Development of a Taiwan CGE model to analyze the socio-economic and environmental impacts of carbon fees

Abstract:
Greenhouse gas emissions mitigation have become critical issues in combating climate change worldwide. Carbon emission charge is proposed to regulate the emissions at industrial sectors in many regions. Taiwan has set ambitious target of net-zero emissions by 2050. The side effects of pricing carbon could cause tremendous impacts on the socio-economic systems. To analyze these impacts, a dynamic computable general equilibrium model is developed. Scenarios of different carbon fees and the recycling mechanism are analyzed till 2050. The results show that sectoral productions and resulting total emissions will accordingly reduce due to the pressure of carbon fee charges on excess emissions. However, with the subsidy and carbon fee recycled to the household and emission-intensive sectors, the impacts on the national wide economic system can be eased. It can thus be verified that carbon fee recycling is necessary to offset the negative economic impacts derived from implementation of carbon fees.