Trade and development implications of key aspects of the energy transition

Critical Energy Transition Minerals

Presentation by the UNCTAD secretariat
Division on International Trade and Commodities, UNCTAD
### Critical energy transition minerals (CETMs)

<table>
<thead>
<tr>
<th></th>
<th>Copper</th>
<th>Cobalt</th>
<th>Nickel</th>
<th>Lithium</th>
<th>REEs</th>
<th>Chromium</th>
<th>Zinc</th>
<th>PGMs</th>
<th>Aluminium*</th>
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</thead>
<tbody>
<tr>
<td>Solar PV</td>
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<td>EVs and battery storage</td>
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</tbody>
</table>

Source: IEA.

Notes: Shading indicates the relative importance of minerals for a particular clean energy technology (● = high; ○ = moderate; O = low).

CSP = concentrating solar power; PGM = platinum group metals.

* Aluminum demand is assessed for electricity networks only and is not included in the aggregate demand projections.
Outline

1. **Motivation**: Why is it important that we address trade and development implications of critical energy transition minerals (CETMs)?

2. **State-of-Play**: What is the market and policy dynamics related to CETMs?

3. **Policy Convergence**: In which issue areas do we need policy convergence?
1. CETM: Trade and Development Implications

- High demand for CETMs as an opportunity for structural transformation

- CETMs being embedded in various policy objectives (e.g., green industrialization, structural transformation, equitable benefit sharing, and minimal damages to society and environment), making the market and policy environment opaque and complex

- Need for policy coordination on CETMs not to exacerbate commodity dependence and ensure inclusive trade gains
2. CETM Market and Policy Dynamics

Market dynamics

- Most dynamically growing minerals traded
- Concentration of trade flows in renewable batteries value chains
- Lack of price transparency
- Asymmetry in capacities to negotiate contracts
Many developing countries hold large reserves of CETMs

Reserves and production of selected minerals, 2022

**Lithium**
- Reserves: Chile (36%), Australia, Argentina, Rest of world
- Production: Chile (26%), Australia, China

**Cobalt**
- Reserves: Democratic Republic of the Congo (48%), Australia, Indonesia, Rest of world
- Production: Democratic Republic of the Congo (70%), Indonesia, Russian Federation

**Nickel**
- Reserves: Indonesia (21%), Australia, Brazil, Rest of world
- Production: Indonesia (49%), Philippines, Russian Federation, Rest of world

**Copper**
- Reserves: Chile (20%), Australia, Peru, Rest of world
- Production: Chile (24%), Democratic Republic of the Congo, Peru, Rest of world

**Graphite**
- Reserves: Türkiye (27%), Brazil, China, Rest of world
- Production: China (65%), Mozambique, Madagascar, Rest of world

Source: UNCTAD using USGS Data.
Critical Energy Transition Minerals (CETMs) Markets: Projected demand to outstrip supply

Source: IEA, UNCTAD.
Trade in CETMs is more concentrated than of crude

**Top three exporters, 2022**
/share of world exports, percentage/

- Crude oil: Saudi Arabia, Russian Federation, United Arab Emirates, Others
- Nickel: Philippines, New Caledonia, Russian Federation, Others
- Graphite: China, Mozambique, Madagascar, Others
- Lithium: Chile, Australia, China, Others
- Cobalt: Democratic Republic of the Congo, Austria

**Top three importers, 2022**
/share of world imports, percentage/

- Crude oil: China, USA, India, Others
- Nickel: China, Canada, Rep. of Korea, Others
- Graphite: United States, Rep. of Korea, China, Others
- Lithium: China, Rep. of Korea, Japan, Others
- Cobalt: China, Morocco, Finland, Others

Source: UNCTAD based on COMTRADE data.
Note: The figure on the left shows the share of trade to total export value for each commodity. The figure on the right shows the share of trade to total import value for each commodity.
Both figures are based on trade data as reported in the following 6-digit level HS Codes: Cobalt (260500), Crude oil (270900); Graphite (250410); Nickel (260400), and Lithium (253090 and 283691).
Trade is concentrated upstream in the value chain

Cobalt trade flows along the EV value chain, 2022 (percentage of total exports)

Extraction
- Cobalt ore (98% of total exports)
- Oman (98% of total exports)

Processing
- Cobalt hydroxide (76% of total exports)
- China (76% of total exports)

Manufacturing of parts
- Battery materials (89% of total exports)
- China (89% of total exports)
- Rep. of Korea (63% of total exports)

Cell components (63% of total exports)
- China (63% of total exports)

End users
- Electric vehicles (49% of total exports)
- China (49% of total exports)
- United Arab Emirates (49% of total exports)

Source: UNCTAD secretariat calculations, based on data from the United Nations Comtrade database
Burgeoning CETM policy actions with different policy objectives

- CETM-importing countries: Securing access to CETMs for pursuing “green” industrial policies
- CETM-producing countries: Enhancing local value addition and extension to downstream activities in the renewable energy value chains

Systematic assessment of “CETM access agreements”
An ongoing work to systematically assess the proliferating state-to-state agreements on CETMs in recent years.

### UNCTAD Database on CETM Agreements

**Typology of agreements (2020-present) in Database**

<table>
<thead>
<tr>
<th>Agreement Type</th>
<th>Count</th>
</tr>
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<tbody>
<tr>
<td>Memorandum of Understanding</td>
<td>18</td>
</tr>
<tr>
<td>Partnership Agreement</td>
<td>14</td>
</tr>
<tr>
<td>Joint Statement</td>
<td>9</td>
</tr>
<tr>
<td>Dialogue or Working Group</td>
<td>6</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>47</strong></td>
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</table>

**Issues covered by agreements**

<table>
<thead>
<tr>
<th>Issue Type</th>
<th>Count</th>
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</thead>
<tbody>
<tr>
<td>Research cooperation</td>
<td>31</td>
</tr>
<tr>
<td>Investment and finance</td>
<td>26</td>
</tr>
<tr>
<td>Environment and social impact</td>
<td>22</td>
</tr>
<tr>
<td>Extraction</td>
<td>18</td>
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<tr>
<td>Exploration</td>
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</tr>
<tr>
<td>Recycling</td>
<td>17</td>
</tr>
<tr>
<td>Trade cooperation</td>
<td>15</td>
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</tbody>
</table>

**States with agreements**

- Australia
- Canada
- Chile
- China
- Democratic Republic of Congo
- European Union / France, Germany, Italy
- India
- Japan
- Kazakhstan
- Namibia
- Republic of Korea
- United Kingdom
- United States
- Vietnam
- Zambia

### Number of Agreements on CETMs, 2020-present

- **2020**: 1 agreement
- **2021**: 5 agreements
- **2022**: 11 agreements
- **2023**: 22 agreements
- **2024**: 5 agreements
- **Planned**: 2 agreements
3. How can we achieve policy convergence?

- Existing framework at the international level?
  - UN General Assembly Resolution on Commodities (A/RES/78/138)
  - UN Environment Assembly 2022 Resolution (UNEP/EA.5/Res.12)
  - Coherence with the multilateral trade rules?

- The UN Secretary-General’s initiative on critical energy transition minerals
  - **UN Interagency Working Group on Extractive Industries** is currently developing a module to help countries harness CETMs for sustainable development.

  - **UN Secretary-General’s Panel on CETM** will be launched on 26 April 2024 to identify common and voluntary principles that help developing countries benefit from fair, just, and sustainable management of CETMs.
Thank you

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