

China's Green Transformation through Eco-Industrial Parks

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This is a short summary of the paper "China's Green Transformation through Eco-Industrial Parks" submitted to the conference "Green transformation and competitive advantage: Evidence from developing countries", Bonn, June 2018. The paper has been selected as one of the most policy-relevant paper submitted for the conference.

Introduction

This paper intends to provide a comprehensive review of China's green transformation through the lenses of eco-industrial parks (EIPs), their impact, the key challenges, and lessons learned. While the international development community and many developing countries are embarking on the green development agenda, China, as a major global player on this front, has made experiences and learned lessons which could be beneficial to both policy makers and practitioners globally, should they consider EIPs as a way forward for their countries.

Research question and methodology

The paper intends to answer the following questions:

- Are the Chinese EIPs Competitive compared with "normal" zones?
- What are the key challenges and lessons from China's green transformation through EIPs?

The main methodology used for this study is qualitative, including literature review, desk research, interviews of local government officials and zone managers, and field visits.

Main findings

Starting from 2001, Chinese ministries launched EIP or similar programs. The Ministry of Environmental Protection (MEP, later changed to Ministry of Environmental & Ecology (MEE)) initiated the EIP Demonstration Program, the National Development & Reform Commission (NDRC) launched the Circular Transformation of Industrial Parks Program, and the Ministry of Industry & Information Technology (MIIT) launched the Low-Carbon Industrial Park and Green Park Program. Since then, China has achieved remarkable progress in terms of green transformation through eco-industrial parks (EIP) programs. For example, between 2011 and 2015, the average industrial water reuse rate in the EIPs has increased by 90%, the reuse of solid waste increased by 94.1%, and the energy consumption per unit of industrial value added decreased by 32.7%ⁱⁱⁱ. Meanwhile, these EIPs show strong economic competitiveness. In 2016, the government conducted a comprehensive assessment of industrial parks, including five areas: economic competitiveness, technology innovation, regional development impact, eco-efficiency and environmental protection, and administrative efficiency. Although only about 10% of Chinese industrial parks are EIPs, 23 (77%) of the top 30 best-performing industrial zones were EIPs, and among the top 10, all but one were EIPs^{iv}. Another assessment by Tan and Gao (2017)^v of 163 industrial zones (137 national level and 26 provincial level) in 2016

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mainly focuses on economic aspects such as economic strength, fiscal strength, revenue stability, growth stability, etc. The results show that, for the comprehensive ranking, 17 (57%) out of the top 30 performers were EIPs; for the GDP sub-index, 20 (67%) out of the top 30 were EIPs; and for the fiscal strength sub-index, 19 (63%) out of the top 30 were EIPs.

Despite the impressive achievements, China still faces some key challenges in greening its economy through EIPs:

1) **Challenges for further scale-up.** This comes from two dimensions. First is the vast regional capacity disparity. Second is the quota limit (that is, only one zone can be chosen per year per province) and complex procedures of applying for the EIP status. It has been over 15 years since the first EIP initiative was launched, but today only about 12% of the industrial zones are certified as EIP or approved as an EIP pilot.

2) **Lack of private sector participation.** The major sources of green initiatives and financing (such as the “green project initiatives” by the People’s Bank of China and the green bond program) are predominantly provided by the government, which is not sufficient to address the large needs.

The key lessons learned are:

1) **Strong government support with concrete standards is necessary.** The concrete EIP standards issued by the government make the EIP concept implementable and place China on par with the leading nations on green development.

2) **Streamlining the institutional framework and implementation procedure in line with international good practices.** Despite the active government support, the overlapping mandates between the three EIP programs among MEE, NDRC and MIIT could create confusion and complexity for the implementation process. To avoid internal competition, it would be useful to harmonize the three green standards

into one, in line with the international EIP framework.

3) **Incentives and technical assistance.** Certain EIP programs, notably the one launched by NDRC, provide financial subsidies to help qualified parks to transform themselves into EIPs. In some advanced regions, local governments also provide technical assistance. However, there is still a big regional disparity in terms of capacity, and the lagging regions need more support.

4) **Green innovation and green supply chains.** Many zones in China, especially the coastal ones, have placed great emphasis on green research and development and on adopting green technologies, as well as encouraging collocation of related firms to create industrial symbiosis. In other regions, especially the central and western ones, this still needs to be strengthened.

5) **Green finance market.** The Chinese government has greatly supported green development through government subsidies, green credits and bonds, and green development funds, which are crucial for the achievements so far. Meanwhile, given the large future financial needs, it is also important to encourage private sector participation.

Main challenges foreseen when putting findings into practice

The main challenge for implementing the findings include:

- Potential resistance from vested interest groups. To consolidate the EIP standards will inevitably meet strong resistance from the incumbent ministries with established programmes, so it will need support from the State Council and above. To further link the eco-development performance with the career enhancement of local officials

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may also face strong resistance from local government officials.

- To increase the private sector investment through a well-functioning green finance market will depend on China's overall financial sector reform. This may take more time than expected.

Lessons Learned and Way Forward for Chinese EIPs

Learning from its own past experiences of industrialization, China has made impressive progress towards transforming its economy through EIPs or green zones, while also facing

challenges for further scale-up. Key lessons include strong government support and concrete EIP standards which focus on transforming the existing industrial parks which are one of the major polluting sources in China; financial incentives and technical assistance, especially from NDRC and coastal local governments; encouragement of green innovation and green supply chains in the EIP pilot zones through support of green R&D and green technology diffusion; and actively developing the green finance market. Going forward, harmonization of the three national EIP programs and support for the private sector to engage more strongly in green finance will help China to “go green” even faster.

ⁱ World Bank, Washington, USA.

ⁱⁱ Tsinghua University, Peking, China.

ⁱⁱⁱ Authors' calculation based on information from MIIT, NDRC, MEE.

^{iv} MoC (Ministry of Commerce), 2018. “2017 National Level Industrial Zones Comprehensive Assessment Results” (press release), May 11, 2018.

<http://www.mofcom.gov.cn>. Accessed on 5/25/2018.

^v Tan, Han and Guohua Gao. 2017. “2017 China Regional Government Assessment Report (Development Zones and Autonomous Municipalities)”.

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