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A NOVEL OF FRACTIONAL ORDER PREDICTIVE MODEL ON CARBON EMISSION INTENSITY IN CHINA'S TRANSPORTATION SECTOR

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Abstract

The research on the carbon emission of transportation sector has always been concerned. The purpose of this paper is to establish a model to predict whether China's transportation sector can meet the emission reduction commitments under the Paris agreement. We have collected data of carbon dioxide emissions and Gross Domestic Product (GDP) of China's transportation sector for 18 years from 2000 to 2017. By comparing the accuracy of GM(1,1), fractional order GM(1,1), combination model of GM(1,1) and Markov model and the combination model of fractional order GM(1,1) and Markov model, the results showed that the combination model of fractional order GM(1,1) and Markov model had the highest prediction accuracy. Afterwards, we got that the carbon emission intensity of transportation sector from China in 2030 will be 63.70% lower than that in 2005. Under the current emission reduction measures and intensity, China's transportation sector will be able to meet the minimum emission reduction targets promised, but it will be difficult to achieve the maximum emission reduction targets by 2030. In the end, we put forward some policy suggestions to the relevant departments to reduce the carbon emission intensity of transportation sector.

Key words: carbon emission intensity, emission reduction commitment, fractional order grey model, transportation sector

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