregional proximity: trade costs within the region are still high.

Proximity Indicator $\rightarrow \left(\frac{X_{ij}X_{ji}}{X_{ii}X_{jj}} \right)^{\frac{1}{2}} = \left(\frac{t_{ij}t_{ji}}{t_{ii}t_{jj}} \right)^{-\left(\frac{1}{2}(\sigma-1)\right)}$



Most of the region's value-added trade flows are with extra-regional partners



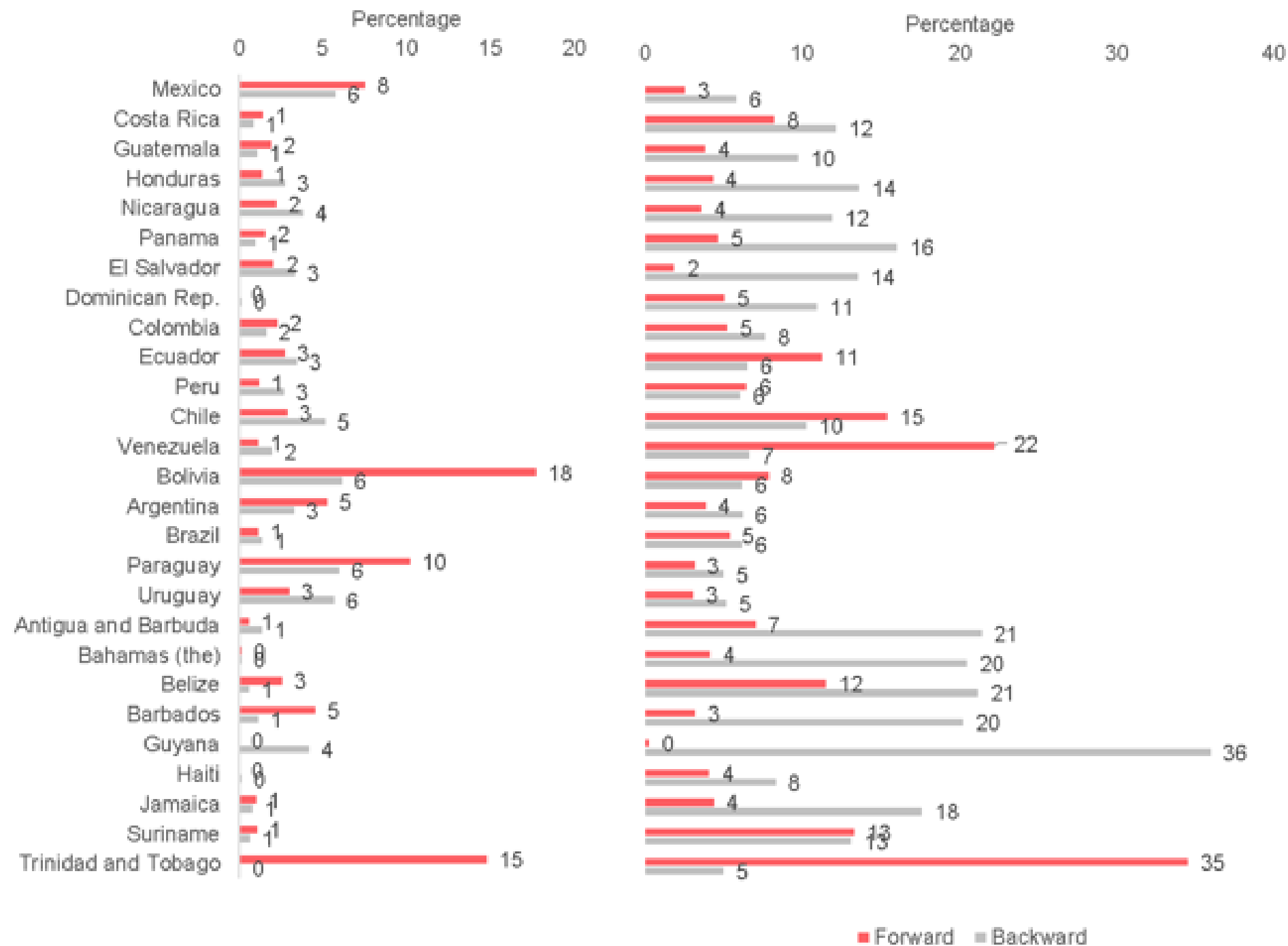
LAC regions have a low participation in regional trade, most trade is with extra-regional partners

