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EXPLORING THE POTENTIALS OF APPLYING THE CIRCULAR ECONOMY FOR WASTE MINIMIZATION AT A REGIONAL SCALE BASED ON BIG DATA ANALYSIS

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Abstract

Although significant achievements have already been made in waste recycling, the quantity of material residues that annually end up in landfills is still regarded as an important environmental pressure at the global level. This paper presents the development of a methodology for studying the potentials of resource recovery for regions and provinces with a case study in the Province of Brescia. The provincial waste management database was used for mapping the wastes' origins and destinations. A Big Data Analysis approach was followed by developing two software packages. The first package is designed in the Powerbi environment to analyse waste management in each waste category, sector, and zone. The second tool was developed using R statistical software for preparing the mass-balance models in combination with spatial analysis. The two packages provide the possibility for planning interventive actions such as the circular economy and industrial symbiosis by identifying the most problematic points and targeting the improvement measures to minimize waste disposal.

Key words: circular economy, industrial symbiosis, recovery, waste management

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