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Stable Supply of Critical Minerals
- The Threat of Maldistribution -
<Summary > ◆

Ichiro Kutani*

Energy Transitions and Critical Minerals

1. Energy transitions will develop unprecedented structures surrounding energy supply and demand, international trade, and technologies that will also shift the centers of geopolitical risks.
2. Under the conventional fossil energy-centered system, geopolitical risks arise from fossil energy imports. Since the oil crisis 50 years ago, the world has reacted to this issue. However, in the world, while pursuing carbon neutrality, the world will become less dependent on fossil fuel imports while ensuring a stable supply of clean technologies, such as renewable energies and batteries, and the critical minerals necessary for its production will become imperative.
3. Supply disruptions and price spikes for critical minerals can pose genuine crises. Japan actually experienced a rare earth supply crisis in 2010.

Risks of Critical Minerals and Global Debate

4. As we progress toward the future, electric vehicles, wind power generators, and solar power generators are becoming increasingly prevalent around the world. When compared with internal combustion engine vehicles and thermal power generation, these technologies are relatively more critical mineral intensive in terms of their requirements.
5. We know that critical mineral reserves are unevenly distributed among certain countries, and it is often the case that downstream processes of mineral products are unevenly distributed among other countries. It is not enough to simply focus only on resource reserves; we must also focus on the maldistribution of downstream processes.
6. The maldistribution of critical minerals is not the only concern. There is also the risk of supply shortages. Taking nickel as an example, under the accelerated decarbonization scenario (Advanced Technology Scenario, IEEJ Outlook 2023), there could be nickel shortages in the mid-2030s. What's more, there is the risk that cumulative demand by 2050 could exceed the world's current resources, even taking into account the amounts recycled. The same is true for lithium, which could be in short supply around the year 2030, even earlier than nickel. This supply-demand crunch will be further accelerated depending on the speed and actions of decarbonization efforts.
7. Given this scenario, the world is hastening its efforts to secure critical minerals. The United States and Europe respectively developed strategies to tackle this situation in 2022 and 2020. They are rolling out programs and financial assistance aimed at conserving resources, strengthening recycling, expanding domestic and international supplies, and building emergency stockpiles.
8. However, the uneven distribution of resources makes it impossible for any one country to establish a system of self-sufficiency on its own, and there is momentum building for international cooperation. Leaders at the G7 Hiroshima Summit 2023 agreed on the need to manage the risks of critical minerals in a joint declaration, and the "Five-Point Plan for Critical Minerals Security" was established by the G7 Ministers' Meeting on Climate, Energy and Environment.

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* Senior Research Director, Energy Security Unit, IEEJ

Japan's Supply of Critical Minerals and Future Directions

9. Japan's critical mineral procurement as a whole has an oligopoly supply structure. With that said, some minerals are imported from G7 and other friendly import-partner countries, so there is potential for cooperating with these countries.
10. Recent policies include the "New International Resource Strategy (2020)", whereby one of the pillars of industrial competitiveness was strengthening the security of rare metals. The Economic Security Promotion Act of 2022 also described ensuring a stable supply of essential minerals as one of its pillars, and designated 11 specific essential minerals through government ordinance. Then in 2023, the Economic Security Promotion Act formulated the "Systems for Ensuring Stable Supply of Critical Products" and presented support measures for securing resources overseas. Japan and the United States also entered into the "Japan-U.S. Critical Minerals Agreement," in which the two countries agreed to cooperate in addressing issues relating to the critical mineral supply chain.
11. The issues surrounding critical minerals in Japan garnered significant attention in 2010 when China effectively suspended rare earth exports to Japan following an incident concerning the Senkaku Islands. Japan was relying on China for more than 90% of its rare earth imports at the time. It has since reduced its dependence on China to less than 60% by diversifying its import partners to include countries such as Vietnam, Malaysia, Thailand, India, and France. Japan also filed a complaint with the World Trade Organization (WTO) and won the right to abolish China's export controls.
12. These are the steps Japan should take to secure a stable supply of critical minerals in the future: 1) Reduce the need for critical minerals by developing resource-saving and alternative resource technologies; 2) Reduce imports by strengthening recycling; 3) Enhance resource security abroad; and 4) Strengthen emergency reserves. In addition, formulating an energy mix also involves a crucial consideration of the technology mix. The Government has already announced a number of policies, and it is expected to implement these policies in collaboration with the private sector, which is responsible for supply.
13. Once again, cooperation with the international community will be essential. Maldistribution risks can be mitigated by strengthening relationships with reliable partners, joint development in the fields of resource extraction, downstream processes, and utilization technologies, and by maintaining fair trade systems.

Contact: report@tky.ieej.or.jp