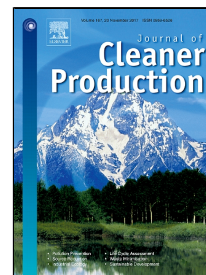


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A performance evaluation of China's coal-fired power generation with pollutant mitigation options

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Abstract:

Recently, performance evaluation of coal-fired power generation with high pollution based on data envelopment analysis (DEA) method has become an advanced research hotspot in China. Instead of a single process in previous studies, we divide the production system of coal-fired power plants into the production process and pollutants abatement process, with pollutant intermediates as the link to connect the two processes in the current paper. Then we present a new two-stage network DEA model to evaluate the performance of China's coal-fired power generation by improving the link constraint that different with traditional network DEA approaches. Meanwhile, we conduct an empirical study to verify the applicability of the proposed approach and find that the proposed model is more effective than the previous models in evaluating the inefficiencies of coal-fired power generation. The empirical results also show that: the inefficiencies of the pollutants abatement process bring poor performance of the regional coal-fired power plants; and the efficiency results vary greatly among different areas of China, efficiency is best in the west area but the worst in the northeast area. Finally, some appropriate propositions are present in order to create better conditions for China's sustainable development.

Keywords: Data envelopment analysis (DEA); Network DEA; Energy efficiency; Pollutants mitigation

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