

## **A review on the pattern of electricity generation and emission in Indonesia from 1987 to 2009**

### **Abstract**

The level of energy demand plays a fundamental role in today's society. It is a vital input in supporting the physical and social development of a country, as well as national economic growth. Looking at the energy demand scenario in present time, the global energy consumption is likely to grow faster than the population growth across the world. Like any other energy sectors, electricity demand has significantly increased in Indonesia over the past years. Currently, there are six types of power plants in the country. The main sources of electrical energy are generated using the gas turbines, steam turbines, combined cycles, geothermal, diesel engine and hydro-powers. Most of Indonesia's power plants are using fossil fuel for electricity generation. Substantial growth in domestic energy demand, however, would be a major challenge for Indonesia's energy supply sector in the future. Over the past decade, thermal power plants generated about 86.69% of electricity and about 13.31% was generated by renewable energy such as hydro-power and geothermal in 2009. The purpose of this study is to chronicle and show a clear view of 23 years trend of Indonesia's electricity generation industry. Furthermore, the capacity of power generation installed and electricity generation from 1987 to 2009 has been gathered for this study. The total pollutant emissions and emission per unit electricity generation for each type of power plants have been also calculated using emission factors. Also, the pattern of electricity generation and emission has been presented. The results show that the implementation and contribution of combined cycle power plants should be increased together with renewable energy and natural gas which are recommended to reduce greenhouse gas emission.