Promoting Sustainable Development of Clean Energy Transition Minerals through UNRMS
Sustainable minerals development: important and timely

The energy transition implies a shift from a fuel-intensive to a material-intensive energy system. The transition has profound implications for economies and extractive industries, while the development of low carbon technologies will change the demand structure of metals in the future.

- Wind energy, solar cells, batteries, and fuel cells are highly dependent on metals such as platinum, cobalt, lithium and REEs, which are mined in only a few countries.
- Renewable power generation, grid expansion, batteries and electric motors are the main drivers of critical materials demand.
- Some CRMs are used across a wide variety of clean energy and storage technologies. Others are predominantly used in one or two types of clean energy and storage technologies.
The outlook projections all see the scale of demand for critical minerals showing significant growth potential

<table>
<thead>
<tr>
<th></th>
<th>Current supply</th>
<th>2050</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper</td>
<td>30 (2020)</td>
<td>50 - 70</td>
<td>Energy is only part of the demand</td>
</tr>
<tr>
<td>Nickel</td>
<td>2.54 (2019)</td>
<td>5 - 8</td>
<td>Currently mainly for stainless steel</td>
</tr>
<tr>
<td>Lithium (LCE)</td>
<td>0.41 (2019)</td>
<td>2 - 4</td>
<td>Mainly for batteries</td>
</tr>
<tr>
<td>Cobalt</td>
<td>0.14 (2020)</td>
<td>0.5 - 0.6</td>
<td>Mainly for batteries</td>
</tr>
<tr>
<td>Neodymium</td>
<td>0.03</td>
<td>0.2 - 0.5</td>
<td>Mainly for permanent magnets</td>
</tr>
</tbody>
</table>
Opportunities and challenges in CETM development

Opportunities

• Job creation
• Infrastructure development
• Contribute to low-carbon economy
• Low-carbon CRM production
• Improved governance capacity

Challenges

• Resource curse
• Regional distribution / just transition
• Fossil fuels sectors / GHG intensive
• Air and water degradation / biodiversity loss
• Health and safety
• Impact on local communities
• Social inequality (Gender, child labour)
Relationship between CETMs and sustainable development

Environmental
SDG 13: Climate Action
SDG 14: Life Below Water
SDG 15: Life on Land

Economic
SDG 1: No Poverty
SDG 2: Zero Hunger
SDG 3: Good Health
SDG 4: Quality Education
SDG 5: Gender Equality
SDG 10: Reduced Inequality

Governance
SDG 16: Peace and Justice Strong Institutions
SDG 17: Partnerships to achieve the Goal

Social
SDG 6: Clean Water and Sanitation
SDG 7: Affordable and Clean Energy
SDG 8: Decent Work and Economic Growth
SDG 9: Industry, Innovation and Infrastructure
SDG 11: Sustainable Cities and Communities
SDG 12: Responsible Consumption and Production

Extractive industries alone are closely related to nearly all Sustainable Development Goals (SDGs).
Utilization further emphasizes their impact on the SDGs.
Guiding principle: A holistic and life-cycle (system) approach

A more efficient, systemwide, holistic and life-cycle approach should be required to align the critical mineral development with SDGs.

Policymakers need to incorporate critical minerals into responsible mining policies, regulations, and legislation and governments need to combat corruption, build regulatory capacity and protect communities.

- **The planning stage**: Countries or regions that are rich in CRM resources need to prepare for a future with depleted or less demanded resources.
- **The design stage**: A mine closure plan should be included.
- **The operation stage**: Governments and the private sector stakeholders must develop strategies to reduce geopolitical risks related to critical minerals and the extractives industry more generally.
- **The trade and supply stage**: The extractive industries and related stakeholders must decarbonize the process of extracting and producing mineral and energy resources, while at the same time contributing to government revenues and enabling better access to modern energy services in developing countries.
Embracing UNRMS for Sustainable CETMs Development: A Path Forward

• UNRMS is a comprehensive framework designed by the United Nations to facilitate sustainable management of natural resources.
• It integrates environmental, economic, and social dimensions into resource management, ensuring that extraction and development activities support broader sustainability goals.

