Assessment of Biofuel Production Potential from Food Waste in Türkiye

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***Abstract*—Food loss and waste are among the critical problems globally. Considering the annual food waste data from the Food and Agriculture Organization (FAO) and other local sources, it is crucial to prevent food waste and reduce the total amount. Apart from these efforts, environmental concerns such as spoilage potential and greenhouse gas (GHG) emissions make food waste an ecological threat. Therefore, utilization of these products in bioprocesses for biofuels or biopolymers can be a promising solution. To this end, in this study, using experimental and simulation data, the potential evaluation of food waste in Türkiye, particularly starch-based substrates, for biofuel production was comprehensively evaluated. Given fuel import dependency, fluctuations in crude oil prices, and food waste-derived GHG emissions, the utilization of these substrates for bioproducts is critical to advancing energy security and environmental sustainability.**

***Keywords*—Biofuel, Bioprocess, Food Waste, Process Simulation**

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