

# Exploring the Impacts of A Carbon Tax Through Computable General Equilibrium Model

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A carbon tax has been proposed or applied in many countries and regions around the world to reduce greenhouse gas (GHG) emissions. In this study, a Computable General Equilibrium (CGE) model for the Province of Saskatchewan is first developed to examine and analyze a series of direct and indirect socio-economic impacts of a carbon tax. The energy sector is further disaggregated based on the production structure and energy use pattern to obtain robust results. Different carbon tax rates are simulated to quantify the inter-relationships of the carbon tax, GHG emission reduction, and economic growth. In-depth examinations are also conducted to investigate some other macroeconomic impacts and responses from specific economic sectors. The results show that the GDP change is mainly caused by consumption reduction and import increases, due to the income decline and relatively low tariff rates. Changes in coal and petroleum product production and processes result in the greatest GHG emissions among all sectors. This suggests that clean coal and petroleum technologies may be the crucial issues for realizing both national and provincial environmental and economic objectives. It is expected that the results will provide a solid basis for supporting the application of an effective Pan-Canadian carbon pricing strategy.