



Perspective

Ecological civilization and government administrative system reform in China

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ABSTRACT

China has recently adopted ecological civilization (eco-civilization) as a new national strategy for sustainable development. Understanding how the new strategy differs from previous national sustainability strategies is critical to evaluate how China's eco-civilization can contribute to global sustainability. Here we reviewed government administrative system changes under the eco-civilization strategy in China. Policy suggestions are provided to further reform the government administrative system for better implementation of eco-civilization.

1. Introduction

The adoption of the 2030 Agenda for Sustainable Development and the signing of the Paris Agreement mark the beginning of a new era in human history toward a sustainable society. China has taken new, bold actions to realize its sustainability goals. These new actions are developed and implemented under the overarching framework of *ecological civilization* (eco-civilization). Different from other national sustainability strategies that China has adopted in the past, eco-civilization takes a more comprehensive approach, integrating not only economic, social, and ecological (or environmental)—the traditional three pillars of sustainability—but also political and cultural systems of the nation. In particular, government administrative system reform has been implemented as a key part of the eco-civilization package. In this paper we aim to examine the eco-civilization strategy in China and how government administrative system reform assists to achieve eco-civilization. Experiences and lessons learned from China's eco-civilization might be useful for other countries to find their paths of sustainable development.

2. Ecological civilization in China

In approximately 40 years, China has undergone the process of industrialization that took developed countries 200 years to complete. During this process, China has made significant progresses in social and economic development. However, the rapid industrialization has also

caused the outbreak of environmental problems during a short period of time. For example, 40 % of Chinese cities are affected by acid rain; severe air pollution is threatening nearly 600 million people (Ministry of Environmental Protection, 2016; Ren, 2013); China's carbon dioxide (CO₂) emissions contribute to approximately one-fourth of the world's CO₂ emissions and 80 % of the world's CO₂ emission growth (Liu et al., 2013; Peters et al., 2012). To combat these challenges, China has developed and implemented a series of national strategies.

The evolution of China's national strategies for sustainable development is shown in Fig. 1. In 1980s and early 1990s, the end-of-pipe strategy was first adopted to set regulations and standards for treating industrial pollutants before discharged to the environment (Liu, 2010). As industrialization and urbanization accelerated in late 1990s and early 2000s, the scale of pollutant discharge also rapidly expanded, making the end-of-pipe strategy alone insufficient. Cleaner production was adopted to prevent environmental pollution from the production phase. During the past decade, China has shifted its focus to develop a circular economy, aiming to improve resource efficiency and reduce the generation of waste and pollution in the entire life cycle of industrial products (Geng et al., 2013; Mathews and Tan, 2016; Zuo, 2005). However, much emphasis of circular economy has been given to the recycle and reuse of waste materials. The fundamental conflict between economic development and environmental sustainability remains as a pressing challenge for China.

To better alleviate the contradiction between economic growth and environmental protection, the Chinese government issued two

