Organized Session

Environment, Resource and Energy in East Asian Region

Organizer: Soocheol Lee(Meijo University),

This session introduces some simulation studies on economic impacts given by the policy mix of carbon tax or subsidy in East Asian Region to achieve 2°C target of Paris Agreement. Our analyses are implemented by a linkage of the following two models: E3ME model which is a top down macro econometric model and FTT(Future Technology Transformation) sub-model which is a bottom-up model of the technical choice.

It was shown that the following appropriate policy mix would be required: the carbon pricing, carbon regulation such as coal thermal power plant regulation or automobile fuel efficiency requirements for automobiles, and subsidy (electric vehicle subsidy or renewable energy subsidy in order meet 2℃ target of Paris agreement.

**Presentation 1**

**Virtual water trade and virtual land trade in the world**

〇Kiyoshi Fujikawa (Nagoya University)

　Zuoyi Ye (Shanghai University of International Business and Economics )

The concept of virtual water trade was first developed as a way of understanding how water scarce countries could provide food and other water intensive goods to their inhabitants. The global trade in goods has allowed countries with limited water resources to rely on the water resources in other countries to meet the needs of their inhabitants. As food and other products are traded internationally, water is also traded internationally behind the trades of those products. It can be said that land is also traded from land rich countries to land scarce countries behind the trades of those products.

WIOD (World Input Output Database) provides timeseries data of water and land consumption by sector. We estimate the trend of virtual water trade and virtual land trade in the world based on WIOD.

**Presentation 2**

**Economic and Environmental impacts of carbon taxes and policy mixes of other instruments in East Asia to meet the 2050 2**°**C targets : An analysis using E3ME-FTT model**

〇Soocheol Lee(Meijo University)

Unnada Chewpreecha(Cambridge Econometrics)

Hector Pollitt(Cambridge Econometrics)

The aim of this paper is to assess, using E3ME global macro econometric model, how we might achieve carbon emission reductions and what is impact on economies for each of the East Asian countries to meet 2℃ target in 2050. The focus of this paper is on a scenario in which emissions are reduced by enough to limit temperature change to 2°C. The conclusion is likely to be that a carbon price is a necessary, but not sufficient, policy instrument to reach an ambitious emission reduction target. We will compare this modelling approach with the optimization modelling tools, if possible, in which the carbon price is the only policy mechanism available and make recommendations on the assessment approach as well as the policy mix with subsidies and regulations.

**Presentation 3**

**Policies and predictions for a low-carbon transition by 2050 in passenger vehicles in East Asia: Based on an analysis using the E3ME-FTT model**

〇Aileen Lam(The University of Macao)

Soocheol Lee(Meijo University)

Jean-François Mercure(Exter University)

Yongsung Cho(Korea University)

Chun-Hsu Lin(Chung-Hua Institution for Economic Research)

Hector Pollitt(Cambridge Econometrics)

Unnada Chewpreecha(Cambridge Econometrics)

In this paper we apply a model of technological diffusion, FTT: Transport, linked to the E3ME macro-econometric model, to study possible future technological transitions in personal passenger transport in four East Asian countries. We assess how targeted policies could impact on these transitions by defining four scenarios based on policies that aim to reduce emissions from transport. For each country we find that an integrated approach of tax incentives, subsidies, regulations (fuel economy efficiency), kick-start programs and biofuel programs yield the most significant emission reductions because, when combined, they accelerate effectively the diffusion of electric vehicles in the region.