

Exploring Community Energy cum Aquavoltaics in Taiwan

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Abstract

Aquavoltaics, the fusion of aquaculture and solar electricity production, has been deemed as a key strategy for achieving energy transition by the government in Taiwan. Southern Taiwan, which serves as the region's primary agricultural and aquaculture production base, simultaneously has a significant potential for ground-mounted and rooftop solar photovoltaics. Given the urgency being accorded to energy transition across the globe, the feasibility of different solutions that can contribute towards renewable energy development must be investigated.

This study has conducted a cost-benefit analysis of different forms of aquavoltaics in Taiwan after accounting for government policies to incentivize independent renewable energy producers such as feed-in-tariff, subsidies, and renewable energy certificates, which complements past feasibility studies. In addition, we explore the possibility of combining a social innovation—community energy—with aquavoltaics. The results reveal that, in general,

ground-mounted aquavoltaics are more profitable than roof-mounted or floating photovoltaic installations because of lower costs. In terms of operational model, a cooperative-type of community energy outperforms the landowner-run and company-run aquavoltaics. The results are largely driven by the availability of subsidies for cooperative-type community energies. Hence, this study recommends “community energy” as a feasible setup for aquavoltaics. However, the law must be amended to allow an aquavoltaics facility to sell electricity to the community without having to change into an electricity firm.

KEYWORDS: Aquavoltaics, Community energy, Cost-benefit analysis, Just transition, Energy transition

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