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Searching for an Alternative Path in the Decarbonization Process through Circularity Tools

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ABSTRACT

The circular economy model, which is becoming increasingly important in the fight against the climate crisis, represents a critical transformation process in terms of both the protection of natural resources and the long-term sustainability of economic activities. This study analyzes the environmental and economic impacts that may arise with the implementation of circular economy principles at the sectoral level and also investigates what role circular economy practices can play in the transition to production processes compatible with the possible carbon thresholds of the European Union. The analysis employs a 75-sector circular economy-compatible input-output (CE-I/O) matrix, developed for the Turkish economy with EXIOBASE data from 2022. Through an assessment of the impact of circular economy policies on waste generation, recycling rates, material efficiency, and raw material extraction, the economic and environmental impacts of these policies on key export sectors are investigated. By assessing whether carbon emissions can be reduced through the application of circularity principles in production processes, the possibility of compliance with the Carbon Border Adjustment Mechanism (CBAM) requirements of the European Green Deal and the nationally determined contributions (NDCs) of the Paris Agreement is being explored.

KEYWORDS Circular economy; Input-output analysis; Export sectors; Carbon emissions

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