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# Assessing the sustainable development of micro-hydro power plants in an isolated traditional village West Java, Indonesia

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## Abstract

The sustainable development of micro- hydropower (MHP) plants is a challenge for rural electrification in developing countries, especially in Indonesia, which has diverse ethnic groups, cultures, and traditions in several isolated locations due to its complex terrain. The uniqueness of a social situation in a location can affect the sustainable electrification development. This study aimed to assess the sustainable development of MHP plants in the Kasepuhan Ciptagelar, which has unique traditions and cultural characteristics. The assessment was conducted using the sustainable development indicator (SDI) method, the Ilskog method, which can include social, economic, environmental, technical, and institutional dimensions. Data were collected through field investigations and qualitative dialogs to understand the culture and ways of thinking. The results of the Ilskog method analysis revealed that the environmental dimensions had the highest scores, whereas economic dimensions had the lowest scores, indicating that the cultural background of the Kasepuhan Ciptagelar impacted the SDI scores. This was attributable to the decision of Kasepuhan's traditional leader, which strengthened the community commitment to renewable energy use. However, the cultural background adversely impacted monetary income to sustain MHP plants. This study proposed that community innovation and microcredit availability could improve productive activities, resulting in better economic conditions to sustain MHP plants.

## Biography

Muhamad Alhaqurahman Isa is a Ph.D. candidate from Bandung Institue Technology, Indonesia, majoring in environmental engineering. He has worked in Governmental Institution, The Ministry of Energy and Mineral Resources since 2011. He holds a Bsc in Civil Engineering from Gadjah Mada University, Indonesia. His master's degree was M.Sc in Hydrogeology and Environmental Geoscience from the University of Goettingen, Germany. During his work as the projects leader, He developed 29 micro hydropower plants distributed in remote locations of Indonesia. He was also responsible for program planning and policy formulation to develop renewable energy in Indonesia. He's passionate about sustainable development and renewable energy.