

## **Short Circuits - Development of a small-scale processing route for the localised short-loop recycling of waste electronic circuit boards**

Initiative: Zirkularität mit recycelten und biogenen Rohstoffen

Ausschreibung: Kooperationsprojekte

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Printed circuit boards are the most valuable component in end-of-life electronics in terms of material content. However, due to the complex material composition recycling is challenging. Established recycling routes are based on the technology of copper smelters and require large quantities of input material. Therefore, only a few such special smelters operate globally, and their feed is shipped over long distances from local collectors. This creates a significant CO<sub>2</sub> footprint and removes economic opportunities from the countries of origin. In this project a hydrometallurgical process which is suitable for local, small-scale operation is proposed and analysed. The best options for mechanical and thermal pre-treatment and the dissolution process with organic and inorganic solvents are investigated and a comprehensive and flexible hydrometallurgical recycling route is developed. Through a Criticality Assessment, supply and demand of critical raw materials present in printed circuit boards is analysed. Further, the economic as well as the environmental impact of the hydrometallurgical treatment is compared to the conventional smelter technology.

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