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Why invest in wind energy? Career incentives and chinese renewable energy politics

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HIGHLIGHTS

- No negative association between fossil fuel production and wind energy development.
- Provinces with party secretaries approaching the age of 65 have more installed capacities.
- Better educated party secretaries are likely to be more supportive of renewable energy.

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ABSTRACT

We study wind development at the provincial level in China, modelling installed wind capacities as a function of both economics and politics. We assume that the top provincial officials desire to maximize their chances of promotion under the Chinese cadre evaluation system. We expect that those with the strongest incentives to perform in order to achieve promotion would work harder to comply with the central government's policy agenda to promote renewable energy. Collecting and testing data on provincial leaders' characteristics, we find that provinces governed by party secretaries who were approaching the age of 65 are associated with significantly higher level of wind installed capacities. This result supports the political tournaments theory of Chinese politics. We also find that better educated party secretaries are likely to be more supportive of renewable energy, implying that education acts to encourage provincial leaders to support the central government's policy.

1. Introduction

The emerging environmental crisis in China has attracted much attention from both practitioners and academics.[1] Environmental challenges pose considerable threats to China's long term development.[2] In addition to the detrimental effect on its own environment, Chinese environmental crisis has profound global implications. The most pressing environmental problem facing the world today is climate change caused by the emission of greenhouse gases, such as carbon dioxide (CO2). With its increasing economic size and energy consumption, China is now the largest emitter of carbon dioxide, accounting for 27 per cent of the global emissions in 2012 according to the Carbon Dioxide Information Analysis Center. In addition, the Chinese government's recent efforts at diversifying energy supply by encouraging renewable energy development, improving energy efficiency, and encouraging cleaner household energy consumption have important and long-term impacts not only in China, but also on the prospect of climate change, the global energy market, and regional securities.

Our paper provides a coherent political economic theoretical framework which, we believe, can be generalized to explain other issue areas of the Chinese energy and environmental politics. One focus of recent political science literature has been on the career incentive structure in the Chinese Communist Party (CCP) to explain how issues such as economic development, state taxation, and pollution are addressed in China. We follow political tournaments literature and assume that top provincial officials desire to maximize their chances of promotion. We expect that those with the strongest incentives to perform to achieve promotion would work harder to comply with the central government's policy

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[1] Economy, 2011; Shapiro, 2012.
[2] Holdaway, 2013; Lora-Wainwright, 2013; Tilt, 2013.

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agenda to promote renewable energy. More specifically, the age of top provincial leaders matters for their efforts to comply, because those approaching the retirement age for provincial leaders would work harder to be promoted to a higher ranking. Indeed, we find an inverted-U shaped relationship between the age of provincial party secretaries and installed wind capacities, with a turning point estimated at around 61 to 63 years of age. In addition, our empirical results show that provinces governed by better educated provincial party secretaries are associated with more wind energy, supporting the idea that education is complementary with efforts to respond to the central government. We also find that leaders who govern their birthplace provinces respond less to the central government agenda, resulting in lower levels of wind capacities.

This paper makes several contributions. First, it provides a better understanding of the politics underlying Chinese energy and environmental policies and politics. It shows that the political incentives of provincial leaders' play a very important role in determining the level of renewable energy development. This is consistent with the recent Chinese environmental politics literature which highlights the importance of politics in affecting policy outputs and outcomes.[3] Second, this paper contributes to the emerging literature on Chinese energy policies.[4] Our study sheds new lights on two puzzling facts noted by previous studies: first, the investment fever in wind power despite its high costs; and second, the considerable discrepancy between overinvestments in wind power capacity and the actual power generated by wind turbines. We suspect that these two puzzles are at least partially explained by the political incentives of local officials: added wind installed capacities, rather than actual electricity generation, are much more visible efforts demonstrated by local officials as signals of compliance with central government agenda. Finally, our study speaks to recent literature on comparative environmental politics.[5] By focusing on the career incentive structure of the CCP, this paper offers a much more nuanced view of how domestic political institutions affect the implementation of energy and environmental policies in authoritarian regimes.

