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# INVENTION

## CATEGORY

# EGI (ELECTRIC GREEN INNOVATION): DEVELOPMENT TECHNOLOGY DYE-SENSITIZED SOLAR CELL (DSSC) MADE FROM *KIAMBANG* CHLOROPHYLL AND *CYANOBACTERIA* IN RANU PANI LAKE CONSERVATION AS ECO-FRIENDLY ELECTRIC ENERGY

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Indonesia is ranked fourth in the world in terms of population. The size of population in Indonesia correlates with basic needs which one is electrical energy. The main energy source in producing electricity comes from fossil fuels and it is a non-renewable natural resources. The solution that has been implemented is in the form of Solar Power Plant (PLTS) based on inorganic materials. In other hand, with this implementation is needed relatively high fabrication costs and this idea can development or found new technological innovation. EGI is an innovation in the development of Dye-Sensitized Solar Cell (DSSC) technology made from *kiambang* chlorophyll and addition *Cyanobacteria* which can be used as an alternative environment-based renewable energy source in Ranu Pani Village, Senduro sub-district, Lumajang district, East Java. The purpose of this research is to create renewable electrical energy technology, increase the electrification ratio in remote area, and as an effort to preserve Ranu Pani Lake from *kiambang* water weeds. The writing method used is qualitative and quantitative. Qualitative method by describing design of EGI, while quantitative method by calculating electrical power generated from combination of basic ingredients. The selection of *kiambang* chlorophyll because it has potential absorb solar energy that can be converted into electrical energy, while addition *Cyanobacteria* because it is a bacteria capable of photosynthesis and containing chlorophyll a and other color pigments that have potential to be dye, and tolerant of UV light. The test results showed that electric power produced by EGI was 0.225-0.27 mV/cm<sup>2</sup> using combination of 10, 15, 20 ml and *Cyanobacteria* of 130,000 cells/ml, while the different in addition of *Cyanobacteria* was 120,000, 130,000, 140,000 cells/ml with 15 ml *kiambang* chlorophyll can produce electric power of 0.276-0.33 mV/cm<sup>2</sup>. Therefore, EGI has the potential to be applied as an eco-friendly electrical energy technology in supporting electricity security in remote area in Indonesia.

**Keywords:** Electric, DSSC, *Kiambang*, *Cyanobacteria*.



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