

# China's Air Pollution Rules: Compliance and Enforcement Lessons From Global Good Practices

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## Summary

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In recent years, air pollution issues have received unprecedented public attention in China. Partly for this reason, the Chinese government has made significant efforts toward reducing air pollution. However, compliance and enforcement will be key to cleaning up the air in China and around the globe. This Article discusses seven specific challenges to achieving effective compliance with and enforcement of the air pollution rules in China. In this regard, global good practices can be useful references for the Chinese government and other stakeholders. Yet such discussions and considerations are only truly useful when viewed and considered within the context of China's unique rulemaking and governance systems, as well as its cultural background.

In December 2015, the countries of the world successfully negotiated the Paris Agreement, which caught up with the science of keeping global warming below 1.5° Celsius (C) above pre-industrial levels and recognized the need for speed to achieve no net emissions by mid-century.<sup>1</sup> However, the great challenges and opportunities in front of us are the fast mitigation actions required to implement it before 2020, through multiple paths. In particular, cutting short-lived super pollutants, including hydrofluorocarbons (HFCs), methane, and black carbon, can avoid 0.6°C of warming by 2050 and 1.5°C by 2100.<sup>2</sup> These super pollutants will play a bigger role in the post-Paris climate scheme.

In this Article, we will discuss air pollution reduction efforts through compliance and enforcement of national laws and regulations in one of the world's biggest emitters, China. These efforts can both mitigate climate change and protect public health in the near future.

Like all countries, China has a unique system of governance for managing and responding to environmental problems, including air pollution. Air pollution is now a severe environmental challenge in China, shortening the life expectancy of millions of residents.<sup>3</sup> Research by Berkeley scientists found that air pollution is responsible

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1. *Adoption of the Paris Agreement*, UNFCC Conference of the Parties, 21st Sess., U.N. Doc. FCCC/CP/2015/10/Add.1 (Dec. 12, 2015), [http://unfccc.int/files/home/application/pdf/paris\\_agreement.pdf](http://unfccc.int/files/home/application/pdf/paris_agreement.pdf).
2. Yangyang Xu, *The Role of HFCs in Mitigating 21st Century Climate Change*, 13 *ATMOS. CHEM. PHYS.* 6083-89 (2013).
3. See, e.g., Yuyu Chen et al., *Evidence on the Impact of Sustained Exposure to Air Pollution on Life Expectancy From China's Huai River Policy*, 110 *PROC. NAT'L ACAD. SCI.* 12936-41 (2013) ("[T]otal suspended particulates (TSPs) air pollution is causing the 500 million residents of Northern China to lose more than 2.5 billion life years of life expectancy."). Air pollution, in particular fine particulate matter (PM<sub>2.5</sub>) pollution, has been the media hot spot in the recent years. A documentary titled, "Under the Dome," which was produced by a former Chinese State Television reporter Chai Jing and released on February 28, 2015, has raised unprecedented public awareness and discussion on the PM<sub>2.5</sub> pollution threshold and environmental policies in China. The new Minister of Environmental Protection, Chen Jining, praised this documentary and commented that it reminded him of Rachel Carson's "Silent Spring." *Minister of Environmental Protection: I've Watched "Under the Dome" and Texted Chai Jing to Express Gratitude*, BEIJING NEWS, Mar. 1, 2015, at <http://www.bjnews.com.cn/news/2015/03/01/354712.html>. However, the

for over 4,000 deaths in China every day and in total 1.6 million deaths every year, which accounts for one out of every six premature deaths in the country.<sup>4</sup> In addition, air pollution from Asia travels to the United States and is estimated to contribute to 29% of the San Francisco area's particulate pollution.<sup>5</sup>

China's system to control air pollution continues to evolve through its experience and its study of global good practices. With a strong national government and an economy with substantial state ownership of enterprises (representing more than 40% of China's nonagricultural gross domestic product (GDP)),<sup>6</sup> China responds to air pollution (and other environmental problems) by combining its planning process,<sup>7</sup> including its Five-Year Plans, with its environmental laws and other rules.<sup>8</sup>

Beyond assuring that air (or other) pollution rules are well-designed, achieving high levels of compliance with those rules requires sufficient and effective implementa-

tion tools. The traditional tool in most jurisdictions for ensuring compliance with mandatory environmental rules is enforcement by imposing fines, penalties, and other punishments. Other mandatory enforcement orders may require corrective measures, such as requiring the installation of specific pollution control equipment or, in the most severe cases, shutting down a noncompliant facility.

Compliance promotion is a complementary tool for ensuring compliance. Examples include explaining the rules through education and training, capacity-building, technical assistance, and other outreach to the regulated enterprises. Compliance promotion also can include providing loans, market incentives or other financial assistance to pay for equipment, or to hire legal or technical expertise to ensure compliance with the applicable rules. In addition to governments, other stakeholders often provide compliance assistance, including international organizations, businesses, academic institutions, nongovernmental organizations (NGOs), and even regional and international trading partners.

In the sections below, we outline air pollution rules and the corresponding compliance and enforcement tools in China. We then discuss seven specific compliance and enforcement challenges for achieving clean air throughout China based on global good practices.

## I. China's Evolving Air Pollution Rules

### A. National Air Pollution Rules and Standards

With regard to air pollution, China has a number of laws, regulations, and regulatory documents, including the *Environmental Protection Act* (amended in April 2014 and went into effect in January 2015), the *Air Pollution Prevention and Control Act* (amended in August 2015 and went into effect in January 2016), and various air pollution-related plans, in particular the *Air Pollution Prevention and Control Action Plan* (adopted by the State Council in September 2013).<sup>9</sup> In addition, the *13th National Economy and Social Development Five-Year Plan* for the first time provides a mandatory target requiring that cities of

video was later removed by the Chinese authorities as the public debates on this topic continue to increase.

4. Robert A. Rohde & Richard A. Muller, *Air Pollution in China: Mapping of Concentrations and Sources*, PLoS ONE 10(8) (2015), doi:10.1371/journal.pone.0135749, <http://berkeleyearth.org/wp-content/uploads/2015/08/China-Air-Quality-Paper-July-2015.pdf>.
5. Stephanie A. Ewing et al., *Pb Isotopes as an Indicator of the Asian Contribution to Particulate Air Pollution in Urban California*, LBNL Paper No. LBNL-4978E (2012), <https://escholarship.org/uc/item/8ff457jb#page-1>:  
Our results for airborne Pb at these sites indicate a median value of 29% Asian origin, based on mixing relations between distinct regional sample groups . . . [O]ur results suggest that the analysis of Pb isotopes can reveal the distribution of airborne particles affected by Asian industrial pollution at urban sites in northern California . . . [I]ndustrial sources of atmospheric Pb—in particular, coal combustion—have grown in the last two decades, most dramatically in China, and emissions of combustion products from Asia have increased accordingly. Lead and other 3 pollutants from Asia, as well as dust, can be transported by winds across the Pacific Ocean to western North America and beyond.
6. Andrew Szamosszegi & Cole Kyle, *An Analysis of State-Owned Enterprises and State Capitalism in China* (2011), [http://origin.www.uscc.gov/sites/default/files/Research/10\\_26\\_11\\_CapitalTradeSOEStudy.pdf](http://origin.www.uscc.gov/sites/default/files/Research/10_26_11_CapitalTradeSOEStudy.pdf) (research report prepared at the request of the U.S.-China Economic and Security Review Commission) (“The state-owned and controlled portion of the Chinese economy is large. Based on reasonable assumptions, it appears that the visible state sector—SOEs and entities directly controlled by SOEs—accounted for more than 40 percent of China's non-agricultural GDP”).
7. Although plans in China sometimes are not issued in the form of “laws,” they are often the key documents listing priorities and setting targets for the government, allocating resources and providing detailed implementation measures of laws. Sometimes, rules and regulations are also made to implement the goals and targets set in the plans. Therefore, it is a process with strong Chinese characteristics that have to be recognized while referencing global good practices.
8. Some scholars argue that, different from the United States or other western systems, state planning is one of the dominant processes of environment governance in China. See Oran R. Young et al., *Institutionalized Governance Processes: Comparing Environmental Problem Solving in China and the United States*, 31 GLOBAL ENVTL. CHANGE 163-73 (2015). See also Genia Kostka, *Barriers to the Implementation of Environmental Policies at the Local Level in China*, World Bank Policy Research Working Paper No. 7016 (2014) (discussing China's environmental planning system and the barriers to the implementation of binding environmental targets at local levels).

