Comprehensive evaluation of policy measures to expand use of environmental friendly vehicles in China focusing on reduction of greenhouse gas

Keyu LU(University of Tsukuba)
Takeshi MIZUNOYA(University of Tsukuba)
Helmut YABAR(University of Tsukuba)
Yoshiro HIGANO(University of Tsukuba)

Abstract:

Since 1980 annual growth rate of internal combustion engine vehicles (ICEVs) in China is 12.6%, a high level has been recorded and environmental issues like air pollution and global warming due to ICEVs become serious in future as the number of registered ICEVs will be over 200 million in 2020. According to materials released by the government, 244 million tonnage of carbon dioxide must be reduced in order to reduce intensity of carbon dioxide emission per GDP in 2020 by 40-45% compared to the 2005 level. To realize this objective, the state council carried out a state level plan named "Energy-saving and new energy automotive industry development plan" on 9th July of 2012 to build up Electric Vehicle and Plug-in Hybrid Vehicle industry.

In this research, input-output model of China economy, which explicitly includes electricity vehicle manufacturing sectors; energy sectors; transportation sectors; normal industry sectors; petroleum sectors, are constructed and the model is expanded to include household and government sectors so that prices, tax and subsidies are endogenously determined.

However, material balance, energy balance and value balance will be modeled up to analyze four aspects of this study including popularize extent of EV&HV; carbon tax rate & it's spend way; introducing extent of new energy industry; effects of social economy activities. Based on simulation analysis with the expanded dual input-output model, effects of carbon tax and subsidy for promotion of electricity vehicles on growth rate of GDP and reduction scenario of GHG are comprehensively analyzed.

Key Words: GHG; I/O model; Comprehensive evaluation; New energy industry; Environmental friendly vehicle; Subsidy; Carbon tax; Balances.