

Factors Enabling the Decoupling of China's Energy-related Emissions from Its Economic Growth

Where is China on the Environmental Kuznets Curve?

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Summary

Economic growth has been one of the most important political goals in China since the reforms introduced by Deng Xiaoping in the late 1970s. The successful increase in economic welfare in China was accompanied by a decoupling of economic growth and energy-related emissions of carbon dioxide (CO₂) and sulphur dioxide (SO₂). The absolute values of these emissions has increased considerably. Two questions arise against this backdrop: what are the main factors behind the decoupling of economic growth and these energy-related emissions, and what is the impact of each of these factors on the rise in emissions? This paper aims to determine and analyse these factors, which are population, per-capita income, total CO₂ or SO₂ intensity of the primary energy supply, and the energy intensity of GDP.

Factor decomposition reveals that the growth in per-capita income and the reduction in energy intensity have the largest balancing impact on energy consumption and emissions in China. The relationship between economic development and emission levels, however, is not linear over time, but follows a path commonly described by the Environmental Kuznets Curve: emissions decrease while per-capita income grows. In China, this phenomenon occurred between 1998 and 2000 and led to a curve much like the typical inverted U-shaped Environmental Kuznets Curve until 2001. Seen from a 2005 perspective, however, this merely turned out to be a structural break.

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1 Introduction

One of the most important objectives of economic policy in China is to fuel economic growth – the motor of development – and subsequently to increase the nation's wealth as the most populous country on earth, with more than 1.3 billion inhabitants. This goal has had priority for the Chinese government (Zhang 2005). The successful balance of the past 25 years shows almost a tenfold increase in real GDP, which rose from 1.8 trillion RMB in 1980 to 17.3 trillion RMB in 2005 (see Table 1).