9. Effective functioning of the regulatory system requires accurate baseline data. Regulators need to select a baseline year when there is adequate data to establish the initial environmental conditions, as this is the point in time used to measure future progress. The data must be reliable as well. For example, the *Air Pollution Prevention and Control Action Plan* selected 2012 as the baseline year for PM<sub>2.5</sub> and coarse particulate matter (PM<sub>10</sub>) emission reduction targets, so it is critical to make sure that the baseline emission data of 2012 is available and accurate for cities and provinces with PM<sub>2.5</sub> and PM<sub>10</sub> emission reduction targets provided. See State Council of China, *Air Pollution Prevention and Control Action Plan* (Sept. 10, 2013), [http://www.gov.cn/zwgk/2013-09/12/content\\_2486773.htm](http://www.gov.cn/zwgk/2013-09/12/content_2486773.htm); English Version: <http://www.cleanairchina.org/product/6349.html> [hereinafter *Air Pollution Plan*]. Please note that some scholars think the Action Plan is not a regulation, but a regulatory document.

prefecture-level and above that fail to meet the fine particulate matter (PM<sub>2.5</sub>) standards have to reduce the PM<sub>2.5</sub> concentrations by 18% by 2020, and for the Jing-Jin-Ji region, by more than 25%.<sup>10</sup> The amended *Air Pollution Prevention and Control Act* has included strengthened provisions on local governments' air protection responsibilities, energy structure adjustment (transition away from coal), coal and fuel quality improvement, environmental monitoring, and information disclosure, public participation, and legal responsibilities.<sup>11</sup>

The *Air Pollution Prevention and Control Action Plan* sets PM<sub>2.5</sub> ambient concentration targets for Beijing, Tianjin, Hebei, Yangzi River Delta, and Pearl River Delta, and a coarse particulate matter (PM<sub>10</sub>) ambient concentration target for cities throughout the country by 2017; it also provides incentives for compliance activities to address PM<sub>2.5</sub> and PM<sub>10</sub> pollution.<sup>12</sup> In addition to PM<sub>2.5</sub> and PM<sub>10</sub>, the *Action Plan* also addresses other significant air pollutants, such as sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), and volatile organic compounds (VOCs).<sup>13</sup> The *Action Plan* also identifies major sources of pollution, including industrial enterprises, area sources,<sup>14</sup> and mobile sources.<sup>15</sup> A total investment of 1.7 trillion renminbi (RMB) (\$277 billion U.S.) is estimated to implement the *Action Plan*.<sup>16</sup> According to the new Minister of the Ministry of Environmental Protection (MEP), Chen Jining, the total investment demand for environmental protection in China will be around 8 trillion RMB (\$1.3 trillion U.S.) to 10 trillion RMB (\$1.61 trillion U.S.) over the next few years.<sup>17</sup> In addition, China also has many rules addressing other major

sources of air pollution, including, for example, restrictions on trash-burning.<sup>18</sup>

In 2012, China revised its national ambient air quality standards (NAAQS), adding PM<sub>2.5</sub> and eight-hour ozone concentration limits, strengthening the requirements on PM<sub>10</sub> and NO<sub>2</sub>, and setting up a two-level system that will take effect nationwide in 2016.<sup>19</sup> In Level I regions, which include nature reserves, famous landscapes, and other regions requiring special protection, the new standards will limit annual average PM<sub>2.5</sub> concentrations to no more than 15 micrograms per cubic meter (µg/m<sup>3</sup>) and no more than 35 µg/m<sup>3</sup> over a 24-hour period. In Level II regions, which include other areas such as residential and industrial zones, the new standards will limit annual average PM<sub>2.5</sub> concentrations to no more than 35 µg/m<sup>3</sup> and no more than 75 µg/m<sup>3</sup> over a 24-hour period.

The NAAQS has been implemented in a three-stage process. First, by the end of December 2012, a total of 74 cities in the major regions, including Beijing, Tianjin, Hebei Province, Yangzi River Delta, Pearl River Delta, municipalities directly under the central government, capital cities of each province, and other listed cities, were required to start monitoring and measuring the emission of air pollutants including PM<sub>2.5</sub> and to make the emission data public.<sup>20</sup> In the second phase, 116 cities were required to launch monitoring and measurement of PM<sub>2.5</sub>, and to publish the data for the public by the end of October 2013.<sup>21</sup> In the third phase, all other cities including and above the prefecture level shall be included in air pollution monitoring and data disclosure.<sup>22</sup>

According to the MEP, starting from January 1, 2015, a total of 1,436 monitoring stations in 338 cities have launched monitoring and measurement of air pollutants based on the new standard.<sup>23</sup> According to the data released by the National Bureau of Statistics, among 161

10. National People's Congress, *13th National Economy and Social Development Five-Year Plan* (Mar. 16, 2016), [http://news.xinhuanet.com/politics/2016-03/17/c\\_1118366322.htm](http://news.xinhuanet.com/politics/2016-03/17/c_1118366322.htm).

11. Standing Committee of the National People's Congress, *Air Pollution Prevention and Control Act* (Aug. 29, 2015), [http://news.xinhuanet.com/politics/2015-08/30/c\\_128180129.htm](http://news.xinhuanet.com/politics/2015-08/30/c_128180129.htm) [hereinafter *Air Pollution Prevention Act*].

12. *Air Pollution Plan*, *supra* note 9. The *Detailed Regulation on the Implementation of Air Pollution Prevention and Control Action Plan in Jing-Jin-Ji and Surrounding Regions* provides that by 2017, PM<sub>2.5</sub> concentrations shall be reduced by 20% in Shanxi and Shandong Provinces, and by 10% in Inner Mongolia below the 2012 levels. Ministry of Environmental Protection, National Development and Reform Commission, Ministry of Industry and Information Technology, Ministry of Finance, Ministry of Housing and Urban-Rural Development and National Energy Administration, *Detailed Regulation on the Implementation of Air Pollution Prevention and Control Action Plan in Jing-Jin-Ji and Surrounding Regions* (Sept 17, 2013), [http://www.mep.gov.cn/gkml/hbb/bwj/201309/t20130918\\_260414.htm](http://www.mep.gov.cn/gkml/hbb/bwj/201309/t20130918_260414.htm).

