社區型微水力發電推動模式探討—以平溪紫東社區為例

Exploring the Development Model of Community-Based Micro Hydropower: A Case Study of Zidong Community in Pingxi

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摘　要

隨著我國積極推動再生能源發展，小水力發電因具備高穩定性、低碳排特性，以及能與農業共存的優勢，逐漸受到重視。農田水利設施遍布全台，具有穩定水源與地形落差，成為發展小水力潛力資源。目前國內農田水利小水力推動模式主要分為案場招租、測試案與社區型微水力三種。其中社區型微水力規模小、營運不以營利為目的，推動初期仍面臨成本與技術挑戰。

本研究以平溪區紫東社區為案例，探討地方社區如何透過社區參與、公私協作機制，規劃設置具教育與示範功能的小型微水力發電設施。研究發現，社區凝聚共識與外部協力為推動關鍵，亦需透過適當補助政策降低初期投入成本。建議未來可建立支持社區型再生能源發展的制度與資源，促進社區走向低碳、永續與具韌性的轉型目標。

關鍵詞：社區參與、微水力發電、再生能源、農田水利、低碳社區、公私協作

Abstract

As Taiwan actively promotes renewable energy development, small hydropower has gained attention for its high stability, low carbon emissions, and compatibility with agricultural systems. With a widespread distribution of irrigation infrastructure and natural elevation drops, Taiwan’s farmland water systems represent significant potential for small hydropower development. Currently, three main models are being explored: lease-based site

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development, test project implementation, and community-based micro hydropower systems. Among these, community models remain in early stages due to scale limitations and cost challenges.

This study takes Zidong Community in Pingxi District as a case study to examine how local communities can engage in participatory planning and public-private collaboration to establish small-scale micro hydropower facilities with educational and demonstration functions. Findings highlight the importance of community consensus and external support. To overcome economic and technical barriers, the study suggests establishing subsidy mechanisms dedicated to community-based renewable energy, promoting low-carbon, resilient, and sustainable development pathways for rural communities.

Keywords: Community Participation, Micro Hydropower, Renewable Energy, Farmland Irrigation, Low-Carbon Communities, Public-Private Partnership