

Analysis of the effects of co2 emissions from coal-fired power plants on the gross domestic regional product in Jakarta

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Abstrak

The phenomenon of rapid economic growth has caused a rise in energy consumption in Jakarta, including a rise in the need for electricity. To supply the population's needs, Perusahaan Listrik Negara (PLN), Indonesia's state-owned electricity company has a plan to build an additional power plant; the energy industry in Indonesia is currently dominated by coal-based power plants. However, this mega project will have an impact on Jakarta's economy (gross domestic regional product, GDRP) and the CO₂ emissions will have an effect as a result of the social cost of carbon because the coal-fired power plant has the highest emission rate compared with other power-plant types. Through the system-dynamics (SD) approach, this study aimed to examine several alternative policy scenarios and determine the best options that can be applied by the Jakarta government to ensure the success of electricity production, which can help to grow Jakarta's economy and minimize the effects of CO₂ emissions simultaneously. Three policies were simulated in the model: business as usual (BAU), a green policy, and a good economic policy. The results of simulation show that each scenario has its own advantages and disadvantages to achieve government target. This study reveals that using combination of green and economic policy is highly recommended to help Jakarta's growth sustainably.