13. *Air Pollution Plan*, *supra* note 9, §1 (providing acceleration of construction of desulfurization, denitrification, and dusting reduction facility construction and improvement in major industries, and promotion of pollution management of VOCs). In addition, the *Twelfth National Economy and Social Development Five-Year Plan* for 2011-2015 provides the emissions reduction targets of 8% of SO<sub>2</sub> and 10% of NO<sub>x</sub>. See National People's Congress of China, *The Twelfth National Economy and Social Development Five-Year Plan* (2011), <http://news.sina.com.cn/c/2011-03-17/055622129864.shtml>.

14. For example, dust from the construction sites.

15. *Air Pollution Plan*, *supra* note 9, §1.

16. *China Will Invest 1.7 Trillion RMB on Air Pollution Control*, CAIXIN, July 22, 2013, at <http://m.china.caixin.com/m/2013-07-22/100559137.html>.

17. *Minister of MEP: The Total Investment Demand for Environmental Protection in China Will Be Around 8 Trillion RMB to 10 Trillion RMB Over the Next Few Years*, People.cn, Mar. 7, 2015, at <http://lianghui.people.com.cn/2015npc/n/2015/0307/c394312-26654322.html>.

18. There are many Chinese rules mentioning trash-burning (more than 200), including: State Council, *Twelfth Five-Year National Environmental Protection Plan* (2011), [http://www.gov.cn/zwzq/2011-12/20/content\\_2024895.htm](http://www.gov.cn/zwzq/2011-12/20/content_2024895.htm); State Council, *Twelfth Five-Year National Strategic New Industry Development Plan* (2012), [http://www.gov.cn/zwzq/2012-07/20/content\\_2187770.htm](http://www.gov.cn/zwzq/2012-07/20/content_2187770.htm); State Council, *Twelfth Five-Year National Energy Conservation and Environmental Protection Industry Development Plan* (2012), [http://www.gov.cn/zwzq/2012-06/29/content\\_2172913.htm](http://www.gov.cn/zwzq/2012-06/29/content_2172913.htm); and General Office of the State Council, *Twelfth Five-Year National Municipal Waste Non-Hazardous Treatment Facility Construction Plan* (2012), [http://www.gov.cn/zwzq/2012-05/04/content\\_2129302.htm](http://www.gov.cn/zwzq/2012-05/04/content_2129302.htm).

19. Ministry of Environmental Protection & General Administration of Quality Supervision, Inspection and Quarantine, *Ambient Air Quality Standards* (Feb. 29, 2012), <http://210.72.1.216:8080/gzaqi/Document/gjzlbz.pdf>.

20. Ministry of Environmental Protection, *The First Phase Monitoring, Measurement and Implementation Workplan for the New Ambient Quality Standards* (May 21, 2012), <http://www.mep.gov.cn/gkml/hbb/bgt/201205/W020120524383009550407.pdf>.

21. Ministry of Environmental Protection, *The Second Phase Monitoring, Measurement and Implementation Workplan for the New Ambient Quality Standards* (Mar. 22, 2013), <http://www.mep.gov.cn/gkml/hbb/bgt/201303/W020130328510299736496.pdf>.

22. Ministry of Environmental Protection, *The Third Phase Monitoring, Measurement and Implementation Workplan for the New Ambient Quality Standards* (May 7, 2014), [http://www.mep.gov.cn/gkml/hbb/bwj/201405/t20140509\\_273595.htm](http://www.mep.gov.cn/gkml/hbb/bwj/201405/t20140509_273595.htm).

23. *338 Cities in China Will Launch Air Pollution Monitoring Based on New Air Quality Standards Next Year*, Xinhua Net, Dec. 30, 2014, at [http://news.xinhuanet.com/politics/2014-12/30/c\\_1113833657.htm](http://news.xinhuanet.com/politics/2014-12/30/c_1113833657.htm).



cities monitored, 90.1% of them failed to meet the new air quality standard in 2014.<sup>24</sup> In 2015, the air quality was getting better. MEP Data showed that 73 out of 338 cities (21.6%) met the air quality standard in 2015.<sup>25</sup>

## I. Mobile Emissions

In addition, China is progressively reducing emissions from mobile sources through strengthened vehicle fuel-quality standards and vehicle emission standards. The sulfur content in vehicle diesel fuel must decrease to below 50 parts per million (ppm) in 2015 and then to below 10 ppm in 2018 nationwide.<sup>26</sup> The sulfur content in vehicle gasoline must decrease to below 50 ppm in 2014 and then to below 10 ppm in 2018 nationwide.<sup>27</sup>

As the fuel quality improves, “China 5” emissions standards will be gradually implemented nationwide. From January 1, 2017, all the manufactured, imported, for sale, and registered light-duty gasoline vehicles and heavy-duty diesel vehicles (including passenger coaches, buses, sanitation trucks, and postal trucks) have to meet China 5 emission standards.<sup>28</sup> From July 1, 2017, all the manufactured, imported, for sale, and registered heavy-duty diesel vehicles will have to meet China 5 emission standards.<sup>29</sup> From January 1, 2018, all the manufactured, imported, for sale, and registered light-duty diesel vehicles will have to meet the China 5 emission standards.<sup>30</sup>

Mobile source emission is one of the major contributors to PM<sub>2.5</sub> pollution in China, in particular diesel fuel vehicles. According to an MEP document, diesel fuel vehicles contribute over 90% of particulate matter from all vehicles.<sup>31</sup> The amended *Air Pollution Prevention and Control Act* provides that no entities or individuals are allowed to manufacture, sell, or import on-road or off-road vehicles, or ships that fail to meet the emission standard requirements.<sup>32</sup> The automobile manufacturers can be required to recall the on-road and off-road vehicles whose air pollution emissions exceed the standards due to design or manufacture defects.<sup>33</sup>

The 2018 standard of fewer than 10 ppm of sulfur will stimulate the use of diesel particulate filters (DPFs), which

can reduce the black carbon emissions from diesel by more than 90%. The use of ultra-low-sulfur diesel (ULSD) along with DPFs is a very effective way to reduce particle pollution from vehicles, so a requirement to also use DPFs, especially for new vehicles, could be an effective complement to the 2016 NAAQS by reducing the contribution of both sulfur and black carbon to particle pollution. Major provinces and cities have been leading on implementation of vehicle fuel quality standards and vehicle emission standards. Further details are discussed in the section below.