Large contrast with Europe or South-East Asia where a big part is regional trade

Most of the region's value-added trade flows are with extra-regional partners

Regional Value Chain

Extra-regional Value Chain



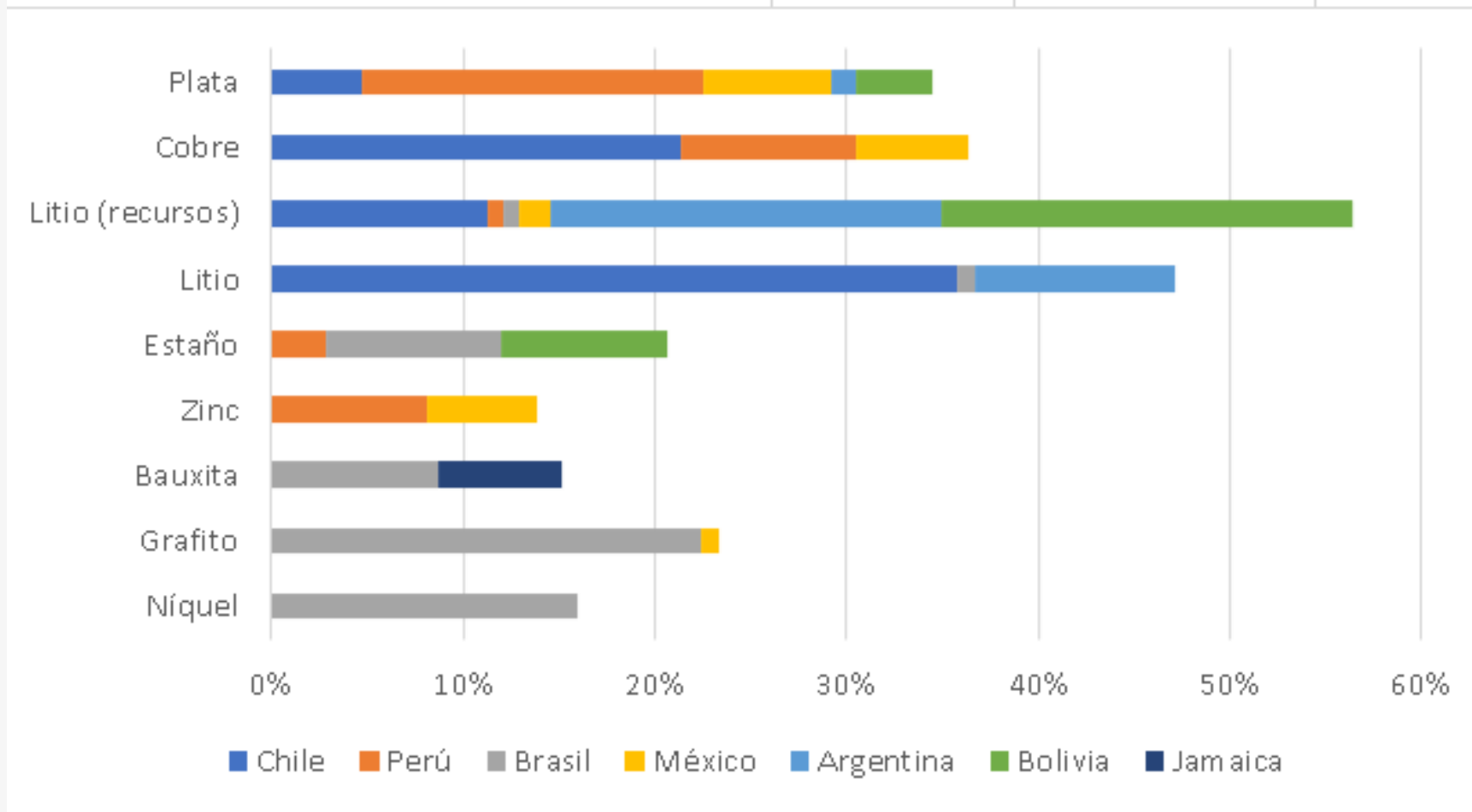
Need to work on:

1. Continue reducing tariff and non-tariff barriers
2. Work on trade facilitation to reduce costs at borders
3. Infraestructure
4. Other regulations that affect GVC (as rule of origins or regulations on the trade of services)

