CIRCULAR ECONOMY PERSPECTIVES IN MANAGING OLD CONTAMINATED GLASS DUMPS

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Abstract

Landfills and dumpsites have been the ultimate end of life sinks for various materials and products. As such, they are considered rich stocks of secondary raw materials for the circular economy. However, most of them are non-sanitary as they lack protective measures against environmental contamination. Over the years, the need to exploit the resource potential of landfills as well as to mitigate their contamination problems, among other factors, has led to the concept of landfill mining, resulting in a number of mainly pilot scale mining of landfills and dumps globally. In southeastern Sweden for instance, where there are over forty old, contaminated glass dumps, a number of remedial dumpsite excavations have been going on, with eventual landfilling of excavated materials in sanitary landfills. Hence, based on the Swedish situation, this study presents three scenarios about: contaminated materials in non-sanitary dumps as they currently stand; ongoing material excavations with subsequent landfilling; and material excavations coupled with materials recovery towards reduced landfilling. The third scenario is presented as more suitable from the circular economy perspective. The scenario is thus discussed in terms of technological implications of the process from identification of concealed valuable materials in dumps to their excavation, sorting, temporal storage, valorization and eventual resource recovery. In addition, legal implications as well as potential social, economic and environmental barriers against the scenario's implementation are discussed. Finally, the study provides recommendations that would be useful in decision making surrounding the management of contaminated and non-sanitary dumpsites.

Keywords: Circular economy, glass waste, heavy metals, landfill mining, waste management

ISBN: 978-91-88898-28-9