

## **Reducing Greenhouse Gas Emissions via Industry Shifts and Regional Shares: An Interregional Dorfman-Samuelson-Solow Leontief System of China**

Topic: Environment Emissions as a Spatial Concern

Author: Xue FU

Co-Authors: Bo MENG, Michael L. LAHR, Yaxiong ZHANG

China promise to reduce nation's carbon dioxide emissions in 2020 by at least 40% of its 2005 levels. This paper proposes that interregional industrial shifts might enable China to meet this goal. A Dorfman-Samuelson-Solow model is presented by using an environmental multiregional input-output table of China in a linear programming format and at given national carbon targets, with aim of maximizing national GDP, under constrains for both demand-supply balance and energy-use change within practical limits. In each province, excluding the energy preserved in the secondary energy, final consumption of 39 manufacturing accounted by bottom-up and up-down methods, final consumption of other sectors, energy transition and loss are calculated by 20 energy type into carbon emissions. The model suggest that moving the energy and heavy industries out of China's North Coast would help considerably, GDP losses from which could be counteracted by raising the output of high-tech industries in the South Coast and of selected services across most of China's regions, moreover, adjusting the energy mix toward cleaner resources would alleviate some pressure to reduce carbon emissions of heavy industry throughout China and of the energy industry in the Central.