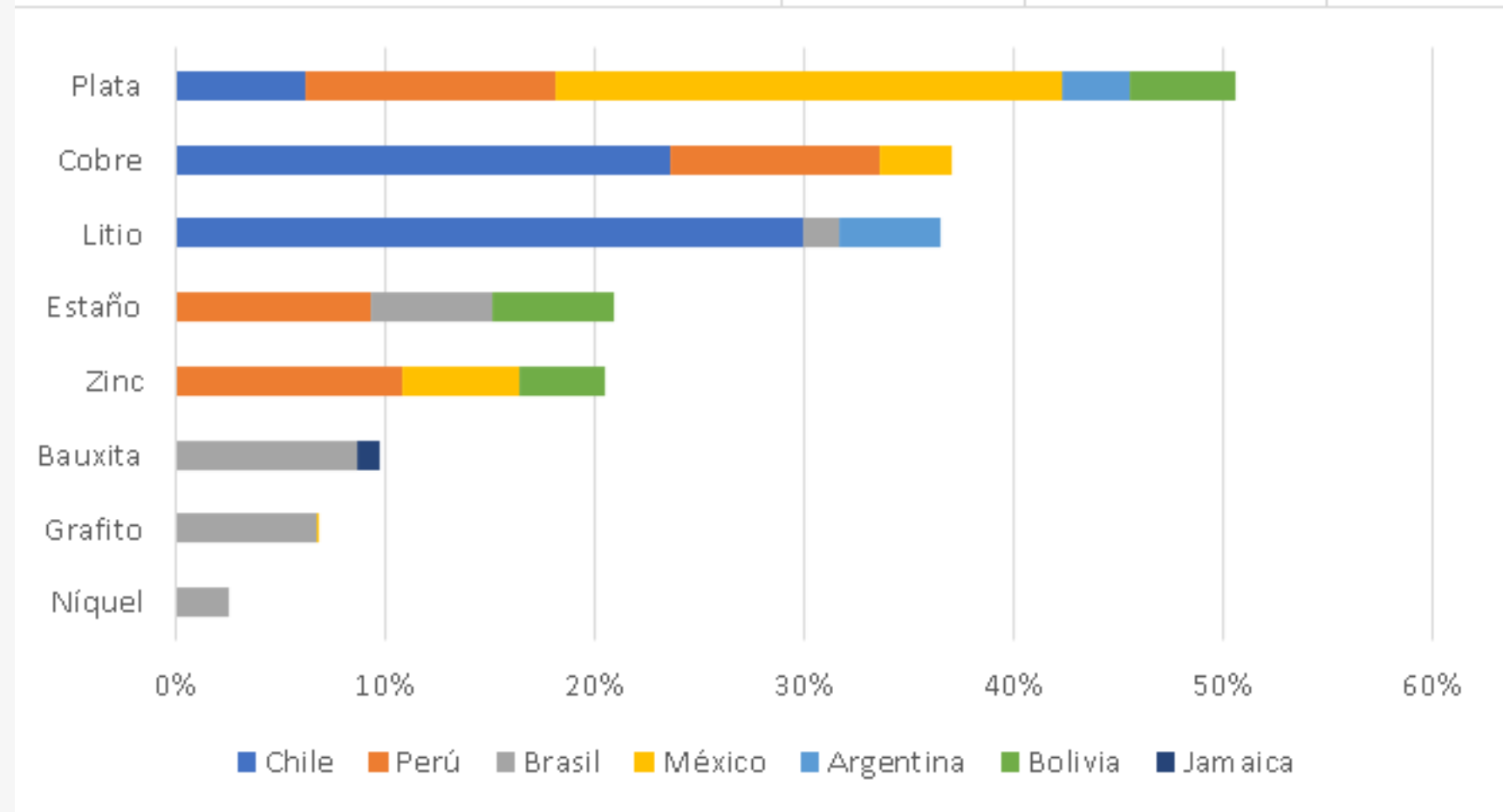
Part II: The participation of LAC countries in the reserves and production of critical minerals

Reserves and production of critical minerals

Panel B. Reservas de minerales críticos



Panel A. Producción de minerales críticos



Note: A **resource** is a concentration of minerals that have been identified and measure with reasonable certainty, but which extraction has not been proven to be economically viable. A **reserve** is a portion of a mineral resource that has been proven to be economically and legally extractable in the current conditions.

