

Thesis Title	Biomass to Energy in Thailand: An Institutional Perspective on the Challenges of Very Small Scale Projects in Chiang Rai Province
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ABSTRACT

Biomass is one of the major renewable energy sources worldwide and is expected to play a greater role in future energy scenarios. Thailand like many other countries has set targets to increase the share of biomass in its energy mix from 841 ktoe for electricity and 2,781 ktoe for heat in 2010 to 1,890 ktoe for electricity and 8,200 ktoe for heat by 2021. Chiang Rai has the largest biomass potential among the nine provinces in the North of Thailand. However, despite the interest and the proposals of several other private investors, hitherto only one biomass-to-energy (BtE) power plant has been built in Chiang Rai with a mere capacity of 0.13MW. The rest of the 550 ktoe biomass potential was not converted into modern forms of energy and was likely to be burnt in open air as part of the preparation of land for the next crop cycle. This burning was believed to be one of the main factors contributing to the smoke haze crisis, which severely polluted the air in Chiang Rai in the summer of 2012.

In order to understand the challenges of very small scale biomass projects in Chiang Rai, this study examines the institutional factors influencing the adoption of BtE by contrasting two BtE projects to become very small power producers (VSPP). The institutional perspective is chosen because the low uptake of BtE in Chiang Rai cannot be explained with simply financial, technological, policy or legal factors – all of which seemed to favor very small scale BtE projects. The multiple-case design allows this study to contrast two proposed projects. The project in Ban Jam Pong Moo 5, Wiang Kean, was successfully established and has been in operation since 2008 while the other in Ban Trikeaw Moo 8, Wiang Chai failed to materialize the plan that had been drawn up since 2010.

To guide the analysis, the 5Ps framework that focuses on the Partnerships between Public, Private, People and Professional sectors is constructed to guide the investigation. Data from documentary study, field observations, and qualitative interviews were triangulated to reconstruct the implementation procedures of BtE projects and to understand perceptions, resources and roles of stakeholders in the two cases. Furthermore, a questionnaire survey was conducted with the successful very small scale BtE projects in Thailand in order to triangulate the finding of the case study. The analysis reveals gaps in the formal institution and outlines the partnerships between the four sectors that can be critical to the success of very small BtE projects. 5Ps framework indicates formal rules are necessary but not sufficient requirements, community understanding and participation is indispensable, and the involvement of professionals can strengthen the project but not a panacea. The results from this study can be used as guideline in Thailand to promote the BtE projects.

Keywords: Biomass/Renewable energy/Partnership model/Project implementation