Newcastle University

Policy note:
Ensuring future supply of minerals for climate action

The use of mined mineral resources globally is important for producing clean technology, but a decline in mining exploration is endangering future supply. A strategy is necessary that identifies future demand, tracks mineral use, coordinates where and how to explore and extract minerals, identifies new technologies and encourages the use of recyclable metals.

There are six measures that should be considered:

1. Reach consensus on international targets for global mineral production
2. Monitor impacts of mineral production and consumption
3. Improve coordination of mineral exploration
4. Support investment and research into new mineral extraction technologies
5. Harmonise global best practices for responsible mineral resource development
6. Develop maps and inventories showing the availability of recyclable metals

Context

World leaders will meet at the United Nations Framework Convention on Climate Change (UNFCCC) in Katowice, Poland from 2 to 14 December 2019 to examine progress towards meeting climate change goals, including on progress towards new technology to mitigate climate change.

Minerals are needed for new clean generation and transmission technologies to tackle climate change. Present levels of demand reflect the current depressed level of economic activity and not what will be required to deliver the Sustainable Development Goals and to decarbonise the global economy. It is likely that there will be a shortfall of some important minerals in the coming decades. There is currently no global agenda that both identifies which minerals will be needed in the future, and how to ensure supply both through mining as well as recycling of metals

A global policy issue

Meeting future demand has implications for global natural resource extraction policies and planning. Extraction not only depends on where minerals can be found, but on governance structures of the country. Due to low prices of metal, exploration has been declining *(Figure 1)*, so a plan is necessary to anticipate future demand and plan future supply accordingly.

A plan is needed now to secure future supply

Minerals are crucial for tackling climate change, which is of urgency. It takes time to explore where economically extractable mineral deposits are located and it can take 13 to 23 years to bring a new copper mine online *(Figure 2)*. For such reasons a strategic assessment of when future supply will be needed and where it could come from, is important now. There is also a need to improve the percentage recovery through recycling of metals already in use, especially of those that are scarce globally.

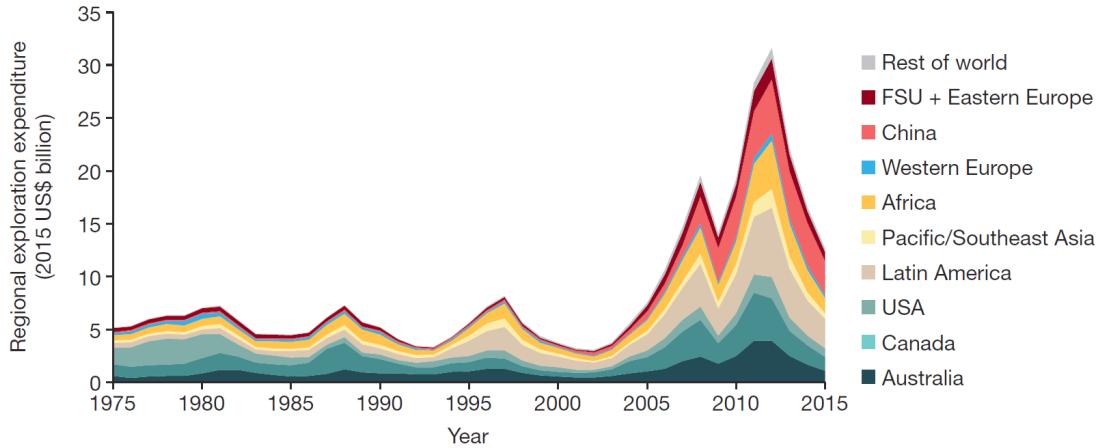

Figure 1. World exploration investment, 1975–2015. Total exploration investment broken down by region and year. 'Rest of world' refers to Mongolia, Middle East and Southwest Asia (including India and Pakistan), FSU indicates former Soviet Union.