Opportunities to participate in clean energy value chains

	Copper	Cobalt	Nickel	Lithium	REEs
Solar PV	●	●	●	●	●
Wind	●	●	●	●	●
Hydro	●	●	●	●	●
CSP	●	●	●	●	●
Bioenergy	●	●	●	●	●
Geothermal	●	●	●	●	●
Nuclear	●	●	●	●	●
Electricity networks	●	●	●	●	●
EVs and battery storage	●	●	●	●	●
Hydrogen	●	●	●	●	●

Relative importance of minerals for a particular clean energy technology: High: ● Moderate: ● Low: ●

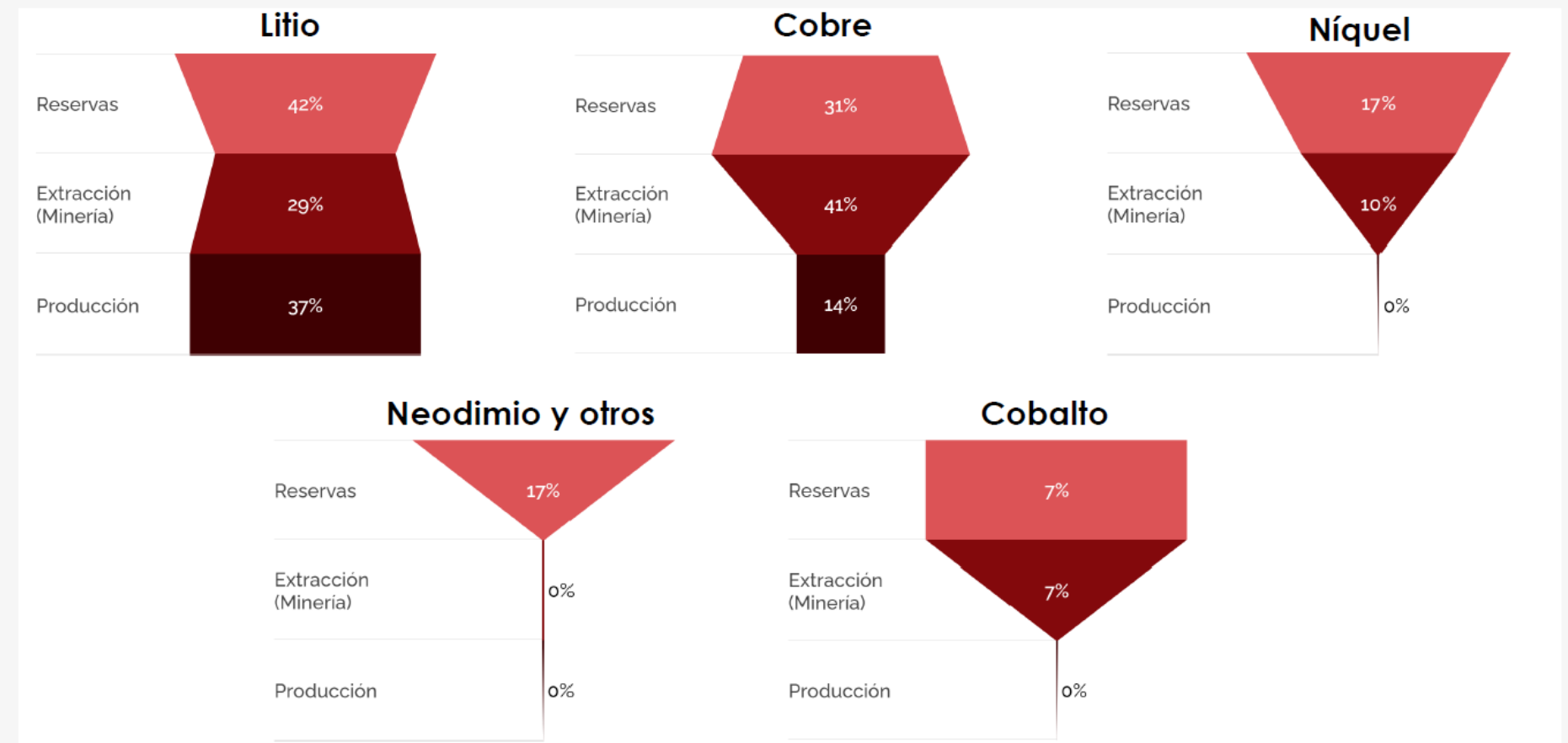
Notas: CSP = concentración de energía solar; REE = Tierras raras (incluyendo Neodimio)