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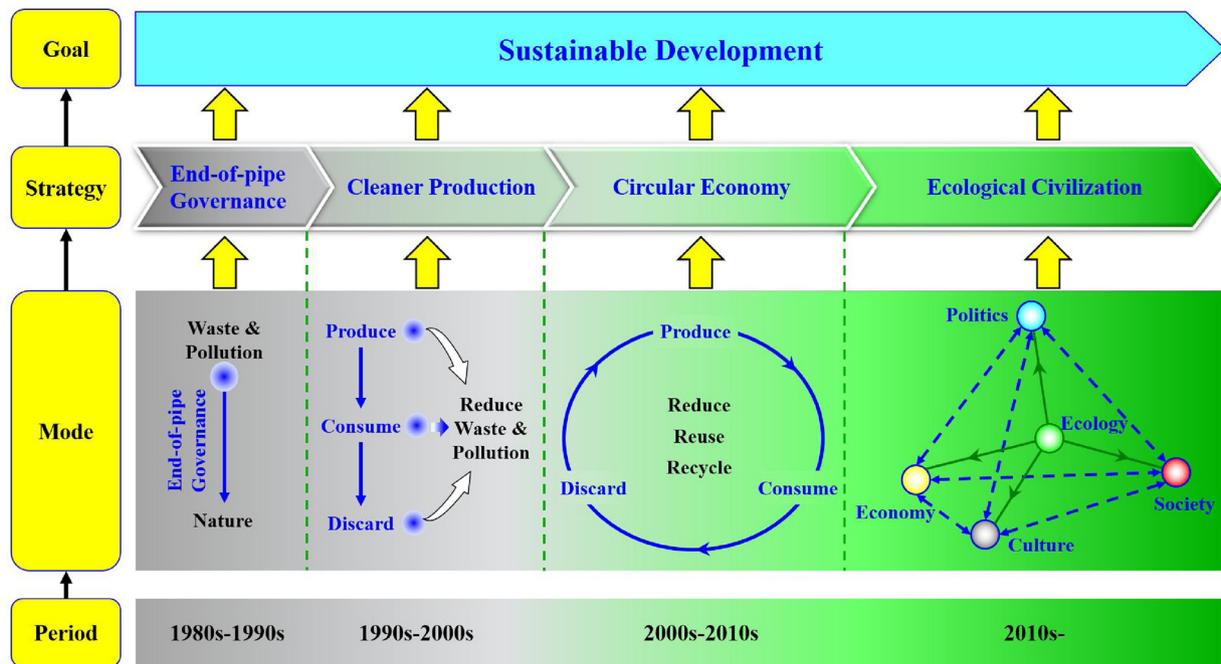


Fig. 1. Evolution of China's national strategies for achieving sustainable development.

guidelines in 2015, i.e., the *Proposal on Accelerating the Construction of the Ecological Civilization* and the *Overall Plan of Ecological Civilization System Reform*, indicating the adoption of eco-civilization as a new national strategy for sustainable development. Coming after cultural and ethical civilization, material civilization, and political civilization, eco-civilization is China's fourth official "civilization" slogan since 1949. Comparing with previous national sustainability strategies that targeted on incorporating environmental considerations in industrial and economic policies, eco-civilization brings environmental protection to a new high level in the national policy arena. This clearly shows the government's commitment to solving environmental problems in China.

Eco-civilization calls for the inclusion of environmental protection in the nation's economic, social, cultural, and political systems, called "five-in-one" system, to establish a long-term mechanism of environmental protection in which stakeholders such as the public, businesses, and government officials can actively participate (UNEP, 2016). A key difference between eco-civilization and previous national strategies for sustainable development is the integration of environmental protection in the nation's political system through a series of government administrative system reform. At present, five provinces (Fujian, Jiangxi, Guizhou, Qinghai, and Yunnan) and approximately 100 cities and counties have been selected as the first cohort of eco-civilization demonstration areas. A series of investigations with regard to the relevant government management system reform has been conducted. Positive progress has been made. It is necessary to summarize the experiences and lessons of the development process of this new strategic in order to provide a reference for developing countries to find a new path of green development.

3. Government administrative system reform for ecological civilization

Several policy initiatives have been implemented in the government administrative system under the ecological civilization strategy. These policies intend to include environmental protection in government political system, taxation policies, and the evaluation system for government officials.

First, the central government is reforming its environmental monitoring and management system. A new, vertical administrative system

for environmental protection has been fully implemented. In this new system, local environmental protection agencies directly report to the agencies in higher political level to prevent local governments from interfering with environmental law enforcement. In addition, the State Council has established a Leading Group on Environmental Protection Inspection. In 2015, the Leading Group has requested meetings with the heads of the local governments of 22 heavily polluted areas to urge for actions to address environmental problems. For example, after a meeting with the mayor of Linyi city in Shandong Province for severe air pollution, the city government limited or ceased production of nearly 600 local companies; as a result, $PM_{2.5}$ and sulfur dioxide emissions have decreased by 24.3 % and 36.1 %, respectively, from January 2015 to May 2015 (Zhou et al., 2015).