Source: Ali, S.H., Giurco, D., Arndt, N., Nickless, E., Brown et al (2017) Mineral supply for sustainable development requires resource governance. Nature, 543(7645)

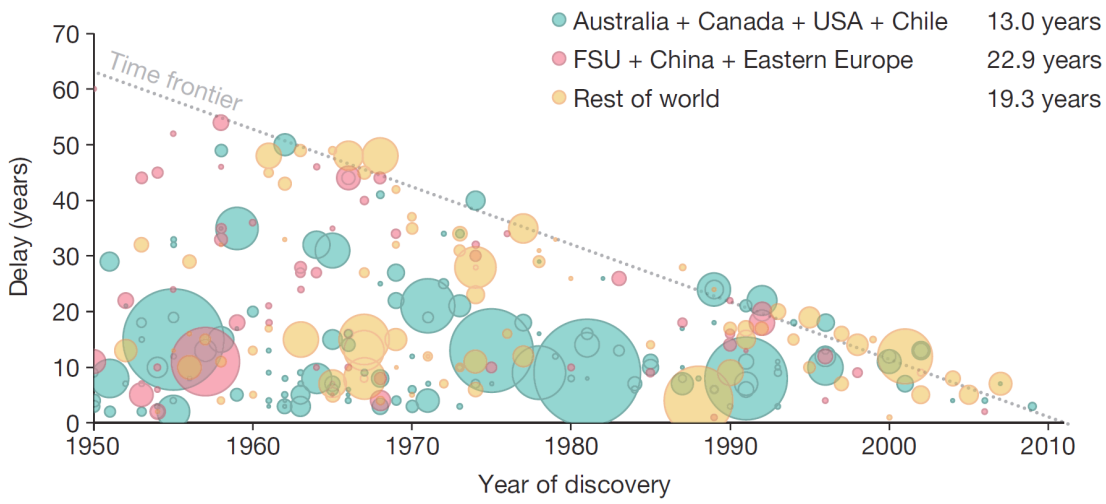

Figure 2. Delays in approved copper projects worldwide based on year of discovery. The size of each plotting symbol indicates the projected size of the extractable deposit. This analysis is based on 271 primary copper deposits of more than 0.1 Mt Cu found in the world. From Ali et al., 2017.

Source: Ali, S.H., Giurco, D., Arndt, N., Nickless, E., Brown et al (2017) Mineral supply for sustainable development requires resource governance. Nature, 543(7645)

Actions are needed by intergovernmental organisations, states as well as industry

As this is a global issue, there are many different stakeholders at different levels. Global organisations such as the International Resource Panel of the United Nations Environment Programme and the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development are crucial for developing global policies.

Mining is also of importance to countries, and their actions depend both on the resources they hold but also which resources they require as a nation for addressing climate change.

Industry are important stakeholders that would put into practice many of the aspects that are necessary to ensure future supply of metals. They will also be key, through better product design and manufacture, in improving the level of recovery of metals in the future.

There is also a need to consider health and environmental consequences of mining, so relevant local stakeholders need to be included in decision-making.

A global strategy that can build on current policies

Current policies for resource use focus on mineral availability and governance, which are crucial for a new strategy to plan for mineral exploration and extraction globally to supply future demand. Such a strategy would build on current knowledge of mineral availability, and take into account governance of countries to ensure supply will not be constrained.

Relevance to the UN Sustainable Development Goals

The UN Sustainable Development Goals cover different arenas that are of relevance to the global mining industry. Mining is directly linked to Goal 12, Sustainable production and consumption, both in terms of how minerals are mined, as well as how they are used and products recycled. As minerals are crucial for clean technology, their supply will also impact on Goal 13, Climate Action.

Summary

Mined resources are necessary for clean technology to combat climate change. Recycling alone is not enough to satisfy present let alone anticipated future demand globally. Continued primary production will be needed for the foreseeable future, but recently exploration has been decreasing due to low current demand. To ensure no interruption in future supply, a strategic approach to mineral exploration and production is necessary now. This would involve intergovernmental organisations as well as nations and industry.

Supporting the Sustainable Development Goals

Read more about our work on Sustainable Development Goal 13, Climate Action:

Global Challenges Academy
Sustainable Cities
Water

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Reference: Ali, S.H., Giurco, D., Arndt, N., Nickless, E., Brown, G., Demetriades, A., Durrheim, R., Enriquez, M.A., Kinnaird, J., Littleboy, A. and Meinert, L.D., Oberhänsli, R., Salem, J., Schodde, R., Schneider, G., Vidal, O., & Yakovleva, N. (2017) Mineral supply for sustainable development requires resource governance. Nature, 543(7645), p.367.

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