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Geothermal	●	●	●	●	●
Nuclear	●	●	●	●	●
Electricity networks	●	●	●	●	●
EVs and battery storage	●	●	●	●	●
Hydrogen	●	●	●	●	●

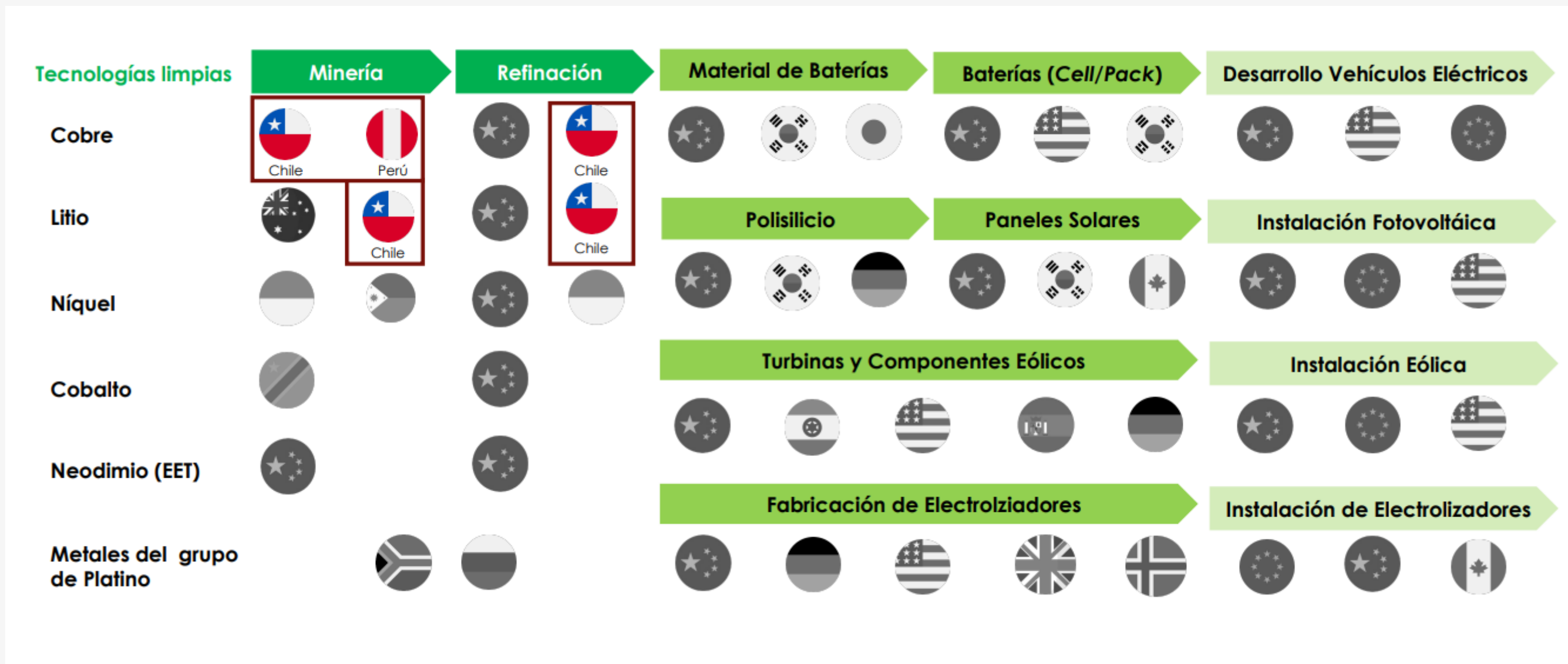
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- Some minerals are going to be critical for the Energy Transition
- Some countries, in particular Chile, Peru, Argentina, Bolivia and Brazil have important reserves of some of them.
- However, the participation in the production is lower than the participation in the reserves and extraction.
- Exploitation of critical minerals is an opportunity but concentrated in a reduced number of countries.
- To exploit this opportunity it is required to offer a Good business environment and economic stability to attract FDI.

