

運用銀行融資方法分析太陽光電發電系統建置之財務可行性

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摘要

The Photovoltaic (PV) power generation method is currently one of the most environment-friendly and popular sources for renewable and clean energy. As Taiwan is located in the subtropical area, it enjoys abundant sunlight and solar energy. Thus, the solar PV development is of great potential for Taiwan. However, many previous solar PV investment projects didn't succeed in due to poor financial effectiveness. As a result, the financial feasibility analysis becomes critical for a PV investment project. There have been many ways for investing a PV project, among those the banking financing and the self-financing plans are most promising. This study aims at developing a financial feasibility evaluation method to analyze the investment effectiveness of a PV project. A real world case study is conducted to grasp the following findings: (1) For the self-financing alternative, all the financial indicator show infeasible, e.g., the net present value is less than zero, internal rate of return is less than discount rate, payback period after discounted is too long, and self-liquidating ratio is less than 1; (2) The banking financing alternative is financially feasible if the influential factors are under well controlled. However, it will confront investment risk in case the revenue and financing loan percentage are reduced, and construction cost is increased. This study draws the following conclusions: if conversion efficiency of solar PV generation can be improved and the construction cost can be decreased, the PV investment will be feasible. Moreover, if the government agency can provide bond to investors for banking financing so as to obtain a more favorable loan-to-value ratio and interest rate, it would decrease the requirement of equity fund for the investors in the initial stage of PV investment project. Such strategies may enhance incentives to the investors substantially, so that it helps promote the solar PV system in Taiwan.

關鍵字：photovoltaic system, bank financing, investment effectiveness, financial feasibility evaluation