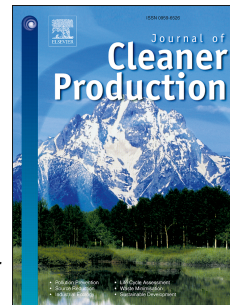


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# Techno Economic Analysis of Electronic Waste Processing through Black Copper Smelting Route

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## ABSTRACT

Waste of electronic and electrical equipment (WEEE), or simply called e-waste, such as waste printed circuit boards (WPCBs) contain a significant amount of valuable, as well as, hazardous elements. Therefore they are considered both as an attractive secondary resource and an environmental burden. In this study, a research has been carried out to investigate and quantify the economic performance of recycling and recovering of valuable metals from WPCBs through a base metal secondary pyrometallurgical operation, namely the black copper smelting. The study involved combined detailed process modelling (thermodynamics, mass and energy balance) and techno-economic analyses. In-depth economics analysis of metal recycling out of WPCB's is useful in understanding the business models and drivers as well as the operational strategies and challenges around these processes. The capital and operating costs for the e-waste treatment plant to be built from the grass root stage has been estimated and the cost-benefit analysis has been carried out. The outcome of the study confirms that the e-waste recycling process embedded in the black copper smelting presents considerable potential value and, therefore, should be taken into consideration. It has been shown that increasing

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