LAC participation in clean technology value chains

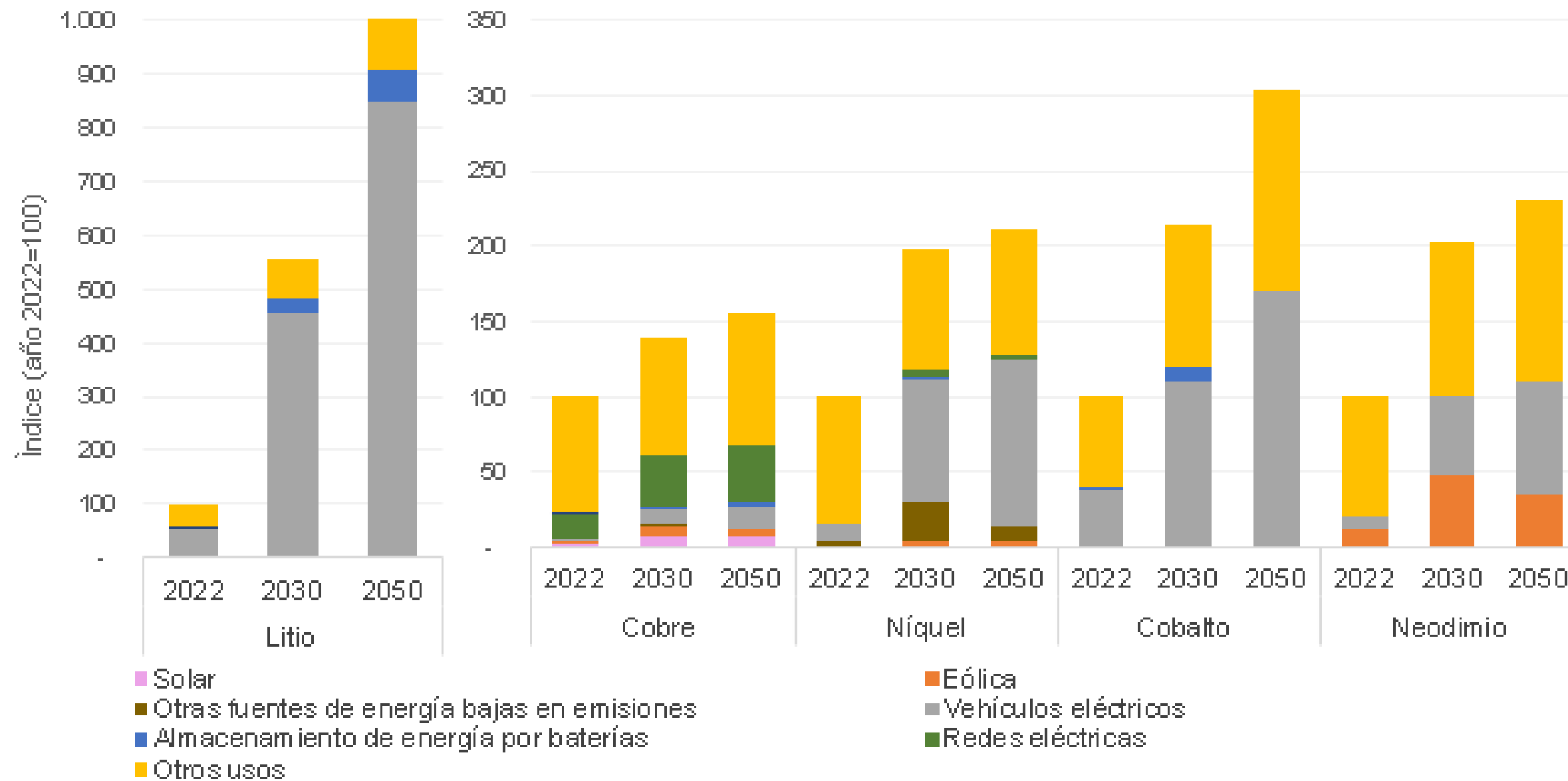


Fuente: Centro Regional de Estudios de Energía (2023) & IEA (2022)

Part III: The demand for critical minerals

The demand for certain minerals will increase dramatically (NZE)

Gráfico 1.6 Demanda de minerales críticos en el escenario de cero emisiones netas



Fuente: Elaboración propia con base en AIE (2023b).

Part IV: Powershoring

Powershoring can be an opportunity for the region

- It is not feasible yet to trade renewable energy, except for interconnections
- This makes that the availability of clean and stable energy sources a big asset to reduce emissions
- Powershoring is a concept related to the attraction of FDI motivated by the availability of clean, stable and secure energy.
- The region has a big potential to produce clean energy and so to take advantage of powershoring.
- However, the potential to attract FDI depends on high quality institutions and a good business environment, in particular investment that requires many years of development and exploitation (for example, the ones on mining).



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