China has also been promoting new energy cars, including electric cars, hybrid electric cars, and fuel battery cars, to further reduce emissions from mobile sources. In 2012, the Chinese government set a target of total manufacture and sales of more than five million electric cars and hybrid electric cars by 2020.<sup>34</sup> In 2015, Chinese government issued the “Made in China 2025” Plan, which aims to upgrade the country’s manufacturing power in the next 10 years.<sup>35</sup> In this plan, the new energy vehicle industry is listed as one of the 10 key industrial sectors to be promoted.<sup>36</sup>

The Ministry of Industry and Information Technology further issued documents to specify the development targets for the new energy vehicle industry under the “Made in China 2025” Plan.<sup>37</sup> According to the Ministry, Chinese-branded pure electric vehicles and plug-in hybrid vehicles should reach annual sales of more than one million units by 2020 (more than 70% of domestic market share) and annual sales of new energy vehicles with internationally leading qualities should reach three million units by 2025 (more than 80% of domestic market share).<sup>38</sup>

In order to promote the sales and application of new energy cars, the Chinese government issued a number of supporting policies, including subsidies and tax benefits.<sup>39</sup> The Ministry of Science and Technology last year released for public comment an implementation plan on the research and development of new energy cars, which provides that China will establish a complete electric car science and technology system and industrial chains by

24. National Bureau of Statistics, *2014 National Economy and Social Development Statistic Bulletin* (Feb. 26, 2015), [http://www.stats.gov.cn/tjsj/zxfb/201502/t20150226\\_685799.html](http://www.stats.gov.cn/tjsj/zxfb/201502/t20150226_685799.html).

25. MEP: *National Urban Air Quality Was Getting Better in 2015*, People.cn (Feb. 4, 2016), <http://politics.people.com.cn/n1/2016/0204/c1001-28112035.html>.

26. The National Development and Reform Commission of China, *The Notice on Fuel Quality Upgrading and Pricing Policies* (Sept. 16, 2013), [http://www.sdpc.gov.cn/fzgggz/jgg/zcfg/201309/t20130923\\_559982.html](http://www.sdpc.gov.cn/fzgggz/jgg/zcfg/201309/t20130923_559982.html).

27. *Id.*

28. Ministry of Environmental Protection & Ministry of Industry and Information Technology, *The Notice on the Implementation of China 5 Vehicle Emission Standards by Two Ministries* (Jan. 14, 2016), <http://www.miit.gov.cn/n1146295/n1652858/n1652930/n4509607/c4603032/content.html>.

29. *Id.*

30. *Id.*

31. MINISTRY OF ENVIRONMENTAL PROTECTION OF CHINA, 2013 CHINA AUTOMOBILE POLLUTION PREVENTION AND CONTROL ANNUAL REPORT (2014), [http://www.mep.gov.cn/gkml/hbb/qt/201401/t20140126\\_266973.htm](http://www.mep.gov.cn/gkml/hbb/qt/201401/t20140126_266973.htm).

32. *Air Pollution Prevention Act*, *supra* note 12, art. 51.

33. *Id.* art. 58.

34. State Council of China, *Energy Conservation and New Energy Car Industry Development Plan (2012-2020)* (June 28, 2012), [http://www.gov.cn/zwqk/2012-07/09/content\\_2179032.htm](http://www.gov.cn/zwqk/2012-07/09/content_2179032.htm).

35. State Council of China, “*Made in China 2025*” Plan (May 19, 2015), [http://www.gov.cn/zhengce/content/2015-05/19/content\\_9784.htm](http://www.gov.cn/zhengce/content/2015-05/19/content_9784.htm).

36. *Id.*

37. Ministry of Industry & Information Technology, *Interpretations to “Made in China 2025” Plan: Promotion of Energy Conservation and the Development of New Energy Vehicle Industry* (May 22, 2015), [http://www.gov.cn/zhuanqi/2016-05/12/content\\_5072762.htm](http://www.gov.cn/zhuanqi/2016-05/12/content_5072762.htm).

38. *Id.*

39. See, e.g., Ministry of Finance et al., *Notice on Continuing to Promote the Application of New Energy Cars* (Sept. 13, 2013), <http://chinaafc.miit.gov.cn/n2257/n2341/c90328/content.html>; State Council of China, *Guidance on Acceleration of the Promotion and Application of New Energy Cars* (July 14, 2014), [http://www.gov.cn/zhengce/content/2014-07/21/content\\_8936.htm](http://www.gov.cn/zhengce/content/2014-07/21/content_8936.htm); and Ministry of Finance et al., *Notice on Financial Support Policies for Promotion and Application of New Energy Cars in 2016-2020* (Apr. 22, 2015), <http://www.ciiif-expo.com/article/show.php?itemid=1668>. For a summary of new energy car promotion policies issued in 2014, see *Unprecedented Support, New Energy Car Policies You Can’t Miss in 2014*, People.cn (Jan. 12, 2015), <http://auto.people.com.cn/n/2015/0112/c1005-26366080.html>.

2020.<sup>40</sup> Government procurement also strongly supports new energy cars, requiring that in 2016, more than 30% of government cars purchased by public institutions shall be new energy cars, and new energy cars shall be widely used by 2020.<sup>41</sup> According to the China Association of Automobile Manufacturers, the manufacture and sales of new energy vehicles in China were 340,471 and 331,092, respectively, in 2015.<sup>42</sup>

## 2. Energy Policy

Of course, China's carbon reduction laws and policies, including energy policies, strongly influence air pollution problems and solutions,<sup>43</sup> as the transition away from coal toward cleaner energy sources will reduce air pollution. The *13th Five-Year Plan* sets targets of reducing energy consumption by 15% per unit of GDP, reducing CO<sub>2</sub> emissions by 18% per unit of GDP, increasing non-fossil fuel energy share by 3% in total primary energy consumption, and capping total energy consumption at below five billion tons of standard coal by 2020.<sup>44</sup> In fact, the amended *Air Pollution Prevention and Control Act* provides that the national government will gradually reduce

the share of coal in the energy mix.<sup>45</sup> The national government also bans the import, sale, and combustion of coal that does not meet quality standards, and encourages the combustion of high-quality coal.<sup>46</sup> The *National Climate Change Plan (2014-2020)* announced that China will reduce its CO<sub>2</sub> emission per unit of GDP by 40-45% below the 2005 levels by 2020 and increase non-fossil fuels consumption to around 15% of the total primary energy consumption by 2020.<sup>47</sup>

The *Energy Development Strategy Action Plan (2014-2020)* provides that China's annual coal consumption shall be held below 4.2 billion tons by 2020.<sup>48</sup> It also provides that by 2020, the share of natural gas in the total primary energy mix shall rise to above 10%, while the share of coal shall be reduced to below 62%.<sup>49</sup> According to an action plan jointly released by the Ministry of Industry and Information Technology and the Ministry of Finance (MOF), China will reduce its industrial coal consumption by 160 million tons by 2020.<sup>50</sup> In December 2015, the National Energy Administration announced that the country will halt approval of new coal mines in the next three years.<sup>51</sup>

For the longer term, President Xi also announced on November 12, 2014, that China will peak its CO<sub>2</sub> emission by 2030 and increase non-fossil fuels to 20% of its total primary energy consumption mix by the same year.<sup>52</sup> At the first session of the U.S.-China Climate-Smart/Low-Carbon Cities Summit held on September 15-16, in Los Angeles, 10 out of 11 cities and provinces committed to taking steps to peak CO<sub>2</sub> emissions earlier than 2030 in support of China's national target of peaking by 2030.<sup>53</sup>

The carbon reduction policies also include the pilot carbon emission trading programs in seven cities and provinces: Beijing, Shanghai, Guangzhou, Shenzhen, Tianjin, Hubei, and Chongqing.<sup>54</sup> In September 2015, on the occasion of President Xi's visit to the United States, China announced/confirmed its plan of launching in 2017 a national emission trading system in key sectors,

40. Ministry of Science and Technology, *National Key Research and Development of New Energy Cars Implementation Plan (Open for Public Comments)* (Feb. 16, 2015), [http://www.most.gov.cn/tzgt/201502/t20150216\\_118251.htm](http://www.most.gov.cn/tzgt/201502/t20150216_118251.htm).

