

The Economic Growth Effect of Low-carbon Development in the Power Sector at the Current Stage in China

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Abstract

Achieving a win-win situation between the low-carbon transformation of the power sector and economic growth is an important part of sustainable economic-environmental development. Improving the low-carbon transformation policies of the power sector is the key to achieving the carbon neutrality goal and is also crucial for China's current economic growth. This paper designs a new method for splitting the power sector and recalculates the power sector data in the national input-output table. Then, it constructs a Chinese macro-economic system using the computable general equilibrium theory. By adding input factors of different types of power in the power sector, it evaluates the economic growth effect of the low-carbon transformation of China's current power sector. At present in China, thermal power in the power sector has the greatest growth effect on economic development, followed by hydropower, wind power, nuclear power, and photovoltaic power in turn. Nuclear power in the power sector has the greatest potential impact on China's current economic growth, followed by wind power, hydropower, photovoltaic power, and thermal power in sequence. As the main basis for the energy structure adjustment of the power sector, the carbon neutrality goal not only takes into account the issue of dealing with global warming but also responds to the actual needs of China's current economic growth. This paper clarifies that different types of power in China's power sector are in a development stage where the existing power generation scale is not equivalent to their economic growth potential, which will provide a scientific basis for achieving a win-win situation between the low-carbon transformation of the power sector and economic development. China should unswervingly implement and promote the low-carbon transformation of the power sector and gradually adjust the energy structure of the power sector.

Keywords: Power Sector; Low-Carbon Transition; Economic Development; Computable General Equilibrium Theory; Carbon Neutrality Target