Financing the Responsible Supply of Energy Transition Minerals for Sustainable Development

International Resource Panel 2025

Key messages

- To achieve the low-carbon energy transition by 2050, a significant increase in the supply of "energy transition minerals" is essential. **Meeting the demand for these minerals by 2030 will necessitate investment of up to $US 450 bn** in their production.
- **Greater focus on environmental, social, and governance issues** in mining for transition materials is essential, more so than in the past. Responsible mining practices that secure a sustainable development licence to operate should become the standard (Recommendations i)
- **'Sustainable finance' that takes social and environmental, as well as financial outcomes into account** has an important role in promoting responsible mining. (Recommendations iv)
- **Adopting circular economy strategies and enhancing resource efficiency** are crucial to managing the demand for primary minerals. (Recommendations ii)
- **Mutually beneficial partnerships** between the communities and countries that host the mines and the importing and processing countries, based on the equitable sharing of benefits, are essential to address concerns about geopolitical security of transition minerals supply chains. (Recommendations iii)
- **Improving security, skills, working conditions, miners' incomes and gender equality** related to all mining and especially to artisanal and small-scale mining, needs to be a priority. (Recommendations iii)
- **International collaboration** and potentially new international, multilateral institutions have an important role in facilitating the responsible supply of energy transition minerals. (Recommendations v)

Recommendations

Below are the specific recommendations for the financial and other reforms necessary to ensure that the production of metals and minerals contributes to sustainable development. The recommendations are organized around the following 5 areas:

i. Improve transparency, reporting and local engagement

- Mining companies should report their financial, environmental, social and governance outcomes on a site-by-site, gendered and ‘shared value’ basis that also takes Indigenous rights into account, according to an agreed industry-wide protocol.
- Site-by-site reporting should contain at a minimum the information covered by the International Resource Panel protocol for the planning and monitoring of mining operations (International Resource Panel 2020).
- Current corporate processes that engage with and involve local communities in data acquisition and reporting should be developed and become more widely adopted.
- A digital product passport for all mineral commodities and their value chains, including environmental, social and governance-related information, should be developed based on a standard reporting protocol, and be required by metal trading exchanges.

ii. Incentivise higher mineral recovery and recycling rates as part of the circular economy

- Incentives should encourage mining companies to extract high proportions of the metals in their ores.
- More information about tailings and other residues should be made available to open possibilities for re-mining in the future.
- Exporting countries should benefit from the extraction of by-product metals recovered in the smelting and processing stages in other countries.
- The recycling of minerals and metals should be considered the final stage in circular materials management, following the application of other circularity approaches before products reach the end of their life.
- Policymakers should improve the economic viability of circular economy approaches to materials and product management by internalizing the social and environmental costs of primary materials production, implementing circular policies through the transition minerals value chains, validating novel financial instruments (e.g. green bonds) to increase investment in circularity, and supporting innovative remanufacturing and recycling technologies.
- In addition to the maximum use of circularity policies and approaches, material demand management is likely to be necessary to ensure that the material supply is sufficient for the essential uses in the low-carbon energy transition.

iii. Improve the management of mineral markets and build stronger national institutions

- Mineral-rich developing countries should be supported as necessary, through international development cooperation and other means, to legislate for and build the institutions needed to regulate responsible mining effectively and justly, so that the whole of society can benefit from the resulting mining boom.
- Jurisdictions that wish to actively stimulate mining to high environmental, social and governance standards and to import products from such mining should join together in a 'Mining Club for Sustainable Development' and consider establishing a raw material border adjustment mechanism. The border adjustment mechanism is not meant to be a protectionist tool but rather aimed at leveling the playing field in terms of sustainability indicators in global trade. Including development indicators and benefit sharing impacts in the adjustment mechanism may favor the Global South as well.

iv. Reform the financial system: Financial taxonomies, architecture and instruments

- Mining that meets high environmental, social and governance standards should be included in the list of sectors in finance taxonomies (e.g. that of the European Union) that qualify for sustainable finance and should also qualify for a special form of climate finance. Concrete guiding principles on business and the environment – similar to the very effective United Nations Guiding Principles on Business and Human Rights – could enable responsible mining to be identified for this purpose.
- Reforms should be made to the financial system (e.g. taxonomies), governance (e.g. taxation regimes) and regulation (e.g. in terms of formalization of artisanal and small-scale mining) to ensure more capital flows to mineral exploration and mining for the clean energy transition, while ensuring the implementation of risk management and environmental, social and governance-related investment criteria.
- Mining investments and financing should be tied to mandatory climate and nature-positive requirements, subject to stringent audit requirements. Mining should also not take place in protected areas.
- Investors' financial portfolios with climate and biodiversity goals should be assessed and monitored for their alignment with defined and disclosed pathways to companies' alignment with climate and biodiversity goals. Financial institutions can use this to determine specific exclusion criteria and an engagement strategy that supports companies' transition pathways.
- Companies with transition plans that have robust validation should be able to receive sustainable and climate-related finance in order to signal their intentions to investors and financial institutions.

- Financial institutions should enhance their capacity to assess and manage the environmental and social risks and impacts associated with mining in order to be able to recognize and finance mining to high environmental, social and governance standards.
- Fiscal, financial and monetary policies should be used to support finance for and investment in responsible mining and infrastructure and for the more circular use of metals in society.
- The mining industry should implement a global 0.1 per cent ad valorem levy on all companies as a contribution to a mining sustainable development fund. In due course, this could become an internationally administered global sustainability tax, levied on all produced non-energy minerals and metals.

v. Consider establishing international institutions

- Consider establishing an international minerals and metals agency to provide oversight and information about the state of and outlook for the world's non-energy mineral resources and markets. It should also provide support for capacity-building and institutional strengthening, especially in developing countries, as well as support for research and innovation activities and for the development of global minerals and metals exploration and production-related standards.
- Encourage the Network for Greening the Financial System to undertake systematic monitoring of macroeconomic risks to the financial sector emanating from commodity markets, through a global commodity price observatory, eventually in collaboration with an international minerals and metals agency when one is created.
- Establish an international framework for managing environmental and social risks and improving access to formal sources of finance in the artisanal and small-scale mining sector.
- Governments, mining companies and NGOs should collaborate to establish a global database for mine tailings facilities and the potential availability of minor (or companion) metals, eventually to be managed by an international minerals and metals agency.
- In due course, consider establishing a United Nations convention on sustainable resources to encourage the sustainable production and consumption of resources, including resource efficiency and moves towards a circular economy.

The full report and outreach materials are available here: https://www.resourcepanel.org/reports/financing-responsible-supply-energy-transition-minerals-sustainable-development
For more information please contact the International Resource Panel Secretariat at: unep-irpsecretariat@un.org