41. National Development and Reform Commission, Central Propaganda Department, Ministry of Science and Technology, Ministry of Finance, Ministry of Environmental Protection, Ministry of Housing and Urban-Rural Development, Ministry of Commerce, General Administration of Quality Supervision, Inspection and Quarantine, National Tourism Administration, and National Government Offices Administration, *Green Consumption Promotion Guiding Opinions* (Feb. 17, 2016), [http://www.mof.gov.cn/zhengwuxinxi/zhengcefabu/201603/t20160302\\_1828395.htm](http://www.mof.gov.cn/zhengwuxinxi/zhengcefabu/201603/t20160302_1828395.htm).

42. China Association of Automobile Manufacturers, *Automobile Industry Economic Developments in 2015* (Jan. 12, 2016), <http://www.caam.org.cn/xiehuidongtai/20160112/1705183569.html>.

43. Carbon reduction policies can significantly improve air quality and public health and could provide health benefits that are up to 10 times the cost of implementing the carbon reduction policies. See Tammy M. Thompson et al., *A Systems Approach to Evaluating the Air Quality Co-Benefits of US Carbon Policies*, NATURE CLIMATE CHANGE (2014), 4:917-23, doi:10.1038/nclimate2342 ("We find that monetized human health benefits associated with air quality improvements can offset 26-1,050% of the cost of US carbon policies. More flexible policies that minimize costs, such as cap-and-trade standards, have larger net co-benefits than policies that target specific sectors (electricity and transportation)."). Rules aimed at energy conservation also can reduce air pollution. See, e.g., Standing Committee of National People's Congress, *Energy Conservation Act* (Oct. 28, 2007), [http://www.gov.cn/jfjg/2007-10/28/content\\_788493.htm](http://www.gov.cn/jfjg/2007-10/28/content_788493.htm); State Council of China, *2014-2015 Energy Conservation Emission Reduction and Low Carbon Development Action Plan* (May 15, 2014), [http://www.gov.cn/zhengce/content/2014-05/26/content\\_8824.htm](http://www.gov.cn/zhengce/content/2014-05/26/content_8824.htm); and State Council of China, *Energy Development Strategy Action Plan (2014-2020)* (Nov. 19, 2014), [http://www.gov.cn/zhengce/content/2014-11/19/content\\_9222.htm](http://www.gov.cn/zhengce/content/2014-11/19/content_9222.htm). Many carbon reduction and energy-efficiency improvement strategies can significantly contribute to air pollution reduction. For example, recent research by Lawrence Berkeley National Laboratory scientists finds that simultaneously phasing down HFCs and improving energy efficiency of room air conditioners in China could avoid 264-620 and 310-720 medium-sized (500MW) peak-load power plants by 2030 and 2050, respectively. See Nihar Shah et al., *Benefits of Leapfrogging to Superefficiency and Low Global Warming Potential Refrigerants in Air Conditioning* (2015), LBNL Report No. LBNL-1003671, <http://eetd.lbl.gov/publications/benefits-of-leapfrogging-to-supereff-0>.

44. *13th National Economy and Social Development Five-Year Plan*, *supra* note 10.

45. *Air Pollution Prevention Act*, *supra* note 12, art. 32.

46. *Id.* art. 35.

47. State Council of China, *Reply to National Climate Change Plan (2014-2020)* (Sept. 19, 2014), [http://www.gov.cn/zhengce/content/2014-09/19/content\\_9083.htm](http://www.gov.cn/zhengce/content/2014-09/19/content_9083.htm).

48. *Energy Development Strategy Action Plan (2014-2020)*, *supra* note 43.

49. *Id.*

50. Ministry of Industry and Information Technology and Ministry of Finance, *Clean and Efficient Industrial Coal Consumption Action Plan* (2015), <http://www.miit.gov.cn/n1146295/n1652858/n1652930/n3757016/c3764068/part/3764069.pdf>.

51. *National Energy Administration: Will Halt Construction of New Coal Mines in the Next Three Years*, XINHUA NEWS (Dec. 30, 2015), at [http://news.xinhuanet.com/fortune/2015-12/30/c\\_128580555.htm](http://news.xinhuanet.com/fortune/2015-12/30/c_128580555.htm).

52. Sino-U.S. Joint Announcement on Climate Change (Nov. 12, 2014); White House, U.S.-China Joint Announcement on Climate Change (Nov. 12, 2014), <https://www.whitehouse.gov/the-press-office/2014/11/11/us-china-joint-announcement-climate-change>.

53. *U.S.-China Climate Leaders' Declaration* (Sept. 15-16, 2015), [https://www.whitehouse.gov/sites/default/files/us\\_china\\_climate\\_leaders\\_declaration\\_9\\_14\\_15\\_730pm\\_final.pdf?utm\\_source=EnergyGuardian\\_email&utm\\_medium=email&utm\\_campaign=14979](https://www.whitehouse.gov/sites/default/files/us_china_climate_leaders_declaration_9_14_15_730pm_final.pdf?utm_source=EnergyGuardian_email&utm_medium=email&utm_campaign=14979).

54. *Carbon Emission Trading Pilot Projects Reached Expectation in the First Year*, PEOPLE'S DAILY, July 20, 2014, at [http://paper.people.com.cn/rmrb/html/2014-07/20/nw.D110000renmrb\\_20140720\\_1-03.htm](http://paper.people.com.cn/rmrb/html/2014-07/20/nw.D110000renmrb_20140720_1-03.htm).

including power generation, iron and steel, chemicals, building materials, including cement, papermaking, and non-ferrous metals.<sup>55</sup>

## B. Regional and Provincial Air Pollution Rules

Within China, regions and provinces are disproportionately contributing to and unevenly affected by the air pollution problem, partly due to the regional distribution of population and heavy polluting industries. The *Twelfth Five-Year Plan on Air Pollution Prevention and Control in Key Regions* lists key regions, including Beijing, Tianjin and Hebei Province, Yangzi River Delta, Pearl River Delta, Central Liaoning Province, Shandong Province, Wuhan and surrounding area, Changsha-Zhuzhou-Xiangtan, Chengdu-Chongqing, the coastal area west of the Taiwan strait, mid-north of Shanxi Province, Guanzhong area of Shaanxi Province, Gansu-Ningxia, and the urban area around Xinjian Urumchi.<sup>56</sup> These key regions were required to reduce the annual concentration of PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>2</sub>, and PM<sub>2.5</sub> by 10%, 10%, 7%, and 5% respectively, below the 2010 levels by 2015.<sup>57</sup> Beijing, Tianjin, Hebei, Yangzi River Delta, and Pearl River Delta were required to reduce the annual concentration of PM<sub>2.5</sub> by 6% below the 2010 levels by 2015.<sup>58</sup>

