

## Analisis Keekonomian dan Potensi Dampak Lingkungan Energi Terbarukan di Kampung Bungin, Bekasi = Economic Analysis and Potential Environmental Impacts of Renewable Energy in Kampung Bungin, Bekasi

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### Abstrak

Penelitian ini mempelajari analisis ekonomi dan potensi dampak lingkungan penggunaan PLTS dan PLTB yang diyakini tidak menghasilkan emisi selama memproduksi listrik. Untuk analisis ekonomi menggunakan metode LCC dan LCOE. Metode LCA digunakan untuk menghitung potensi dampak lingkungan dari sistem PLTS dan PLTB *off grid* menggunakan baterai. Hasil penelitian untuk analisis ekonomi menyebutkan biaya LCC PLTS lebih rendah dibanding PLTB, dengan biaya LCC PLTS sebesar Rp 724.448.306, sedangkan biaya LCC PLTB Rp 1.834.313.012. LCOE dari PLTS juga lebih rendah dibanding PLTB, dengan LCOE PLTS sebesar Rp 2.542/kWh, sedangkan biaya LCOE PLTB Rp 6.445/kWh. Potensi dampak lingkungan pada PLTS dan PLTB di Kampung Bungin menggunakan software Simapro menggunakan metode CML IA, didapatkan kategori GWP PLTS 0.09 kg CO<sub>2</sub> eq/kWh dan GWP PLTB 0.176 kg CO<sub>2</sub> eq/kWh. EBT yang sesuai di Kampung Bungin berdasarkan analisa ekonomi dengan biaya LCOE yang rendah dan analisa berdasarkan potensi dampak lingkungan adalah PLTS.

This study studied economic analysis and the potential environmental impacts of using solar power plants and power plants which are believed to produce no emissions during electricity production. For economic analysis use the LCC and LCOE methods. The LCA method is used to calculate the potential environmental impact of the solar power plant and off grid wind turbine power plant systems using batteries. The results of the study for economic analysis stated that the cost of LCC solar power plant was lower than wind turbine power plant, with the cost of LCC solar power plant amounting to Rp 724,448,306, while the cost of LCC wind turbine power plant was Rp. LCOE from solar power plant is also lower than PLTB, with LCOE solar power plant of Rp 2,542 / kWh, while LCOE wind turbine power plant costs Rp 6.445 / kWh. Potential environmental impacts on solar power plant and wind turbine power plant in Bungin Village using Simapro software using the CML IA method, obtained GWP solar power plant category 0.09 kg CO<sub>2</sub> eq / kWh and GWP PLTB 0.176 kg CO<sub>2</sub> eq / kWh. The appropriate renewable energy in Bungin Village is based on economic analysis with low LCOE costs and analysis based on potential environmental impacts is solar power plant.