Eco-innovation Methodologies: A Literature Review (2003 -2024)

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ABSTRACT

Eco-innovation, or the creation and deployment of new products, processes, or services with a lower environmental effect, has emerged as a critical approach to addressing the issues of sustainability. This literature review synthesizes the methods used in eco-innovation research to provide a thorough understanding of the field's current state and future directions. This review uses a number of academic publications from fields such as environmental science, engineering, business, and sociology to identify and categorize major approaches utilized in eco-innovation research. These methodologies include life cycle assessment (LCA), design thinking, system dynamics modeling, eco-design, cradle-to-cradle principles, and multi-criteria decision analysis (MCDA), among others. Each approach's benefits, limitations, and applicability are examined, revealing how they contribute to the advancement of eco-innovation theory and practice. The assessment also emphasizes developing trends, such as the incorporation of artificial intelligence and big data analytics into eco-innovation approaches, as well as the growing emphasis on participatory approaches that involve stakeholders throughout the innovation process. This review, by summarizing existing knowledge and identifying gaps in the literature, provides insights for researchers, practitioners, and policymakers trying to foster sustainable innovation and address major 21st-century environmental issues.

Keywords: Eco-innovation, Eco-innovation Methodologies, Literature Review, Scopus Database, sustainable innovation