Therefore, the national government has recognized the regional impacts of air pollution and allocated special funding support for air pollution reduction efforts by the regions facing the most serious air quality challenges. In October 2013, the MOF allocated five billion RMB for air pollution reduction in Beijing, Tianjin, and Hebei and surrounding regions<sup>59</sup>; in 2014, the MOF also arranged to allocate 10 billion RMB for air pollution reduction in Beijing, Tianjin, Hebei and surrounding regions, Yangzi River Delta, and Pearl River Delta.<sup>60</sup>

So far, key regions are taking the lead on air pollution reduction, including PM<sub>2.5</sub> reduction in China. For example, the capital city of Beijing has issued its *2013-2017 Clean Air Action Plan*, which details its implementation plan to achieve the PM<sub>2.5</sub> concentration reduction targets,<sup>61</sup> and further issued government documents that

provided specific air pollution reduction assignments for different government agencies and announced the officials in charge.<sup>62</sup> Beijing issued its *Air Pollution Prevention and Control Regulation* in January 2014, which among others provides strengthened legal responsibilities for air pollution in Beijing.<sup>63</sup> Also, Beijing will invest 760 billion RMB on PM<sub>2.5</sub> reduction by 2017.<sup>64</sup>

Another heavily polluted province, Hebei, issued the *Implementation Plan on Hebei Province Air Pollution Prevention and Control Action Plan* in September 2013, which listed 50 measures on PM<sub>2.5</sub> reduction.<sup>65</sup> Hebei announced an investment of 0.8 billion RMB on air pollution focusing on PM<sub>2.5</sub> and PM<sub>10</sub> in 2014.<sup>66</sup> Also, the amended *Hebei Province Air Pollution Prevention and Control Regulation* includes strengthened provisions on air pollution penalties.<sup>67</sup> Tianjin also issued its *Clean Air Action Plan*<sup>68</sup> and amended *Tianjin Air Pollution Prevention and Control Regulation*<sup>69</sup> for strengthened air pollution reduction measures. In addition, the Jing-Jin-Ji and surrounding regions (covering Beijing, Tianjin, Hebei, Shanxi, Inner Mongolia, and Shandong) also took collaborative actions on the fight against air pollution.<sup>70</sup> The Chinese Research Academy of Environmental Sciences has launched the drafting process of a *Jing-Jin-Ji Regional Air Pollution Prevention and Control Mid- and Long-Term Plan*.<sup>71</sup> Major provinces and cities also have been leading on implementation of vehicle fuel quality standards and vehicle emission

ping District, *Changping District 2013-2017 Clean Air Action Plan* (Oct. 14, 2013), <http://www.bjchp.gov.cn/tabid/7242/InfoID/269182/setting-moduleid/13733/Default.aspx>.

62. Beijing People's Government, *Key Assignments Distribution for Beijing 2013-2017 Clean Air Action Plan* (Aug. 23, 2013), <http://zhengwu.beijing.gov.cn/gzdt/gggs/t1322955.htm>; Beijing People's Government, *2014 Key Assignments Distribution for Beijing 2013-2017 Clean Air Action Plan* (Feb. 12, 2014), <http://zhengwu.beijing.gov.cn/gzdt/gggs/t1341112.htm>; Beijing People's Government, *2015 Key Assignments Distribution for Beijing 2013-2017 Clean Air Action Plan* (Feb. 9, 2015), <http://www.chinaev.org/DisplayView/Normal/News/Detail.aspx?id=20288>; and Beijing People's Government, *2016 Key Assignments Distribution for Beijing 2013-2017 Clean Air Action Plan* (Jan. 23, 2016), [http://govfile.beijing.gov.cn/Govfile/front/content/22016011\\_0.html](http://govfile.beijing.gov.cn/Govfile/front/content/22016011_0.html).
63. Beijing People's Congress, *Beijing Air Pollution Prevention and Control Regulation* (Jan. 22, 2014), <http://210.75.193.155/rdzw/information/exchange/Laws.do?method=showInfoForWeb&id=2014307>.
64. *Beijing Will Invest 760 Billion RMB on PM<sub>2.5</sub> Reduction. Mayor Signed the Life and Death Contract*, XINHUA NET (Mar. 17, 2014), at [http://news.xinhuanet.com/fortune/2014-03/17/c\\_126277583.htm](http://news.xinhuanet.com/fortune/2014-03/17/c_126277583.htm).
65. Hebei People's Government, *Implementation Plan on Hebei Province Air Pollution Prevention and Control Action Plan* (Sept. 2013), [http://www.hebhb.gov.cn/ztdb/hbdqwrfl/xgwj/201309/t20130925\\_38906.html](http://www.hebhb.gov.cn/ztdb/hbdqwrfl/xgwj/201309/t20130925_38906.html).
66. *Jing-Jin-Ji Air Pollution Prevention and Control: Hebei Invests 0.8 Billion RMB on Air Pollution Control*, ENORTH, 2014, at <http://news.enorth.com.cn/system/2014/04/16/011821898.shtml>.
67. Hebei Province People's Congress, *Hebei Province Air Pollution Prevention and Control Regulation* (Jan. 13, 2016), <http://he.people.com.cn/n2/2016/0125/c192235-27617756.html>.
68. Tianjin People's Government, *Tianjin Clean Air Action Plan* (Sept. 28, 2013), [http://www.tj.gov.cn/zwgk/wjgz/szfwj/201310/t20131009\\_223397.htm](http://www.tj.gov.cn/zwgk/wjgz/szfwj/201310/t20131009_223397.htm).
69. Tianjin People's Congress, *Tianjin Air Pollution Prevention and Control Regulation* (2015), [http://www.tj.xinhuanet.com/gov/2015-02/05/c\\_1114270431.htm](http://www.tj.xinhuanet.com/gov/2015-02/05/c_1114270431.htm).
70. *Detailed Regulation on the Implementation of Air Pollution Prevention and Control Action Plan in Jing-Jin-Ji and Surrounding Regions*, *supra* note 12.
71. *Jing-Jin-Ji Air Pollution Prevention and Control Plan Was Launched to Clarify Time Plan to Improve Air Quality*, SOHU.COM (July 27, 2015), at <http://news.sohu.com/20150727/n417593429.shtml>.

55. White House, *Fact Sheet: The United States and China Issue Joint Presidential Statement on Climate Change With New Domestic Policy Commitments and a Common Vision for an Ambitious Global Climate Agreement in Paris* (Sept. 25, 2015), <https://www.whitehouse.gov/the-press-office/2015/09/25/fact-sheet-united-states-and-china-issue-joint-presidential-statement>.
56. State Council of China, *Twelfth Five-Year Plan on Air Pollution Prevention and Control in Key Regions* (2012), <http://www.mep.gov.cn/gkml/hbb/bwj/201212/W020121205566730379412.pdf>.
57. *Id.*
58. *Id.*
59. Ministry of Finance of China, *The National Finance Allocated 5 Billion RMB to Reduce Air Pollution in Beijing, Tianjin, Hebei, Inner Mongolia, Shanxi, and Shandong* (Oct. 14, 2013), [http://jjs.mof.gov.cn/zhengwuxinxi/touruqingkuang/201310/t20131012\\_997900.html](http://jjs.mof.gov.cn/zhengwuxinxi/touruqingkuang/201310/t20131012_997900.html).
60. Ministry of Finance of China, *The Ministry of Finance Allocated 8 Billion RMB as Air Pollution Prevention and Control Special Fund* (May 16, 2014), [http://jjs.mof.gov.cn/zhengwuxinxi/gongzuodongtai/201405/t20140516\\_1080714.html](http://jjs.mof.gov.cn/zhengwuxinxi/gongzuodongtai/201405/t20140516_1080714.html) (eight billion RMB was allocated on May 16, 2014).
61. See *Beijing 2013-2017 Clean Air Action Plan*, <http://zhengwu.beijing.gov.cn/ghxx/qtgh/t1324558.htm>. Several districts of Beijing have also issued their own Clean Air Action Plans. See, e.g., Government of Beijing Chang-



