

## Intisari

Total kebutuhan listrik (termasuk konsumsi listrik beberapa industri metalurgi) meningkat menjadi 433 TWh (*terawatt hour*) di tahun 2032 pada skenario BaU (*Business as Usual*) dan 702 TWh di skenario OPT (optimis). Berdasarkan hal tersebut, banyak penelitian yang dilakukan mengenai energi baru terbarukan seperti tenaga surya, angin, dan air. Indonesia berada di garis khatulistiwa sehingga memiliki banyak energi yang melimpah, seperti sinar matahari berada di kisaran  $4,8 \text{ kWh/m}^2$ . Dengan keadaan demikian diharapkan dapat memenuhi kebutuhan energi masyarakat yang semakin meningkat sebesar 7% dan memenuhi capaian program pemerintah lewat badan usaha milik negara yakni pln dengan menyediakan pelayanan listrik hingga 100% sedangkan pada tahun 2018 baru mencapai 71%. Kemudian dalam pemenuhan energi listrik memiliki dampak pada sektor ekonomi berupa investasi 1% pada bidang energi dapat menaikkan pertumbuhan ekonomi sebanyak 0,072% lalu juga berdampak dalam mengurangi polusi udara 0,53%. Dengan demikian, dilakukan penelitian panel surya *monocrystalline* terhadap volume air tertentu untuk mengetahui tegangan keluaran agar diketahui pula semisal terjadi hujan terukur juga besaran tegangan keluaran. Hal ini diharapkan panel surya *monocrystalline* digunakan ketika cuaca hujan sehingga dapat memenuhi kebutuhan listrik hingga ke wilayah pedesaan yang memiliki akses sulit untuk menerima layanan listrik.

**Kata kunci:** Energi, listrik, dampak, penelitian

## ***Abstract***

*Total electricity demand (including electricity consumption for several industries smelter) in 2032 is projected to increase to 433 TWh (terra watt hour) in the BaU scenario (business as usual), and 702 TWh in the OPT (optimistic) scenario. Based on this, there is a lot of research and research on new, renewable energy such as sunlight, wind, water, rubber and so on. Indonesia is on the equator so it has abundant energy, such as sunlight in the range of 4.8 kWh/m<sup>2</sup>. In this situation, it is hoped that it can meet the energy needs of the community which are increasing by 7% and fulfill the achievements of the government program through state-owned enterprises, namely PLN, by providing electricity services up to 100%, whereas in 2018 it only reached 71%. Then, fulfilling electrical energy has an impact on the economic sector in the form of a 1% investment in the energy sector which can increase economic growth by 0.072% and also has an impact in reducing air pollution by 0.53%. Thus, solar panel research was carried out monocrystalline to a certain volume of water to determine the output voltage so that if rain occurs, the output voltage can also be measured. This is expected to be solar panels monocrystalline used during rainy weather so that it can meet electricity needs in rural areas that have difficult access to electricity services.*

***Keywords:*** Energy, Electrical, Impact, Study,