2. Wind power development in China

Almost all traditional energy sources have adverse environmental consequences. For example, coal is commonly burned to create energy, which has negative consequences on local air quality. Moreover, increased carbon dioxide has the potential to adversely affect the world's climate. Perhaps the greatest source of carbon dioxide emissions is the burning of coal to create electricity. Such action creates a global pollutant, affecting people across the world.

Concerned about the potential risks of relying on fossil fuels for economic development as well as its implications on the environment, the Chinese national government has become an active promoter of renewable energy. A series of policies have been proposed and implemented at the national level since the early 1990s. For instance, in 1998, the State Development and Planning Commission and Ministry of Science & Technology put forward Incentive Policies for Renewable Energy Technology Localization. During the Tenth-Five-Year Plan (2001–2005), the central government introduced the idea of mandatory market shares for renewable energy in electricity supply. The National Development & Reform Commission aimed to commercialize the nascent wind industry by initiating a wind power concession policy program which promoted domestic projects through competitive bidding and required wind turbines to be manufactured with at least 70% domestically produced content.

A milestone of central government efforts is the 2005 Chinese Renewable Energy Law.[6] Many studies have since highlighted how local governments actively responded to policies designed by the central government.[7] Among non-hydraulic renewable energy sources, wind power has the greatest potential to transform the energy mix for China. By the end of 2012, wind power had already accounted for 6.6% of total electricity generation capacity in China. In absolute numbers, China, with 91,412 MW of cumulative installed wind capacity by the end of 2013, ranked at the top of list of all countries in the world, followed by the USA (61,091 MW) and Germany (34,250 MW).[8]

Recent research examines renewable energy and climate change politics in China such as taxation structures and local governments' investment in wind power,[9] grid-connected capacity and actual generation of electricity,[10] and the impacts of the Renewable Energy Law on local government behavior.[11] These studies often do not offer theories for the politics behind the design and implementation of these policies. At the same time, other studies provide general overviews of China's energy policy-making processes by describing crucial actors at the central government level,[12] the evolution of government policy priorities,[13] and national level debates concerning energy policy.[14] A recent review of studies on the politics of climate change in China points out, however, that the key to understanding energy and climate change politics is to explain how central policies are implemented by the various levels of local governments.[15]

In addition, there are puzzling issues regarding wind power development in China. For instance, some local governments enthusiastically expanded wind power capacities despite the fact that this extension cannot offer them more fiscal revenues.[16] Some scholars have suggested that local governments have to achieve targets set by the central government.[17] However, many local governments consistently exceed their annual targets.[18] Indeed, there is a considerable gap between the installed wind capacity and the actual power generated by existing wind turbines. Previous research often focuses on conflicts between wind power development and grid companies.[19] Incentives of local government officials, however, have not been carefully studied.

3. A political economic theory

3.1. Theories from chinese politics

To better understand the politics that drive renewable energy development in China, we review recent literature in Chinese politics that focuses local government behaviors. This line of

[3] Moore, 2014.
[4] Kostka and Hobbs, 2012; Lewis, 2013; Tsai, 2014.
[5] Wang, 2015.
[6] Lema and Ruby, 2007; Liu and Kokko, 2010; Wang et al., 2012; Schuman and Lin, 2012.
[7] Zhang and Li, 2012; Zhang et al., 2013.
[8] Global Wind Energy Council: http://www.gwec.net/global-figures/graphs/; accessed 30 September 2014.
[9] Zhang and Li, 2012; Zhang et al., 2013.
[10] Fang, Li and Wang, 2012.
[11] Liu and Kokko, 2010; Wang et al., 2012; Schuman and Lin, 2012.
[12] Meidan et al., 2009; Bergsager and Korppoo, 2013.
[13] Zhang and Heller, 2007; Valenzuela and Qi, 2012.
[14] Downs, 2008; Rosen and Houser, 2007; Ong, 2012.
[15] Qi and Wu, 2013.
[16] Zhao et al., 2013 have shown how taxation from thermal plants can be much higher than that from wind farms.
[17] Zhang and Li, 2012; Zhang et al., 2013.
[18] Fang et al., 2012; Zhang et al., 2013.
[19] Zhao et al., 2013.