Panel One: Opportunities and Challenges for Resource-Rich Countries and Asia and the Pacific to Build Resilient Clean Energy Technology Supply Chains

June 5th 2024 – ADB HQs in Manila

By Jae-young Choi
DG for Economic Security & Supply Chain
Ministry of Economy and Finance   South Korea
Korea faced an acute shortage of UREA in 2021

How is used UREA in diesel engines?

UREA turns diesel engines into cleaner and greener ones

Korea was rocked by UREA crisis!

(Yonhan Feature) Urea crisis reveals risks of S. Korea's supply chain

Supply chain

Urea crisis lays bare South Korea's heavy dependence on China

Cargo truckers vow general strikes amid 'urea water'-related logistics crisis
Korea’s policymakers came to aware that such a low tech, cheap and single element could have an immense potential to bring down nation-wide economic circulations.
Key minerals are essential for carbon neutrality and clean energy transition

RENEWABLES

IEA: Demand for critical minerals to spike 3.5 times by 2030
Korea is a major producer of batteries and semiconductors but heavily relies on import for critical minerals.
Some Korean companies in need of critical minerals
Such **Outright Asymmetry** in supply and demand demonstrates that Korea is highly vulnerable to supply chain disruptions.
Global production – mining, refining & processing - of critical minerals is concentrated on a handful of countries
Korea’s Industry Ministry – MOTIE determined to reduce excessive dependence, pinpointing 33 critical minerals

<table>
<thead>
<tr>
<th>Priority critical materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithium, Nickel, Cobalt, Manganese, Graphite</td>
</tr>
<tr>
<td>Rare earth elements: Lanthanum, Cerium, Neodymium, Terbium, Dysprosium</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Critical minerals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Niobium, Copper, Aluminum, Silicon, Magnesium, Molybdenum, Vanadium, Tin, Titanium, Tungsten, Antimony, Bismuth, Chromium, Lead, Zinc, Gallium, Indium, Tantalum, Zirconium, Strontium, Selenium</td>
</tr>
<tr>
<td>Platinum group elements: Platinum, Palladium</td>
</tr>
</tbody>
</table>

MOTIE also coined measures to take down reliance like these………..

- Developing a Global Minerals Supply Map
- An Early Warning System (EWS)
- Expanding public storage to buy golden time
- High level diplomacy with resource rich nations
- MSP, IPEF
MOTIE strived to encourage private sector investment

- Pre-emptive examinations on global mining projects by KOMIR*
- Undertake feasibility analyses by public research institutions
- Favorable financing incentives
- Battery recycling up to 20 percent

*KOMIR: Korea Mine Rehabilitation and Mineral Resources Corporation
https://www.komir.or.kr/eng/
Korea set an ambitious dependence target from 80% to 50% by year 2030 by inducing diversifying importation, securing overseas mineral resources, reshoring & friend shoring, and international cooperation.
Korea's diversification efforts towards – Altasia – could be a boon for some Asian countries,

But scope for such opportunities can be limited...........
Because mitigation measures usually

- Take long time to bear fruits
- Consume big public resources
- Need incentives for private investment, and
- proper Regulatory framework
Despite repeated calls and efforts, Korea's dependence for key minerals on specific country has been **intensifying rather than subsiding**.
Once export ban was lifted, Urea imports from a single country surged again. This shows the formidable market mechanism in play.

Illustration source: https://www.hankyung.com/article/2023073026071
Reshoring and friend-shoring in critical minerals will be costly and lengthy process

Mining and refining are environmentally sensitive and their negative impact may drag progress.

Save our environment !!
Therefore mineral rich countries’ opportunities from Korea's diversification depends market mechanism, investment capabilities, and environmental concern.

In the short term, opportunities for mutual cooperation would be narrower than we think.
Before closing the show......

ADB's initiative to strengthening Asia's supply chain resilience will catalyze region's vibrant cooperation in technology sharing, green transition, and business opportunities.
Thank you!