Airin Kim 2017: A Study to Compare Investment Returns from Phase 1 and Phase 2 of a Solar Farm Project for Government and Agricultural Sector Cooperatives. Master of Arts (Applied Finance), Major Applied Finance. Independent Study Advisor: Nattawoot Koowattanatianchai, D.B.A. 62 pages

This is a feasibility study to compare investment returns from phase 1 and phase 2 of a solar farm project for government and agricultual sector cooperatives. Each phase is intended to produce 5 megawatts of electricity for 25 years. Standard project appraisal measures such as net present value (NPV), payback period (PP), internal rate of return (IRR) are used to gauge the project value. Sensitivity analysis is also performed to ascertain robustness of the project value.

The results of the study show that the solar radiation in each participanting region is sufficiently intense for electricity generation, with the central region having the highest potential for electricity production owing to its solar radition intensity and flat areas. Appropriate capital structure for investing in the project is 20% equity and 80% liability. This study proposes that the amount of debt obligation in each phase should not exceed 216,050,495.00 Baht. It is found that the project will allow the Board of Investment (BOI) to maintain cash flows for 8 years. The project yields the payback period of 7 years for phase 1 and 8 years for phase 2. The longer payback period in phase 2 of the project is due to a decrease of the revenue from electricity supply of about 4.12 Baht per unit. The reduction in electricity generating costs in phase 2 also benefit the Provencial Electicity Authority (PEA) because the selling price remains approximately stable over time. We find that the Revenue Department will be able to collect 11,351,493,301.00 Baht of corporate income taxs from the project, under our base assumptions and constraints. This study advocates that phase 3 of the project should continue since the National Energy Policy Committee (NEPC) has granted the right to produce 800 megawatts of solar power and there will be 347.16 megawatts of capacity left from the first 2 phases. The study recommends that the appropriate purchase price is between 5.00-5.20 Baht per unit and that the government should provide full authorization to the Agricultual Sector Cooperatives to obtain full benefits of community income distribution. Having done all this, members of the cooperatives are able to retain income benefit at the rate of 6.5% per month. Our sensitivity analysis reveals that if the price is lower then expected, it is not worthwhile to invest in the project and that the land should instead be used for agriculture-related purposes. The project also becomes unworthy for the sponsoring company if labor cost and the inflation rate turn out to be higher than our initial expectation.

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