• Benefits for CETMs Development:
  ✓ Risk Mitigation: Helps in identifying, assessing, and managing environmental and social risks associated with CETMs extraction and development.
  ✓ Market Access and Investment: Enhances access to international markets and attracts investment by demonstrating commitment to sustainability.
  ✓ Long-term Viability: Ensures the long-term viability of CETMs projects by aligning them with sustainable development objectives, thereby securing resources for future generations.

• Call to Action:
  ✓ Adopt UNRMS: Policymakers, industry leaders, and stakeholders in the CETMs sector to adopt the UNRMS framework for guiding their operations and strategies.
  ✓ Collaborative Implementation: Collaborative efforts between governments, the private sector, civil society, and international organizations to implement UNRMS effectively and achieve sustainable outcomes.
  ✓ Continuous Improvement: Ongoing assessment and adaptation of practices in response to evolving sustainability challenges and opportunities.
Thank you!

Professor Xunpeng (Roc) Shi/施训鹏
Research Principal, UTS:ACRI
President, International Society for Energy Transition Studies
Consultant, Economic and Social Commission for Asia and the Pacific
Email: xunpeng.shi@uts.edu.au
23 April 2024, Geneva
ISETS is a worldwide, independent, non-profit membership-based professional organization headquartered in Australia, which has 1000 members in 60 nations and more than 10 international organizations.

ISETS aims to facilitate a just, equitable and inclusive transition of energy and relevant sectors toward a sustainable low-carbon future through knowledge-sharing and dialogue.

ISETS is open to anyone interested. Registration (at www.isets.org) as an Associate Member is free permanently.
We have also worked with many member States to develop SDG 7 road maps, national cooling action plans and studies on the phase-down of coal.

We have joined hands with many ISETS members on these efforts, and we look forward to greater collaboration in the future. As we embark on this transformative journey together, let me express our deep hopes and aspirations for ISETS.

We anticipate that ISETS will evolve into a valuable hub of knowledge and collaboration, unwavering in its commitment to foster dialogue and effectively gather and share information on technologies, products, solutions and experiences.

It is crucial that ISETS can increasingly attend to the growing needs for support in developing and least developed countries, regions and groups, contributing to a just, equitable and inclusive energy transition that leaves no one behind.
The 2024-2026 Youth Voice Competition will be jointly organized by ISETS and ESCAP. Winners will be invited to the ESCAP Headquarters in Bangkok to participate in the Youth Dialogue and UN IEFSD (2-4th Dec 2024).
Types of Entries

1. **New Models or Frameworks**: for energy systems, consumption, distribution, or policy that promote sustainability and efficiency.

2. **Innovative Action Plans or Solutions**: Comprehensive strategies or action plans aimed at facilitating the energy transition at local, regional, national, or global levels.

3. **New Products**: Technological innovations, product designs or business models that contribute to renewable energy generation, energy storage, energy efficiency, or reduction in energy consumption.

4. **Technology Applications and Software Solutions**: Software, apps, or platforms that support energy transition goals. This could include blockchain for energy trading, AI for optimizing energy consumption, or digital platforms for promoting community-based renewable energy initiatives.

5. **Educational and Awareness Campaigns**.

6. **Research Studies and Analyses** that provides new insights into the energy transition, including market analyses, policy impact studies, or technological feasibility studies.

7. **Pilot Projects or Case Studies**.

8. **Artistic and Creative Expressions** to explore and communicate themes related to energy transition.
Global Call For Nomination 全球征集

This initiative aims to highlight innovative practices, technologies and solutions that significantly contribute to global efforts towards achieving a sustainable low-carbon future.

The nominated cases can range from groundbreaking research, transformative projects or practices, effective policies to revolutionary products or technologies.

Submissions are open permanently. However, for those wishing to join the exhibition at the 2nd International Conference in Nanjing, China, on November 1-4, 2024, the deadline is August 31, 2024.
Contact Information: isets@isets.org; secretariat@isets.org
For more information and to submit your nomination, please visit https://isets.org/nominations-for-outstanding-cases/.