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# Contribution of the Waste Management to the Copper Metabolism of Austria

## Project ABASG III - Copper

By means of a copper balance, this project explores the relevance of the waste management within the overall copper management of Austria. Further, the project also investigates to what extent the current management of copper-containing waste corresponds to the goals of the Austrian Waste Management Law.

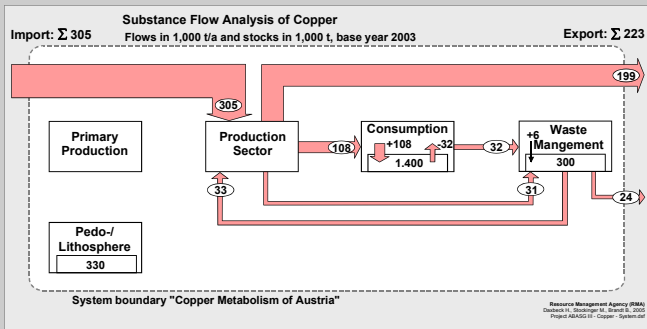
The project has been commissioned by the Ministry for Agriculture, Forests, Environment and Water Management.

## Motivation

Copper is a key basic material and agent of excellent technical characteristic. Copper extraction from metal waste is related to a much lower energy and material consumption compared to that needed in the primary copper production. An optimal copper management allows thus for significant savings of energy and resources and consequently, for prevention of large amounts of emissions and waste within the primary production.

## Goal

The project aims at identifying the quantitatively most relevant copper-containing goods that circulate in the Austrian economy as well as at defining their mass flows and stocks in production, supply and consumption. Additionally, the waste generation that occurs during raw material extraction, production and consumption is roughly estimated.



## Conclusions

- The anthropogenic copper stock amounts to ca. 1.4 Mio. t Cu and consists up to 80 % of the copper stock in buildings and infrastructure; the residual ca. 20 % of the stock is presented by the durable consumer goods. In comparison, the copper stock in the sanitary landfills and the one in the natural copper deposits in Austria, amounting to ca. 300,000 t Cu each, total to approximately four times lower a value.
- The resource copper is used extremely efficiently. Of all the copper that ends in the waste management, 90 % are directed to various recycling processes, both in inland and abroad. Only barely 10 % of the copper is landfilled and is thus withdrawn from a prospective recycling.
- 40 % of the current copper input into the waste management is transferred abroad and so is lost as input material for the Austrian production sector.

## Method

A substance flow analysis is undertaken of the key copper-containing goods and stocks, and so a description of the copper metabolism of Austria is enabled. The system "Copper Metabolism of Austria" considers the three economic sectors:

- "Primary Production" with the process contained "Copper Mining"
- "Production" with the processes contained "Refining", "Foundry & Semi-finished Product Fabrication" and "Goods Production", and
- "Service" with the processes contained "Trade", "Private Households", "Other Branches" and "Waste and Wastewater Management".

## Results

The Copper metabolism of Austria is dominated by a significant flow of both imported and exported copper. **In total, Austria imports annually ca. 305,000 t copper.** In the same time, ca. 223,000 t are annually exported. Thus ca. 80,000 t copper annually remain in Austria. Considering also the secondary copper generated in Austria, **the national copper turnover amounts to ca. 108,000 t annually.**

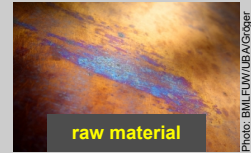
The key goods within the copper metabolism of Austria are: "Copper Wire", "Electrical Cables and Conductors", "Pipes", "Copper Scrap" and "Refined Copper".

Amounts in 1,000 t Cu

Buildings	Cars	EI. appliances
Input: +84	Input: +8.7	Input: +6.4
Output: -15	Output: -5.8	Output: -5.6
Stock: +69	Stock: +2.9	Stock: +0.8

**durable consumer goods**      **short-lived consumer goods**

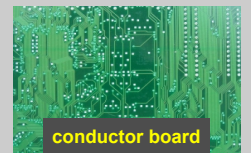
Photos: P. Brandt



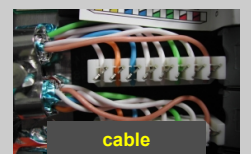
raw material



semi-manufactured products



conductor board



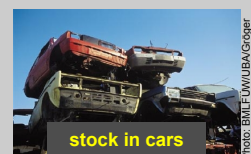
cable



pipeline



stock in buildings



stock in cars



electronic waste



construction waste

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Initiative for promotion of environmentally compatible and sustainable resource management

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