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Developing a Socioeconomic Assessment Tool for Biogas Adoption of Sugarcane Farmers in Nigeria

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Abstract: This study involves the design and implementation of a structured questionnaire developed to investigate the socioeconomic determinants influencing biogas technology adoption among sugarcane farmers in Oyo State, Nigeria. The tool was formulated through an integrative process involving literature review, expert consultation, and preliminary field tests with target respondents. It included variables spanning demographic characteristics, farm operations, energy use, and perceptual factors. The questionnaires were administered to 120 farmers, and logistic regression analysis revealed that education level (OR = 7.08), perception (OR = 12.72), farming experience (OR = 1.12), and age (OR = 0.94) are significant predictors of willingness to adopt biogas. In addition to statistical results, the survey identified significant knowledge gaps and policy-related barriers to the implementation of decentralised biogas systems. The findings highlight the necessity for targeted policy interventions, including farmer education and youth engagement, to drive biogas technology adoption and ensure the effective valorization of sugarcane bagasse. This would have significant contribution toward sustainable energy generation and improved waste management in Nigeria.

Keywords: biogas adoption; questionnaire; socioeconomic survey; sugarcane; logistic regression; Nigeria

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