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Deliberating on the energy cap in China: the key to a low-carbon future?

“ The present article argues that the industrial relocation represents a golden opportunity for low-carbon development in inland China and that the conflict between inland development and carbon management can be resolved by increasing central government investment in renewable energy and exempting renewable energy from the energy cap. ”

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During a State Council meeting in January 2013, the subject of capping China's annual energy consumption in 2015 at 4 billion tons of coal equivalent (tce) was resurrected. The energy cap was first proposed in 2011 to the slow growth in energy use. There were many reasons to control energy consumption, including to reduce carbon emissions, reduce rising dependency on imported fuel and maintain a cleaner environment. However, the drafting of the energy cap was placed on hold due to concerns over its potential negative impacts on China's economy, which is energy and carbon intensive. Arguments against the energy cap typically take the following form: China is undergoing rapid industrialization, which necessarily results in higher energy consumption; therefore, a restrictive energy cap would be detrimental to China's industrialization progress and, ultimately, its economic development.

From a geographic perspective, this argument against the energy cap is overly simplistic. Not all areas of China are industrializing, as coastal industries are beginning to move inland. Therefore, the energy cap will affect the industrializing and comparatively poor inland provinces much more than the wealthy but deindustrializing coastal provinces. Despite its impact on inland development, the energy cap is necessary to prevent the inland provinces from committing to carbon-intensive investments – an act that will lock China into high-carbon growth for the coming decades. The present article argues that the industrial relocation represents a golden opportunity for low-carbon development in inland China, and that the conflict between inland development and carbon management can be resolved

by increasing central government investment in renewable energy and exempting renewable energy from the energy cap.

The energy cap

In 2006, the central government introduced the energy intensity target system that aimed to incentivize local officials to improve the energy efficiency of their jurisdiction [1]. Under the system, every province was given an energy intensity reduction target – typically 20% in 5 years – that its leading officials would be punished for not meeting. Most provinces achieved the targets in 2010; however, a policy lesson that emerged from the experience was that an energy intensity target alone was not sufficient to slow total energy consumption and carbon emissions. Because the provincial energy intensity is calculated by dividing the total energy consumption of a province by its gross regional product, local officials can reduce energy intensity by simply doing what they do best: rapidly increasing gross regional product. Because of this loophole, although the energy intensity of China decreased from 1.28 in 2005 to 1.03 in 2010 using 2005 constant prices (a decrease of 19.5%), total energy consumption increased from 2.36 billion tce in 2005 to 3.25 billion tce in 2010 (an increase of 37.7%) [2]. This energy consumption translated into 8.33 billion tons of carbon dioxide in 2010 [3].

This rate of increase in energy consumption was overly fast according to the central government. Therefore, the government began to investigate an energy cap. The proposed energy cap, 4 billion tce in 2015 (23.1% above

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the 2010 level of energy consumption), leaves much less room for energy consumption growth compared with the previous period. Future energy caps will be determined at the beginning of every 5-year planning cycle. However, the State Council has declared that its ambition during the 2011–2015 planning period is to establish the institutions, which is usually taken to indicate that the energy consumption cap will be a guidance target rather than a compulsory target. In other words, no real punishment for failure to comply will be enacted during this pilot phase. From 2016 to 2020, the cap will become compulsory, with real consequences for local officials who fail to observe the limit. Implementation details, such as the evaluation system and provincial targets, remain under development.

Industrial relocation as an opportunity for low-carbon development

One problem with the argument that an energy cap is incompatible with China's current status as an industrializing economy is that it oversimplifies China's economic geography. China is a vast, diverse country and not every province in the country is undergoing industrialization. Since the reform, industrialization has been concentrated at the coastal regions, especially in the following three areas: the Pearl River Delta region, the Yangzi River Delta region and the Beijing–Tianjin–Tangshan region [4]. However, recent years have witnessed several dramatic changes in the business environment in these areas, including labor shortage followed by rising labor costs, decreasing availability of land, stricter environmental regulation and government-sponsored relocation policies [5,6]. Therefore, after three decades of rapid industrialization, these areas are beginning to deindustrialize, and are increasingly associated with the term 'post-industrial cities' [101]. Where do the firms relocate to? Although some firms have relocated overseas, a more appealing option for many factory owners is to relocate inland [7]. The vast inland regions in China remain comparatively underdeveloped and poor. These areas are more abundant in natural resources, labor and land, and the local governments in these inland regions are eager to attract the relocating industries. Until recently, such development was welcomed by the central government, as is evident from the positive reports released by Xinhua News Agency (the State Council's official news outlet), often with encouraging titles such as 'Industrial relocation unleashes growth potential in west China' and 'Inland economy ready to take off thanks to industrial relocation' [8,9].

Inevitably, this market- and administrative-driven nationwide industrial relocation process means that in the future the energy consumption of coastal provinces will trend downward, or at least grow at a much slower pace than the industrializing inland provinces. These provinces will live easily under the energy cap; however, the energy consumption of inland provinces will grow rapidly as an increasing number of industries relocate inland. This will create problems for the local officials when the energy cap is implemented. From the perspective of the inland provinces, it is not difficult to understand why the proposed energy cap is perceived as a threat to their right to develop through industrialization.

However, the developmental concern of inland China is not the only issue at stake. China is the world's largest carbon emitter, and its industries account for more than 70% of total carbon emissions [10]. Therefore, the last thing that we want to see is the relocation process simply moving energy- and carbon-intensive industries and infrastructure from the coast to inland China. Because of the long lifetime of infrastructure and industrial investment, this form of relocation will lock China into carbon-intensive growth for the coming decades. However, industrial relocation is also a golden opportunity to improve industrial energy efficiency in a cost-effective manner; as Stern noted, "*it is much cheaper to build a new piece of capital equipment using low-emission technology than to retro-fit dirty capital stock*" [11]. The realization of this opportunity requires the participation of local government. Therefore, there must be disincentives for local officials in the inland provinces to pursue carbon-intensive growth; the energy cap can provide such disincentives.

A solution to the conflict

The present analysis has shown that, on the one hand, the energy cap will negatively impact the goal of developing inland provinces through industrial relocation. On the other hand, the cap is the key to China's low-carbon future by preventing these inland regions from pursuing carbon-intensive growth. The key to the success of the energy cap, then, is to enable the inland provinces to develop and industrialize, but only in a manner that is climate compatible; for example, through investment in state-of-the-art energy-efficient industries and renewable energy. The central government can give inland provinces less restrictive energy caps. This measure could address the development issue by allowing more room for inland provinces to develop but would fail to prevent inland China from committing to a carbon-intensive growth. Alternatively, the central



government can maintain the energy cap restriction but exempt renewable energy from the cap. This will provide local governments with a strong incentive to develop renewable energy. In addition, as a support to inland low-carbon development, the central government must heavily invest in renewable energy in inland China, which is richly endowed with renewable energy resources. Unlike many other national governments, the Chinese central government is blessed with a sound financial position, which allows significant investment in green infrastructure. In 2012, spending on energy conservation and environmental protection totalled RMB¥200 billion (~USD32.4 billion at the current exchange rate) [12]. This is a large sum but only amounts to 3.1% of the total central government expenditure. There is certainly room for more increased investment in renewable energy.

In conclusion, the development of inland China is at a crossroad. Whether inland China will develop into a low-carbon economy or lock China into a future of carbon-intensive growth depends to a large degree on the current action of the central government. The introduction of the energy cap is the key to a low-carbon future not just to China, but to the world.

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