

Study on China's Energy-Economy-Environment System Based on Sustainable Economic Growth

Topic: Environmentally extended input-output analysis

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China is and will be the most important energy consumer and producer in the world. The growth rates of energy demands and energy-related CO₂ emission per capita are relative higher. With the popularity of low-carbon economy, the causality relationship among energy consumption, gross domestic product (GDP) and environmental pollution is a key issue in energy economics. Although a large number of studies on this issue have been reported over the past years, there is still a lack of analysis as to the distinction of contribution generated by energy to the economy (instead of other resources, for example capital, labor). Is China an energy-exporting or importing country in recent years? In this paper, a non-competitive energy-economy-environment import-type input-output (N3EIO) model and DEA-type linear programming models are constructed to measure energy consumption performance. The empirical results indicate that in order to obtain a "win-win" outcomes for China's economic growth and the target of energy-saving and emission reduction, more measures should be adopted. The measures include: increasing the proportion of non-fossil energy in primary energy consumption, imposing carbon tax, developing clean coal technology and encouraging processing trade in a controlling manner.