

New Dynamic Model Provides Global Copper Stock-and-Flow Landscape

Study: Development of a Global Copper Flow Model

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Reliable and up-to-date figures for metal recycling from post-consumer products are generally not readily available. In an effort to address this void regarding copper, the International Copper Association (ICA) commissioned a study to develop models that would track copper tonnage with respect to global mining, international trade, end-uses and recycling.

Key Findings:

- The research developed a means of tracking stock-and-flow trends and the life cycle of copper in unprecedented detail.
- Approximately 441 million tonnes (Mt) of copper was in use worldwide in 2015.
 - Over 26 Mt went into service, while approximately 12 Mt of copper contained in discarded products became available for recycling.
 - One-third (over 8 Mt) of the global copper supply comes from recycling.
- The new model quantifies the potential for improvement in the collection and separation of end-of-life products.

Dynamic Modeling

Dynamic modeling tracks copper through time and is based on the best available data, both public and proprietary.

- The research tracks copper tonnage with respect to global mining, international trade and end-uses, and it quantifies recycling and pinpoints areas of improvement.
- The dynamic model starts in 1910 and tracks copper in all applications through to today.

Life Cycle Perspective

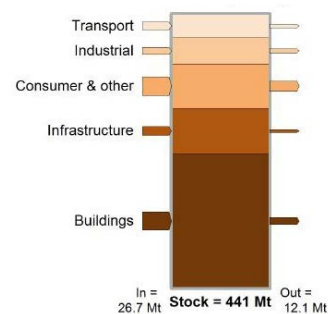
The study examines the life cycle of copper from mining, through metal production, the production of semi-finished goods, the fabrication of end-use products, their useful lifetimes and finally their disposal after use.

- At the end of the life cycle of end-use products, the copper becomes part of the "urban mine".
 - It is either recycled, becomes waste if it ends its life as landfill, or is lost within other cycles, such as steel or aluminum.
 - This detailed accounting of copper flows at each stage of the life cycle is what makes this model unique and valuable.

Within the global copper demand examined in the research, the key areas of use included buildings, infrastructure, industrial, transportation, consumer and electronic products.

- Collection and recycling of discarded products together with recycling of manufacturing scrap yielded well over 8 Mt of recycled copper.

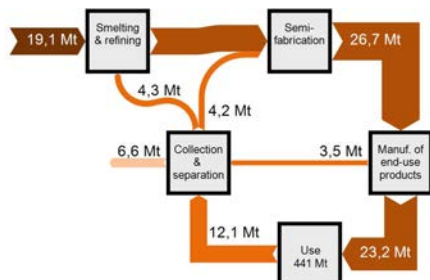
Copper in use (global stock 2015)



Copper in Everyday Products

The amount of copper contained in end-of-life consumer products is larger than the amount of copper scrap coming from buildings, despite the stock being much larger in buildings. This is due to their longer lifetimes. Recovering copper from consumer products presents a challenge as it is more arduous in terms of both collection and separation.

Global copper flows (2015)



For more information on copper demand or ICA, visit www.copperalliance.org.

For more information on copper's use in sustainable energy, visit www.sustainablecopper.org.

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International Copper Association
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