

Scenarios for future copper demand and supply in China

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Copper is an essential resource that is used in a wide range of applications. Because of its unique conductive properties it is difficult to substitute. With its rapid economic development in recent decades, China has experienced a pronounced growth in copper production and consumption, becoming the world's largest copper consumer from 2002 onwards. Its share in global copper demand increased from 20% in 2006 to 46% in 2016, steadily growing during that period. This rapidly rising demand is not expected to slow down in the coming decades. This may cause future supply problems and will contribute to environmental issues.

To meet the growing copper demand, China imports a large amount of copper from other countries, which is perceived as a huge supply risk by the Chinese government. Meanwhile, a further consequence of imported scrap copper is the occurrence of serious environmental pollution and ecological damage including waste water and air pollution in processing dismantling and secondary copper production. In order to reduce this risk, and more importantly to reduce the environmental pollution caused by imported scrap copper, China implemented a policy restricting the import of scrap copper, the so-called “Green Fence” policy. Thus to compensate for the reduced import, it is crucial for China to consider scenarios to realize a circular economy for copper in the future.

The study presented here explores scenarios on how to meet China's copper demand in the future and what impact Chinese government proposals to ban the import of all forms of imported scrap copper will have on Chinese copper supply. Copper demand scenarios are developed to estimate future demand from 2005 to 2050 using a dynamic material flow model. We then define copper supply scenarios to match demand, and add an assessment of the environmental implications related to copper production and use. The scenario results can be used to identify possible measures and policy options in response to a future copper supply challenge.