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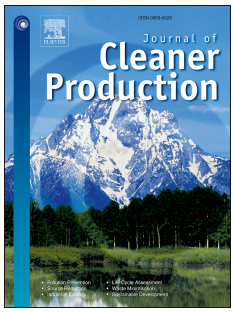

Carbon dioxide emissions and energy efficiency analysis of China's regional thermal electricity generation

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Carbon dioxide emissions and energy efficiency analysis of China's regional thermal electricity generation

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Abstract

In this study, we analyze the energy efficiency and carbon dioxide (CO_2) emissions reduction of China's regional thermal electricity generation from 2004 to 2010 on a regional grid level. China has seven regional grids. By using Log Mean Divisia Index (LMDI) analysis, we determine that the intensity and energy mix effects have positive effects on CO_2 emissions reduction, but the effects of structural and CO_2 emissions factor are insignificant. The accumulated intensity and energy mix effects account for −10.70% and −10.41% of the CO_2 emissions reduction, respectively. Such improvements are brought about the policy that encourages large power plants, discourages small energy-inefficient power plants, and promotes large-capacity high-parameter units. This policy has contributed to electricity conservation in thermal electricity generation. However, regional results show that the North grid of China performed poorly. Hockey stick effects were also observed in the intensity effect of the Central and North grids. Thus, regional moving average targets are recommended.

Keywords: CO_2 emissions; Energy efficiency; China thermal electricity industry; LMDI

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