

(O_IWM_09) RECYCLING E-WASTE FOR SUSTAINABLE MANAGEMENT OF NATURAL RESOURCES

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ABSTRACT:

Electronic waste (E-waste) which consists of old, end-of life, discarded electrical and electronic equipment's (EEE), is the most rapidly growing MSW stream worldwide. The toxic and hazardous materials present in it can lead to severe environmental and occupational hazards, if not handled properly. However, presence of significant quantity of valuable recoverable material makes it a potential secondary resource for metal extraction. Composition of E-waste is complex with 38% ferrous material, 28% non-ferrous material, 19% plastic, 4% glass, 11% other (wood, rubber, ceramic, etc.). Although the precious materials are only 1% by weight, it accounts to nearly 80% of the total intrinsic value. Around \$ 21 billion of Au and Ag are used in various EEE per annum. Along with precious metals it also contains various rare earth metals such as Platinum, Gallium, Indium, Lithium, etc. Primary metal extraction from mining has significant negative environmental impact due to substantial natural resources consumed and low recovery efficiency; comparatively extraction from E-waste is 50 times greater which is much more economical with lesser ecological footprint and the energy savings are considerable: aluminium 95%, copper 85%, iron and steel 74%, plastics 80%. This is the

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reason why E-waste recycling which is also called as "Urban Mining" can facilitate in sustainable management and conservation of rapidly depleting natural resources.

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