standards. Beijing transitioned to ULSD in 2012,<sup>72</sup> and some other cities and provinces have updated to ULSD before the national standard becomes effective as well.<sup>73</sup> For vehicle emission standards, Beijing adopted light-duty vehicle emission standard China 5 in 2013.<sup>74</sup> By the end of 2015, all new heavy-duty diesel vehicles in Beijing were required to meet the China 5 emission standards.<sup>75</sup> From June 1, 2016, Beijing required DPFs to be installed on new heavy-duty diesel vehicles including buses, sanitation trucks, postal trucks, tour coaches, shuttles, school buses, airport shuttles, and mining loaders.<sup>76</sup>

Other key regions such as Shanghai and Pearl River Delta have started the implementation of China 5 standards as well. The national ministries require that from April 1, 2016, all imported, for sale, and registered light-duty gasoline vehicles, light-duty diesel passenger coaches, heavy-duty diesel vehicles (only buses, sanitation trucks, and postal trucks) have to meet China 5 emission standards in 11 provinces/cities (including Beijing, Tianjin, Hebei, Liaoning, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong, and Hainan).<sup>77</sup> Beijing and other large cities also have limited growth in new vehicle ownership by restricting car sales and implementing a license lottery.<sup>78</sup> In addition, local governments also have been implementing policies to promote the new energy cars, including subsidies and special license lotteries,<sup>79</sup> and accelerating construction of infrastructure such as the charging stations for new energy cars.<sup>80</sup>

During the time of special events, such as APEC in November 2014 in Beijing, Beijing and the surrounding

regions of Tianjin and Hebei took short-term dramatic air pollution control measures, such as shutting down air polluting factories and reducing on-road vehicles for immediate air pollution reduction outcomes.<sup>81</sup> However, these measures are not sustainable and therefore cannot solve the fundamental air pollution problems for these regions.

## II. China's Evolving Tools for Ensuring Compliance With Air Pollution Rules

In addition to a set of rules based on a combination of laws, regulations, and plans to combat air pollution and other environmental problems, China also has a set of tools to promote compliance with such rules,<sup>82</sup> including both disincentives, such as monetary penalties or jail sentences imposed by the judiciary,<sup>83</sup> and incentives. Incentives can include allocation of resources, for example through the Five-Year Plans, and making the achievement of performance targets one of the criteria for promotion of responsible officials. To reduce inadvertent noncompliance, when enterprises or individuals simply do not know how to comply with the rules, China is also integrating other "western"-style compliance assistance tools, including technical assistance on monitoring and pollution control. In addition, public participation is another important tool for environmental compliance and enforcement. However, such western-style tools might work differently in the context of the Chinese system.

Understanding China's air pollution rules and its compliance tools will enable the relevant stakeholders to review global good practices for environmental compliance and enforcement, and more effectively recommend ways to strengthen these functions within the systems unique to China. It is clear that successful implementation of environmental rules requires significant effort and forethought.

72. Beijing Municipal Environmental Protection Bureau, *Beijing Issued and Implemented Vehicle Gasoline and Vehicle Diesel Fuel Standard 5* (May 17, 2012), <http://www.bjepb.gov.cn/bjepb/413526/331443/331937/333896/449997/index.html>.

73. China Association of Automobile Manufacturers, *Cities and Provinces Promote the Adoption of Vehicle Fuel Standard 5* (Aug. 1, 2014), <http://www.caam.org.cn/biaozhuidongtai/20140801/0905126595.html>.

74. *Jing 5 Vehicle Emission Standard Expires and Beijing Will Implement China 5 Vehicle Emission Standard Before National Implementation*, XINHUA NET, Sept. 18, 2013, at [http://news.xinhuanet.com/local/2013-09/18/c\\_117411167.htm](http://news.xinhuanet.com/local/2013-09/18/c_117411167.htm).

75. *2015 Key Assignments Distribution for Beijing 2013-2017 Clean Air Action Plan*, *supra* note 62.

76. *Beijing Starts to Implement Heavy Duty Diesel Vehicle China 5 Standard Today*, People.cn, June 1, 2015, at <http://energy.people.com.cn/n/2015/0601/c71661-27086779.html>.

77. Ministry of Environmental Protection & Ministry of Industry and Information Technology, *The Notice on the Implementation of China 5 Vehicle Emission Standards by Two Ministries* (Jan. 14, 2016), <http://www.mit.gov.cn/n1146295/n1652858/n1652930/n4509607/c4603032/content.html>.

78. *China's Hangzhou Latest City to Restrict Car Sales*, REUTERS, Mar. 25, 2014, at <http://www.reuters.com/article/us-china-autos-regulations-idUSBREA2O0S620140325> ("China's eastern city of Hangzhou will start restricting car sales from Wednesday. Five Chinese cities—Shanghai, Beijing, Tianjin, Guangzhou and Guiyang—have already put curbs on car sales and more are expected to follow.")

79. *Local Policies Get in Place, New Energy Car Industry Is Going to Boom*, SOHU BUSINESS, Feb. 26, 2015, at <http://business.sohu.com/20150226/n409176433.shtml>; and *State Plus Local Subsidies: Analysis of New Energy Car Subsidy Policies*, AUTOHOME, Feb. 24, 2014, at <http://www.autohome.com.cn/news/201402/729912.html>.

80. *New Constructions in Beijing Have to Install Charging Stations, and Electric Cars Won't Be Prohibited to Get on the Road on Any Days*, People.cn, June 1, 2015, at <http://energy.people.com.cn/n/2015/0601/c71661-27084116.html>.

81. *See Hebei Orders Factory Shutdowns to Stop Smog Casting Pall Over Apec*, SOUTH CHINA MORNING POST, Oct. 22, 2014, at <http://www.scmp.com/news/china/article/1621658/hebei-orders-factory-shutdowns-stop-smog-casting-pall-over-apec>.

82. A good example is the recently issued *State Council Notice on Strengthening Environmental Supervision and Enforcement*, which covers various aspects of environmental enforcement, including improving environmental legislation and supervision systems, strengthening penalties on environmental violations, increasing supervision on environmental protection agencies and other agencies involved, identifying responsibilities of stakeholders, including the government, agencies, entities, and individuals, and promoting capacity-building for both enforcement personal and facilities. In particular, the notice provides lifetime responsibility on government officials for ecological environmental damages. *See* State Council of China, *The Notice on Strengthening Environmental Supervision and Enforcement* (Nov. 27, 2014), [http://www.gov.cn/zhengce/content/2014-11/27/content\\_9273.htm](http://www.gov.cn/zhengce/content/2014-11/27/content_9273.htm).

