

ANALYSIS OF CIRCULAR ECONOMY POLICY FOR ELECTRICAL AND ELECTRONIC EQUIPMENT IN BRAZIL

RESUMO

Introdução

Brazil is currently the largest generator of waste electrical and electronic equipment (WEEE) in South America, producing 2.4 billion kg annually (Baldé et al. 2024). Hence, this industry requires a transition to a circular economy (CE). However, decision-makers find it difficult to define appropriate targets and incentives for circular economy policies (Guzzo et al., 2022). This research implements a semi-hierarchical framework based on data triangulation to analyze the Brazilian ecosystem of policies, strategies, and legislation aimed at WEEE management.

Problema de Pesquisa e Objetivo

This study starts from the central question: how has Brazil's ecosystem of policies, strategies, and regulatory instruments structured governance around WEEE management, and what are the prospects for the transition to a circular economy? Thus, the objective of the research is to analyze key regulatory instruments, plans, and strategies, identify strengths and weaknesses, assess alignment between objectives and outcomes based on reports and literature, and propose a systemic framework integrating policies, strategies, priority sectors, and incentive mechanisms.

Fundamentação Teórica

In the context of WEEE, the EC plays a strategic role due to the presence of critical metals with high added value. Therefore, WEEE governance requires integrated policies that combine extended producer responsibility (EPR), reverse logistics, technological innovation, and social inclusion (Banik et al., 2020). This research is based on a critical analysis of WEEE policies, which should consider not only legislation but also institutional reports, performance indicators, and contributions from academic literature (Bhattacharjee et al., 2023).

Metodologia

A systematic semi-hierarchical structure with three stages was used to analyze Brazilian policies on WEEE collection and treatment. Following data triangulation, the study examined: (I) mandatory and non-mandatory policies, including the PNRS and related programs; (II) communications and reports from national entities (Green Eletron, ABREE with sectoral data and performance indicators); and (III) academic literature reviewing policy strengths, weaknesses, and gaps in Brazil's circular economy transition.

Análise e Discussão dos Resultados

The investigation illustrates the complexity of Brazil's transition toward a circular economy for WEE, highlight the interplay of strategies, policies, legislation, implementation tools, priority sectors, and financing. The framework also identifies priority sectors include WEEE, packaging, plastics, batteries, and organics, focusing on innovation and social inclusion. Critical gaps were also identified that need to be overcome for the country to move from a robust regulatory model to an effective implementation model, aligned with international best practices, integrated strategies.

Considerações Finais

Brazil has a promising legal and strategic framework, but the key challenge is turning potential into effective results. The analysis presents the country's emerging governance model for a circular economy in WEEE, a multi-layered ecosystem linking strategic visions, legal frameworks, operational instruments, and economic incentives. By organizing the approach into interconnected layers, we provide an analytical lens to assess coherence, identify gaps, and compare Brazil's progress with international circular economy models.

Referências

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Palavras-Chave: circular economy / Waste from Electrical and Electronic Equipment / Political analysis