

**Topic:** An Analysis of impact of Carbon Tax Levy on Electricity Tariff in Thailand by Computable General Equilibrium Model

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### ABSTRACT

In recent years, issues of climate change and CO<sub>2</sub> mitigation have become more and more important. Since electrical power generation is one of the key major greenhouse polluters, measures and technologies to mitigate its emissions are of interest to most countries. This study aims to investigate the effects and economic implications of levying carbon taxes on electricity generation in Thailand by using the dynamic Computable General Equilibrium (CGE) model. In this study, economic activities of Thailand were categorized into 40 sectors with 49 commodities. Four scenarios were assumed: Business as usual (BAU), Low carbon tax rate (LT), 150 baht per ton CO<sub>2</sub>, Average carbon tax rate (AT), 450 baht per ton CO<sub>2</sub>, and High carbon tax rate (HT), 750 baht per ton CO<sub>2</sub>. The result shows that, although the imposition of HT can yield a greater impact on the economic growth, particularly for a short term, its effect is moderate. In addition, its impact on CO<sub>2</sub> is much more effective in a long term than LT. A tax rate of 150 baht per ton of CO<sub>2</sub> can reduce only 0.50% of CO<sub>2</sub> emission from the BAU case, and the rate is kept constant for the entire period of tax implementation. At AT, it can reduce 2.2% of CO<sub>2</sub> emission from the BAU case, and it can reduce more in a longer term. The result also shows that, even with the high tax tariff, its impact on the economic growth is moderate, and the effect gradually declines over the years. It can slow down the economic growth by -0.14% from the BAU case on the first year of tax imposed and gradually reduces to -0.12% after a ten-year period. In conclusion, it was found that an imposition of carbon tax tariff on electricity price to mitigate CO<sub>2</sub> emissions is possible, provided that a prudent policy to reallocate the tax to make production more efficient must be deployed as a part counter of this tax regime.

**Keywords:** CGE model, Electricity generation, Carbon Tax