

## **Tourism Area Development Optimization Based on Solar-Generated Renewable Energy Technology at Karimunjava, Central Java Province, Indonesia**

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**Abstract :** Karimunjava is one among Indonesian islands which is lacking of electricity supply. Despite condition above, Karimunjava is an important tourism object in Indonesia's Central Java Province. Solar Power Plant is a potential technology to be applied in Karimunjava, in order to fulfill the island's electrical supply need and to increase daily life and tourism quality among tourists and local population. This optimization modeling of Karimunjava uses HOMER software program. The data we uses include wind speed data in Karimunjava from BMKG (Indonesian Agency for Meteorology, Climatology and Geophysics), annual weather data in Karimunjava from NASA, electricity requirements assumption data based on number of houses and business infrastructures in Karimunjava. This modeling aims to choose which three system categories offer the highest financial profit with the lowest total Net Present Cost (NPC). The first category uses only PV with 8000 kW of electrical power and NPC value of \$6.830.701. The second category uses hybrid system which involves both 1000 kW PV and 100 kW generator which results in total NPC of \$6.865.590. The last category uses only generator with 750 kW of electrical power that results in total NPC of \$ 16.368.197, the highest total NPC among the three categories. Based on the analysis above, we can conclude that the most optimal way to fulfill the electricity needs in Karimunjava is to use 8000 kW PV with lower maintenance cost.

**Keywords :** Karimunjava, renewable energy, solar power plant, HOMER

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