

Co-benefits of Reducing non-CO₂ Emissions in Asia by achieving 2 degree target pathways

Tatsuya Hanaoka

National Institute for Environmental Studies, Tsukuba, Japan
Tel & Fax: +81 298502710, E-mail:hanaoka@nies.go.jp

This study analyzes the cobenefits of reducing SO₂ and NO_x emissions in Asia while achieving a 2 degrees global temperature limit above pre-industrial levels in the global regions. This study uses the AIM/Enduse[Global] model which is a bottom-up optimization model with detailed technology selection framework. This study focuses on the following points; 1) estimation of mitigation potentials and costs of the Kyoto GHG basket of six gases (CO₂, CH₄, N₂O, HFCs, PFCs and SF₆), and 2) assessment of cobenefits of reducing air pollutants such as NO_x and SO₂. Mitigation measures of energy efficiency improvement on the demand side and the shift to less-carbon intensive or non-fossil fuel energies on the supply side play important roles in reducing CO₂ emissions as well as increasing cobenefits of SO₂ and NO_x emissions reductions. The 400 US\$/tCO₂ carbon tax scenario can achieve pathways in a 15-85 quantile range of the two degree target scenarios, and emissions of GHGs, SO₂ and NO_x in Asia are largely reduced around 60-90% compared to the reference scenario. Energy shift in energy supply sector largely contribute to reducing GHGs as well as SO₂ in Asia. However, NO_x are derived from transport as well as energy supply, and there are limitations to shifting from fuel vehicles to Hybrid, plug-in Hybrid, electric vehicles in Asia.

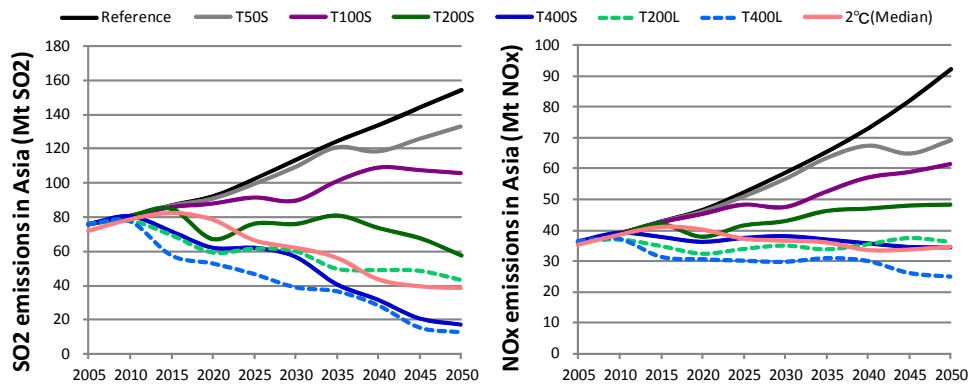


Figure 1 SO₂ and NO_x emissions pathways in Asia

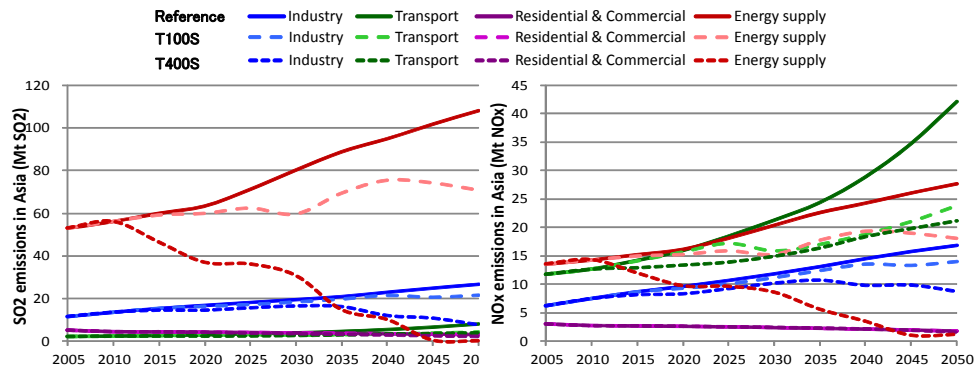


Figure 2 Sectoral breakdown of SO₂ and NO_x emissions in Asia

Note) I appreciate your feedbacks but please do not quote yet, because these results will be under-review as a journal paper.