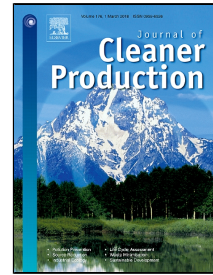


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Do technological innovations promote urban green development?—A spatial econometric analysis of 105 cities in China

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Abstract: Rapid urban economic growth in China has resulted in a number of resource and environmental challenges. Technological innovations are a source of economic growth but act as a double-edged sword in their effects on urban green development. This study aimed to determine whether technological innovations promote or impede the enhancement of urban eco-efficiency in China and also to reveal regional and administrative-level differences in terms of the effects of technological innovations. We selected the number of granted invention patents and the proportion of technology-related revenue in the total revenue of national high-technology industrial development zones (NHTIDZs) as indicators to represent knowledge innovation and product innovation, respectively, and used the spatial autoregressive model to examine the effects of the two innovations on urban eco-efficiency. The results showed that technological innovations, which enhanced urban eco-efficiency, had a greater impact on eastern cities than on central and western cities. The higher was the administrative level of a city, the greater were the effects of invention patents on urban eco-efficiency. Moreover, the higher was the administrative level of a city, the smaller was the role that NHTIDZs played in promoting urban eco-efficiency, which represented a case of diminishing marginal utility.

Keywords: Technological innovation; urban development; eco-efficiency; spatial autoregressive model

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