Second, the Chinese government has been developing policies to internalize resource and environmental externalities in its taxation system. For example, the government has developed and implemented policies to impose a mineral resource tax and resource compensation fee; such tax and fee have generated a cumulative income of \$130 billion during 2008-2016. Since July 2016, the government has completely reformed the mineral resource tax from "levy per quantity" to "levy per price", so that the mineral resource tax can follow resource price changes to reflect the degree of resource scarcity. In addition, the government has begun to collect taxes for the use of natural resources such as water, and the collected funds have been used to alleviate poverty in underdeveloped regions in the form of inter-basin ecological compensation. For example, the government of the Qinghai Sanjiangyuan Protected Area which is the source of three major rivers (Yangtze, Yellow, and Lancang) has issued 11 ecological compensation policies, leading to a win-win situation of economic and ecological benefits. The annual average growth rate of per capita disposable income in Guoluo, one of the key prefectures in this area, has reached 14.7 % for farmers during 2010-2015, and the annual ecological benefits in Sanjiangyuan has reached up to \$0.5 billion (Ouyang et al., 2016).

Third, the government is overhauling the performance evaluation metric system for its officials in the first cohort of eco-civilization demonstration areas. The new system consists of 51 metrics in five categories including economic development quality, resource and energy conservation, ecological and environmental protection, ecological

culture cultivation, and institution and mechanism development. A “chief executive accountability system” has been developed to monitor and manage natural resources at the provincial, city, and county levels. Officials who were held responsible for significantly damaging ecological environment and natural resources will not be promoted even if the economy has been greatly developed. These policies create effective incentives for officials to set environmental protection as one of their political priorities. During the implementation of the new performance evaluation system, deficiencies of government statistics and monitoring capacity are also identified. Experiences and lessons learned from these pilots will be used to develop a national evaluation performance metric system for government officials in the future.

4. Policy suggestions

Despite the progresses that have been made, eco-civilization in China is still in its infancy. It is crucial to deepen the reform of government administrative system to promote five-in-one. The government should integrate the eco-civilization with the construction of economy, ethical, society and politics, so as to activate the enthusiasm of all stakeholders to participate in environmental protection. Here we provide policy suggestions to help achieve the eco-civilization goals.

First, a diversified source of funding needs to be explored for eco-civilization. The resource taxation system needs to be improved to internalize additional externalities such as resource depletion, environmental pollution, and ecological damage to reflect in the price of natural resources and resource-intensive products (Meckling et al., 2015). Mechanisms like eco-fund lotteries, green development funds, or extended producer responsibility that can help diversify funding sources should also be considered (Gu et al., 2016).

Second, the government should develop a nation-wide environmental credit system to monitor and evaluate environmental performance of companies. Mandatory disclosure of environmental credits for public companies and other large state-owned enterprises can help engage the public to participate in monitoring the environmental performance of those companies. Environmental credits can also be incorporated in the financial system to use financial mechanisms (e.g., loan, insurance) to encourage companies to improve their environmental performance (Zhou et al., 2020).

Third, metrics related to the social dimension of eco-civilization, such as green travel, green consumption, green poverty alleviation, need to be added in the performance evaluation metric system for government officials. Moreover, local governments should be allowed and encouraged to develop additional metrics specific for the local situation. Comparative studies should be conducted with similar metrics used in other countries or organizations (e.g., OECD green growth indicators) to explore the prospect of China’s metric system applied to other regions, in particular the Belt and Road countries.

Last but not least, the data acquisition capacity of eco-civilization performance evaluation metrics for government officials should be improved. It is important to use information and communications technology to build an infrastructure for nation-wide environmental

monitoring and data acquisition system. New approaches are also needed to complement the existing environmental monitoring system. For example, the natural resource balance sheets need to be developed to monitor the eco-civilization performance of local governments; ecosystem carrying capacity need to be evaluated to determine the upper limit of resource consumption, the bottom line of environmental quality, and the redline for ecological protection. Using these information, the government could incorporate environmental protection metrics in performance evaluation of government officials for lifelong accountability (Liu and Yang, 2012).

These new initiatives, together with other actions that China has already been taking, will bring significant changes to the government administrative system in China by integrating environmental considerations for eco-civilization.

Declaration of Competing Interest

None.

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