Analisis teknis dan finansial potensi bisnis panel surya atap di kawasan industri Pulogadung = Technical and financial analysis of solar photovoltaic rooftop business potential in the Pulogadung industrial park / Kevin Marsahala Siahaan

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Abstrak

Panel surya atap merupakan suatu terobosan dalam meningkatkan bauran energi terbarukan di Indonesia yang ramah lingkungan. Meskipun begitu, teknologi pembangkitan listrik ini tidak terlalu berkembang karena belum ada skema bisnis yang tepat. Penelitian ini bertujuan menganalisis potensi iradiasi matahari, seizing instalasi, potensi penjualan tenaga listrik dari instalasi panel surya atap, evaluasi proses bisnis, dan rekomendasi skema bisnis. Metodologi penelitian dilakukan dengan menggunakan Meteonorm Software untuk mengkalkulasi Global Horizontal Radiation. Kemudian, mengkalkulasinya dengan efisiensi modul, module mismatch, inverter, MPPT, kabel, dan shading untuk mengetahui produksi energi per kWh/m2. Hasil penelitian menunjukan bahwa skema bisnis Power Purchase Agreement dan sewa instalasi layak untuk diimplementasikan di kawasan industri Pulogadung berdasarkan Internal Rate of Return, Net Present Value, dan Pay Back Period. Penelitian ini merekomendasikan Power Purchase Agreement karena paling menguntungkan secara finansial dalam jangka panjang.
<hr>Solar photovoltaic rooftop is a breakthrough in increasing the renewable energy mix in Indonesia that is environmentally friendly. Even so, this electricity generation technology is not too developed because there is no appropriate business scheme yet. This research aims to analyze the potential of solar irradiation, seizing the installations, potential sales of electricity from solar photovoltaic rooftop installations, and evaluate business process and the recommendation. The research methodology was carried out using Meteonorm Software to calculate Global Horizontal Radiations. Then, it calculates with module efficiency, module mismatch, inverter, MPPT, cable, and shading to determine energy production per kWh/m². The result of the study shows that the business schemes such direct purchase, installment purchase, power purchase agreement, and installation lease are proper to be implemented in Pulogadung Industrial Area based on Internal Rate of Return, Net Present Value, and Pay Back Period. This research recommends the power purchase agreement because it is the most financially profitable in the long term.