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The Chinese Copper Cycle: Tracing Copper through the Economy with Dynamic Substance Flow and Input-Output Analysis

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Abstract

China has become a major user of copper as well as a producer of copper containing products. We present a dynamic model of Chinese copper stocks and flows in the period from 1990 to 2015. The model results indicate that China's per-capita in-use copper stock has grown from about 7 kg in 1990 to close to 60 kg in 2015. At the same time, total copper imports have increased from approximately 0.65 Mt per year to close to 10 Mt. One of the peculiarities of the Chinese copper cycle is that a comparatively large fraction ($\approx 1,4$ Mt) of these imports are made up of scrap, which China re-processes into new products. At the same time, China has relatively low domestic recycling efficiencies. The substance flow perspective is extended with national accounting data, which allows for a portrayal of the interconnection between copper flows and the wider economic structure. It is thus possible to identify the economic sectors which not only directly but also indirectly require copper for the provision of their goods and services.

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