

<https://doi.org/10.7250/CONNECT.2024.059>

A NOVEL GE-MACKINSEY MARKET APPROACH: INVESTMENT OPPORTUNITY FOR THE BIOPOLYMER PACKAGING MATERIALS

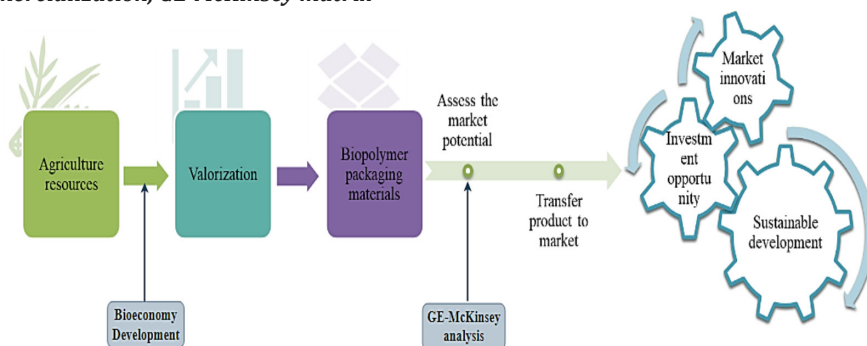
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Abstract – Sustainable development in agriculture seeks to implement a robust bioeconomy strategy by valorizing agricultural resources into value-added products. Compared to primary biomass use, using agriculture residues and wastes can help to achieve higher reductions in GHG emissions and lower feedstock costs. Bioeconomy has substantial potential for high-value products such as biopolymers, pharmaceuticals, and food and feed additives. Low-value applications like bioenergy, biofuels, and bulk chemicals have a weak potential for bioeconomy development. However, high value-added products, including biopolymers, require an equal focus as other products in the bioeconomy value pyramid that can lift the market to elevate sustainable bioeconomy development. A successful transition through radical innovations must be justifiable, with economic, environmental, and social benefits primarily promoted by stakeholders, businesses, or government organizations. One of the core options would be to know the market potential of the biopolymer products. Here, a methodology for decision-making to evaluate four existing biopolymer packaging materials (cellulose, PHA, PLA, and starch) in the EU market has been developed using the GEMcKinsey Nine-Box Matrix, considering market attractiveness and product competitive advantage. Market innovations can be fostered by integrating the resource availability and technology advancement indicators to the methodology steps. The methodology considers sustainability advantages for the agriculture sector and promotes the strategic commercialization of biopolymer packaging materials. Product-specific indicators are used to evaluate the market attractiveness and product competitive advantage. The research findings show that PLA biopolymer packaging material has the highest potential for commercialization. The application of this methodology and its results provide a justifiable way of determining the investments in value-added products and allow investors to make the right decision-making choice for bioplastic packaging materials, ensuring their sustainability and profitability in the market.

Keywords – *Agriculture resources; bioeconomy; biopolymer packaging materials; commercialization; GE-McKinsey matrix*



Market analysis for biopolymer packaging materials.