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Review

China's new environmental protection regulatory regime: Effects and gaps

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1. Introduction

Although efforts to conserve natural resources have a long history, only relatively recently have governments implemented relatively effective laws and regulations to control some forms of air, water and soil pollution (Wulf, 2015; Hughes, 1999). Key components of such laws include clearly stated goals and objectives, numerical discharge and ambient criteria based on acute and chronic toxicity tests, funding and technologies for reducing point and diffuse sources of pollution, rigorous discharge and ambient monitoring programs, large data storage and retrieval programs, and reporting that is interpretable by the general public and suitable for publication in scientific journals. Equally important components of pollution control and mitigation are engaged and active citizens, media, regulatory agencies, legislative bodies, and judiciaries as well as some sort of widely adopted conservation ethic (Hughes, 2014; Leopold, 1949; Wood, 2013; Nash, 1989).

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Historically, rigorous air, water and soil pollution controls have not been implemented until after a political unit or nation experiences serious and widespread pollution, i.e., some sort of crisis arising from industrialization, urbanization, and largely uncontrolled pollution or environmental and biological contamination (Hughes, 1999). In this paper, we outline how China has recently taken major steps to control its industrial pollution and contamination, compare its approaches with those of the USA and Europe, and summarize key technical concerns that will likely limit the effectiveness of those approaches.

2. Recent changes in China's environmental legislation and related reforms

China's industrialization and urbanization have generated undesirable environmental consequences. Having recognized the substantial adverse social and ecological impacts of economic and population growth, over the past three years China has developed and reinforced its environmental regulations by passing three key statutes (Limburg Hughes et al, 2011). First, revised and enacted on 1 January 2015, the new *Environmental Protection Law* (*EPL*) has become the most progressive and stringent law in the history of environmental protection in China (Zhang and Cao, 2015). It details harsher penalties for environmental offences such as daily fines, contains provisions for tackling pollution, enshrines the public's environmental right-to-know, establishes a framework for environmental public-interest ligation, and increases accountability of local governments and law-enforcement agencies. The new *EPL* also provides a much clearer framework and guidelines for improved environment governance in China than what previously existed. Another key component of the *EPL* is a chapter on information disclosure and public participation that addresses improving data collecting and reporting measures including principles, scope, content, methods and procedures, and supervision of environmental information disclosure including that for enterprises. Second, the newly revised *Atmospheric Pollution Prevention and Control Law* took effect in early 2016, emphasizing addressing the sources, total discharge, and density of pollutants (National People's Congress (NPC), 2015). Third, the State Council issued three ten-point action plans for tackling air, water and soil pollution in 2013, 2015 and 2016, respectively, to implement the new laws and regulations (P.R.C Ministry of Environmental Protection (MEP), 2013; The State Council, 2015; P.R.C Ministry of Environmental Protection (MEP), 2016a).

China's 13 th Five-Year Plan for Economic and Social Development (2016–2020) increases the independence of provincial environmental protection departments (EPDs) from local governments and unifies monitoring and inspection programs at the national level. Under this reform, city/county environmental enforcement and monitoring agencies will be restructured to report directly to provincial EPDs rather than the governments at the same levels (Zhang, 2016). These reforms will be phased in on a pilot basis in 17 provinces/autonomous regions and completed nationwide in 2018 (Finamore, 2016). The laws and regulations and their subsequent environmental management program reforms outlined in the 13th Five-Year Plan represent a paradigm change from an ineffective pollution control system to one based on environmental quality goals and standards ("Full Text of Report on C, 2016).

To support this new responsibility and emphasize environmental quality improvement, in March 2016, the Ministry of Environmental Protection (MEP) reorganized its Department of Pollution Prevention and Control and Department of Total Pollutants Control into three separate environmental management Departments of Air, Water and Soil.

3. Progress and effects on law enforcement and implementation

The implementation of the laws and action plans has gone reasonably well. MEP inspected 1.77 million enterprises in 2015, prosecuted 191,000 violating enterprises, shut down 20,000 enterprises, temporarily stopped production by 34,000 enterprises, and ordered 89,000 to comply within a set deadline. The judiciary administered 715 daily penalty cases in 2014, with fines totaling 569 million RMB (US$ 87.5 million); 4191 closing cases; and 97,000 administrative penalty cases at all levels of environmental enforcement, totaling 4.25 billion RMB (US$ 654.1 million), an increase of 34% over 2014 (Fig. 1) (P.R.C. Ministry of Environmental Protection (MEP), 2016b). In addition to fines, 3800 administrative detention and suspected criminal cases resulted in arrests, trials, and jail sentences of those found guilty (P.R.C. Ministry of Environmental Protection (MEP), 2016b). The total discharges of major pollutants have been reduced because of the strict enforcement of the new *EPL*. Compared with 2014, the total national discharges of COD, NH_3, SO_2 and NOx in 2015 were 22.24 million tons, 2.30 million tons, 18.59 million tons, and 18.52 million tons, down 3.1%, 3.6%, 5.8%, and 10.9% respectively (Fig. 2) (P.R.C. Ministry of Environmental Protection (MEP), 2016c).

The MEP also has greatly strengthened its supervision of local governments' implementation of their environmental responsibilities. It supervised 33 cities (regions), interviewed 15 city mayors and ordered provincial EPDs to supervise over 163 prefecture-level and above cities, and to interview 31 city governments. Although approving 159 EIA (Environmental Impact Assessment) projects with a total investment of US$228 billion, the MEP rejected 21 projects involving a total investment of about US$17.8 billion, reaching a 13.2% non-approval, which was unprecedented. On 30 March 2015, the MEP turned down the Xiaonanhai Hydropower Station of Chongqing Municipality, which could cost US$512 million and create thousands of jobs because of concerns over protecting rare fish species in the Upper Yangtze River, abiding strictly with the ecological "red line" set in the new *EPL*. With new and strict measures, China is making visible progress in improving its air quality. China's three major urban-industrial regions – Beijing-Tianjin-Hebei, Yangtze River Delta and Pearl River Delta – and 74 other major cities have seen PM2.5 reduced by 12–19%, SO_2 reduced by 16–28%, and NO_2 reduced by 5–11% relative to 2014 levels (Fig. 3) (P.R.C. Ministry of Environmental Protection (MEP), 2016d).

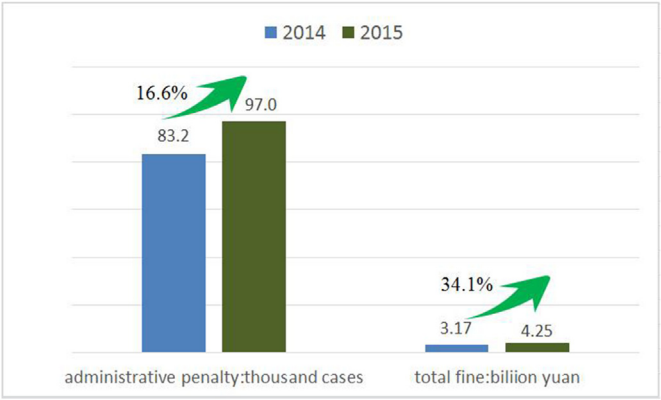

Fig. 1. Percent increase in enforcement actions in 2015 relative to 2014 in China.
Source: P.R.C. Ministry of Environmental Protection (MEP), "Environmental Protection Minister Chen Jining's Press Conference for the Fourth Session of the 12 th National People's Congress" (MEP, Beijing, 2016; http://www.xinhuanet.com/politics/2016lh/zhibo/gov_20160311b/wzsl.htm) (in Chinese).