

Pakornpan Nakhampa 2009: Effect of the External costs to Feed-in Tariff of a Small Biomass Power Plant. Master of Science (Environmental Technology and Management), Major Field: Environmental Technology and Management, Department of Environmental Science. Thesis Advisor: Assistant Professor Jukkrit Mahujchariyawong, Ph.D. 111 pages.

Biomass power plant is one of the alternative energy plans that provides rural and nation the positive impacts on economic, social and environmental issues. The objective of this research was to study effect of external cost in electricity generating processes from biomass fuel and reflect the value of impacts on environmental economic and social issues to electricity purchasing system of biomass power plant. This positive value of environmental economic and social was added as one factor of electricity purchasing system of Electricity Generating Authority of Thailand to feed-in tariff of firm contract for very small renewable power generation. The real price related to external cost showed the reasonable feed-in-tariff. In the case of 250 kilowatt and 900 kilowatt biomass power plants, the positive externality value were 6.82 and 6.80 baht per kilowatt which were higher than using fossil fuels in power plant processes, when economic social and environmental impacts were considered. Furthermore, carbon sink can be planned for Clean Development Mechanism (CDM), carbon sink was simulated to calculate with the feed-in tariff. The result showed feed-in-tariff in the case of 250 kilowatt biomass power plant should be 10.81 baht per kilowatt-hour. Thus, process financial support considering feed-in tariff related to the real positive externality value will be promotion for the environment-friendly and renewable energy.

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