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Unlocking the potential of biogas technology in West Java, Indonesia: A multilevel analysis of adoption barriers and opportunities

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Abstract

A viable method for producing sustainable energy, particularly in developing country, is biogas technology. However, the use of biogas technology has only been partially adopted in places like West Java, Indonesia. This study used a multilevel analysis that took into account the levels of the individual, organisation, and institution to determine the factors impacting the adoption of biogas technology in West Java. This study used a mixed-method approach that included interviews with significant stakeholders and a survey of 208 farmers. The findings suggested that a lack of technical expertise and financial resources, as well as insufficient assistance from the government and other organisations, were the main obstacles to the implementation of biogas technology. Particularly, the farmers lacked the technical know-how and abilities needed to set up and maintain biogas technology. Despite the obstacles, this study identified several opportunities for the uptake of biogas technology in West Java, including the potential for income generation, health benefits, and environmental sustainability. Biogas technology can provide farmers with a dependable source of energy and fertiliser, minimising their reliance on fossil fuels and chemical fertilisers. Furthermore, the use of biogas technology can help mitigate the negative impact of agriculture on the environment by reducing greenhouse gas emissions and enhancing soil health. The study suggests a comprehensive approach to overcome the barriers to the adoption of biogas technology in West Java, which involves improving technical skills and knowledge through training programs, increasing financial support through grants and subsidies, and enhancing government and organisational support through policies and regulations

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