

From Waste to Energy: A Comprehensive Review of the Circular Economy Model for Solid Waste Management in Malaysia

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Abstract:

The Circular Economy concept has been widely introduced globally, including Malaysia. The strategic transition concept was originally from a linear disposal-based system towards a circular economy that emphasizes waste prevention, resource recovery, recycling, organic waste valorization, energy recovery, and stakeholder participation. Malaysia has several policies and initiatives to support this Circular Economic transition, such as *Blueprint Ekonomi Kitaran Sisa Pepejal 2025-2035*, *Dasar Kebersihan Negara 2030*, source separation programs, and plastic sustainability initiatives. However, the real practices were fragmented at the institutional and implementation levels. Thus, the main aim of this paper is to increase awareness with specific attention to all relevant parties by proposing an integrative Circular Economy Model for Solid Waste Management in Malaysia. Based on the global and Malaysian initiatives literature, the proposed Circular Economy Model includes source separation, food waste prevention, material recovery, plastic circularity, digital waste monitoring, stakeholder governance, market creation, waste-to-energy, and performance measurement. The paper contribution lies within a single framework that integrates Circular Economy and energy efficiency, which can guide policymakers, local governments, industry stakeholders, and academics in strengthening Malaysia towards solid waste sustainability.

Keywords:

Circular Economy, solid waste management, solid waste sustainability, waste-to-energy.