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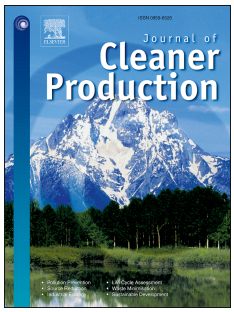

The causal relationship between carbon emissions and land urbanization quality: A panel data analysis for Chinese provinces

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The causal relationship between Carbon emissions and land urbanization quality: A panel data analysis for Chinese provinces

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Abstract: The Chinese government, like many others around the world, has set carbon targets that by the time of 2020, to achieve a 40 – 45% decrease in CO_2 emissions per GDP compared with that of 2005. In some parts of China, short-term economic needs have dominated urban planning, while in other areas—especially in recent years—emphasis has shifted to the quality of urban development. This paper contributes to the literature as placing emphasis on the quality of land use as well as detecting possible causal links between land urbanization quality(LUQ) and carbon emissions using panel data from at provincial level from 2004 to 2013.The results show that: There is bidirectional long-run causal relation between carbon emission and LUQ on the national scale, which implies that the two are jointly determined and that they simultaneously affect each other. As the case of recovery to the equilibrium, Eastern regions have the fastest speed, followed by the Central and the Western ranked at last. Further, what worth noting is LUQ contribute to reducing carbon emissions, indicating the ongoing industrial restructuring and green developments have come into force. Moreover, we deduce that the Central region has the highest potential for energy conservation. We further propose that emphasis should be placed on promoting the degree of LUQ and energy conservation in the implementation during the New-type Urbanization Plan (2014–2020).

Keywords: Land Urbanization Quality, Carbon Emission, Panel Data, China

1. Introduction

As a result of extensively increase in Greenhouse gas emissions (GHGs), climate change, especially global warming serves as one of the most challenging issues in this era. Reducing GHGs has become a common goal around the world, China's actions to control greenhouse gas emissions goal: By 2020, to achieve a 40–45% decrease in CO_2 emissions per GDP compared with that of 2005. By 2020, to achieve non-fossil energy accounts for the proportion of primary energy consumption to 15%; to increase 40 million hectares of forest area through reforestation and strengthening forest management. Faced with the new situation of market economy, energy consumption, globalization and human contradiction, the National Land Use Plan (2006-2020), proposed combining land-use with environment, demographic, ecological determinants(Xu et al., 2015).There are extensive research on energy-growth-environment nexus (Farhani & Ozturk, 2015; Dogan & Seker,2016), real-life case studies on sustainability (Zhao et al., 2006;Chau & Wu,2010;Wang et al., 2014), and social-economic-ecology issues related to China’s urbanization (Chen et al., 2010;He et al., 2016).

Land Urbanization refers to the rising process of the proportion that land with urban morphological characteristics in total land area in a region or country (Lu et al., 2007). Land

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