

Wanida Artkla 2012: Economic Feasibility of Fast-growing *Acacia* hybrids Plantation and Effecting Factors on Decision to Adopt Plantation for Using Power Generation. Master of Science (Resource Management), Major Field: Resource Management, Interdisciplinary Graduate Program. Thesis Advisor: Associate Professor Piti Kantangkul, Ph.D. 111 pages.

The objectives of this study were to analyze economic costs and benefits of *Acacia* hybrids plantations along with factors influencing the decision on utilizing plantations for electricity generation. In order to analyze economic feasibility, the study used secondary data on associated costs and yields of *Acacia* hybrids trees, as well as indirect costs-benefits from related studies. Consider benefits to the farmer and public sector. The 11-year project life with given interest rate of 3.64 percent and the rotation was set for a fuel to generate electricity. It was cut at 3 years and when there were new shoots, it harvested every 2 years. Yields, the next rotation, expected to increase 20 percent and could harvest all, 5 times per crop cycle. Primary data from interview with farmers of 296 households living nearby the three study areas (Ladkrating and Manjakriri plantations as well as Kampangpech silviculture research center), was used to derive factors influencing the decision to adopt plantations for electricity generation.

The economic costs-benefits analysis found that plantations returned a worthy investment with both projects of farmers and the government. The economic return on farmers' projects, had a net present value of 14,644 baht per rai, return on investment of 1.39 and an internal rate of return of 34%. Economic returns on public projects were characterized by, a net present value of 219,192 baht per rai, return on investment of 5.80 and an internal rate of return of 132%. Sensitivity analysis was applied to all three case of study and showed an excess of 10% of costs vs. benefits with case one. With case two benefits were reduced by 10%, while costs remained constant and with case three costs increased by 10% with a simultaneous decline of benefits by 10%. All sensitivity analysis proved the return of investments and thus the economic feasibility of the project.

The analysis of factors influencing the decision on accepting plantations for electricity generation showed that gender, education, experience in planting fast-growing trees, environmental issues, opinions and attitudes about planting fast-growing trees projects are significant ($p \leq 0.05$) determinants on adoption of plantations for electricity generation.

Student's signature

Thesis Advisor's signature