

ABSTRACT

Carbon footprints are carbon emissions from human activities that have negative impacts, such as drought, lack of clean water, extreme weather and natural destruction. In 2020, total global CO₂ emissions reached 33.9 gigatons, with the electricity and heating sector as the largest contributor. Indonesia is among the top six carbon emitters with 1.981 billion tons per year. Reducing emissions at the corporate level can enhance reputation, reduce costs and improve financial performance. Net-Zero Emission (NZE) is a condition where carbon emissions are balanced with the earth's uptake, requiring a transition to clean energy. Indonesia plans to achieve NZE by 2060 through its long-term low-carbon strategy. The Internet of Things (IoT) enables more efficient energy management in homes and buildings, saving energy and costs. The above problems get a response from the author to be applied to save electrical power at the Telkom Access Purwokerto Office. The results obtained after simulating the application and survey of electrical equipment at the Telkom Access Purwokerto Office, Payback Period (PP) of 41.7 months (3.48 years), RoI value of 12.75% with an investment period of 4 years or 79,109.76 kWh or Rp114,337,857.00 and Quality of Service results with throughput, delay, packet loss, and jitter parameters in the “good” category. In conclusion, this project is profitable in terms of office operational cost efficiency, energy efficiency and availability.

Keywords: *Carbon Footprint, Quality of Service, Return on Investment, Payback Period*