



Mineral supply constraints necessitate a global policy response

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Adoption on 12 December 2015 of The Paris Agreement, the first universal climate agreement, suggests that nations will invest in infrastructures for renewable energy sources paving the way to a global low-carbon society. These large-scale changes will require vast amounts of metals and minerals. Regardless of whether known supplies are enough to meet demand in the near future, efforts must be made now to forestall unpredictable yet inevitable supply shortages in the decades to come, shortages that would dramatically impact the building of additional generation and distribution capacity, and deployment of low-carbon technology. But in response to the current downturn in commodity prices, the global mining industry is downsizing and reducing investment in the new exploration, putting at risk future security of supply.

Mining and climate change are inextricably linked; the new adaptive technologies needed to tackle climate change depend on extraction of minerals and metals. An interdisciplinary group supported by the International Union of Geological Sciences, the International Council for Science Unions and UNESCO proposes measures to avert the looming minerals crisis that is developing in the context of current recycling capacity and exploration trends.

Our immediate goal is to stimulate discussion of supply constraints using available data on mineral reserves. We build on recent discussions of supply risk and criticality with a focus on the source of primary resources over the next two to three decades when the availability of metals for recycling will remain low. Current massive production of iron ore and other such commodities despite record low prices indicates a failure of the traditional supply and demand constraints. Broader discussions of metal and mineral supply beyond current criticality are needed given the pace of technological and demographic change as well as rapid development spurts. Furthermore, accessible mineral deposits are irregularly distributed and often occur in areas of conflict. We advocate the establishment of an international panel (under the auspices of the United Nations) to monitor consumption and production of mineral resources for future generations.

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