

The Impact of Circular Economy Implementation on ASEAN Agriculture Sector: Opportunities, Challenges, Strategies and Indicators

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Abstract. In response to current resource scarcity, global climate change, environmental degradation, and increasing food demand, the circular economy (CE) is a promising alternative strategy to promote sustainable, restorative and regenerative agriculture. A review of the literature on CE confirms the initial hypothesis that theoretical CE support systems have not yet been adapted to the field of agricultural programming and planning. This paper bridges this gap in two ways: i) by adapting the general CE Reinforcement Framework to sector-specific programmes, and ii) by examining the range of indicators available for quantifying the work performance of the circularity of agricultural production systems in an effort to support decision-making processes. Therefore, the different elements in the theoretical CE framework are integrated with the components associated with the agricultural production system. One of the main contributions of this research is to reveal the meaning, description, or main characteristics of CE applied to agriculture. Furthermore, the basic principles used as the basis for implementing CE are adapted to field conditions in ASEAN countries, and CE strategies for agricultural activities are formulated in detail. Forty-one circularity indicators for the practice of a theory and method in an agricultural system were also analyzed comprehensively to determine its strengths and weaknesses. Referring to the key findings, future research channels and changes at the institutional and normative levels are offered to facilitate and streamline the implementation of CE in the system of activities undertaken to add value to agriculture. For example, internationally recognized competency standards and units of determination of size, dimension, or capacity, which are adequate should be established, to develop studies and define the circularity of various agricultural activities in the ASEAN region.

Keywords: *ASEAN Regenerative agriculture; Bioeconomy; Closing resource loops; Narrowing resource loops; Slowing resource loops*