Applicability of the Life Cycle Assessment Model in Solid Waste Management in Zimbabwe

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Abstract

Solid waste increase is inevitable globally due to anthropogenic activities. This adds burden to waste management systems in developing countries including Zimbabwe. Currently, life cycle assessment (LCA) model is used to achieve sustainability and circular economy (CE) in solid waste management. Therefore, the main goal of this paper was to unearth LCA model applicability in solid waste management in Zimbabwe. Data sources were retrieved from databases like Scopus, ScienceDirect and Springer, although government documents were also used. In Zimbabwe, organic and inorganic solid waste is generated from various sources, namely industries, institutions and households. Solid waste management in Zimbabwe is based on traditional linear approach where waste is collected and disposed through landfilling, burning, incineration, burying, open pits or illegally. Most disposal approaches occupy base of waste management pyramid, hence posing detrimental impacts to human health, terrestrial, aquatic and atmospheric ecosystems. Management approaches are far from Agenda 21, Sustainable Development Goals (SDGs), Zimbabwe Vision 2030 and National Development Strategy 1 demands. Literature revealed that LCA model can be utilised to achieve sustainable solid waste management in countries like Zimbabwe. LCA model is essential in management of solid waste in Zimbabwe, since it assists decision makers in selecting management approaches with less environmental health impacts. Moreover, LCA enables application of waste material reuse, recycle, repairing and recovery, thus narrowing the gap to achieve CE and economic growth in Zimbabwe. Owing to LCA model implementation of waste management legislation and policies which support energy recovery and circular economy became easier in Zimbabwe.

Keywords

Life cycle assessment · Solid waste · Solid waste management · Zimbabwe ·Environmental impacts · Circular economy · All authors have read · Understood