83. On June 23, 2014, the Supreme People's Court issued an opinion entitled, *The Supreme People's Court Opinion on Comprehensive Enhancement of Environmental Resource Trial Work to Provide Vigorous Judicial Safeguards to Promote Construction of an Ecological Civilization* (This path-breaking opinion sets out the guiding ideology, fundamental principles, and target tasks for environmental justice and associated public interest trial work. Among other things, the opinion describes measures needed to strengthen trial work in environmental criminal, administrative, and civil cases, and also sets forth procedural strategies to promote public interest environmental civil litigation. It also describes courses of action aimed at advancing orderly institutional reform of the environmental justice system and efforts to increase the transparency of and public participation in this system.)

Behavioral changes to encourage higher levels of compliance can be difficult to accomplish on both a societal and personal level. No single formula exists for achieving compliance. There is merely trial, evaluation, and adaptation to find the most effective combination of enforcement response and compliance assistance for any given national, regional, or local context.

### III. Challenges for Air Quality Enforcement and Compliance

#### A. Challenge 1: Assembling an Inventory of Air Pollution Rules and Assessing Enforceability

Assembling an inventory of national and local rules relevant to controlling air pollution, including environmental, transportation, energy, health, and other related areas, is a critical first step to the success of any compliance and enforcement program. Evaluating the interrelationships among the laws, policies, plans, and other rules can help identify inefficiencies and gaps, and help improve understanding of how the system is working to ensure that the environmental protection objectives are achieved.

Once the compliance system is inventoried, the enforceability of each rule or other requirement should be assessed, starting with whether the rule is specific and clear enough to be able to identify the following: (1) who is responsible for implementing the rule (individual or enterprise); (2) what action or activity does the rule require of the responsible entity; (3) when is the individual or enterprise required to act; (4) where are they are required to act (e.g., in relation to what source); and (5) how will compliance with the rule be monitored and enforced. The enforceability assessment should look at other factors as well, including feasibility, fairness and equity, precision, time frames, reporting requirements, and alignment with global good practice.

In the Chinese context, this issue is even more complicated because plans often do not take the form of laws in the western sense, therefore, special consideration and clarification are needed as to how to resolve conflicts among laws and plans and how to enforce the plans in practice.<sup>84</sup>

#### B. Challenge 2: Clarifying Roles, Responsibilities, and Authority of Key Enforcement and Compliance Decisionmakers

Implementation and enforcement of pollution control laws depends on a coordinated effort among a wide range of national, provincial, and local government actors, often beyond traditional environmental protection agencies, including the judiciary, public prosecutors, police, regu-

lated entities themselves, the general public, the media, and academia.

### I. Intragovernmental Communication

Adequately delineating the roles, responsibilities, and decisionmaking authority of stakeholders across the enforcement chain presents significant challenges to all compliance and enforcement programs. Where authorities have conflicting or unclear responsibilities, their authority can be fragmented (rather than coordinated) and the capacity to enforce environmental rules weakened. Fragmentation can result in a lack of information-sharing on program performance, disagreement on how best to reach environmental objectives, and conflicting messaging to the regulated community and the public. Fragmentation also can occur when decentralization of environmental enforcement is poorly executed or incomplete.

To reduce fragmentation, it is important to promote communication and collaboration among stakeholders throughout the implementation and enforcement process. Experience from the International Network for Environmental Compliance and Enforcement's regional network activities demonstrates that intragovernmental networks within a single nation-state can improve enforcement through personal relationships established through network activities and joint capacity-building programs.

In China, the amended *Air Pollution Prevention and Control Act* has strengthened the provisions on air protection responsibilities of local governments and corresponding evaluation systems.<sup>85</sup> However, capacity-building and motivation mechanisms are needed for implementation. Currently, the number of staff for air emission enforcement in China is still very low, and most environmental protection agencies do not have dedicated staff focusing on air pollution-related enforcement. More dedicated staff with relevant skill sets and expertise on air pollution are needed.

At the regional and local levels, it is also critical to discuss mechanisms to motivate the local governments to enforce air pollution reduction provisions. Among other things, this requires a clear mandate. However, this may be challenging, as the officials may also have other conflicting mandates (e.g., promoting economic growth), along with inadequate resources. In addition, it also requires that the performance requirements and standards in the rules are clear enough to avoid government officials taking irrational measures to meet the emission reduction targets, such as shutting down public heat supply in the cold winter.<sup>86</sup>

Local governments, in particular in the key regions, also should cooperate and collaborate on compliance and enforcement of air pollution rules. Because air pollution

84. For a detailed discussion of state planning process in China, see Oran R. Young et al., *Institutionalized Governance Processes: Comparing Environmental Problem Solving in China and the United States*, 31 GLOBAL ENVTL. CHANGE 163-73 (2015).

85. *Air Pollution Prevention Act*, *supra* note 12, art. 3-5. Section 10 of the *Air Pollution Prevention and Control Action Plan* also provides that the local governments are responsible for air quality protection in their own administrative regions. *Air Pollution Plan*, *supra* note 9, §10.

86. *Linzhou, Henan Province Stopped Heating Supply to Meet Emission Reduction Targets*, Sohu.com (Jan. 12, 2011), <http://news.sohu.com/20110112/n278810690.shtml>.



goes beyond a specific administrative region, the amended *Air Pollution Prevention and Control Act* provides the mechanisms of air pollution joint prevention and control in the key regions.<sup>87</sup> There are also provisions in §8 of the *Air Pollution Prevention and Control Action Plan* for regional coordination, in particular for the Beijing, Tianjin, Hebei, and Yangzi River Delta region.<sup>88</sup>

## 2. Significant Role of China's Judiciary

A recent opinion from the Supreme People's Court indicates that the Chinese judiciary, as well as environmental lawyers, will play a more significant role in environmental enforcement; the Supreme People's Court opinion also describes how the judiciary will strengthen the trial work of environmental criminal, administrative, and civil cases, how they will set up dedicated environmental trial agencies, and how they will promote procedural strategies that promote public interest environmental civil litigation.<sup>89</sup>

### C. Challenge 3: Enforcing Rules Through Swift, Credible, Predictable, Appropriate Penalties, and/or Other Sanctions That Create Deterrence

Enforcement through fines, penalties, and other sanctions or punishments is the foundation of most programs to ensure compliance with environmental rules. This approach relies on providing "disincentives," or negative consequences, to discourage noncompliance. Decoupling the economic benefit of noncompliance is critically important to eliminate any competitive advantage of the violator and "level the playing field" for good actors. (Other approaches can complement enforcement and punishment by providing assistance to regulated facilities to help them comply with the applicable rules. Such nonpunitive compliance assistance is discussed below.)

#### I. Deterrence Measures

The principle of deterrence underlies many environmental compliance activities. Effective enforcement programs deter illegal conduct by creating disincentives for those who violate the law. There are two types of deterrence: specific and general. Specific deterrence is the effect that an enforcement action has on the targeted enterprise's subsequent environmental performance. General deterrence is the effect that an enforcement activity has on other enterprises, in addition to the polluter that is the target of a specific action. Properly communicated, a single enforcement action can have a cascading effect on many potential viola-

tors, encouraging them to change their behavior to comply with the rules.

For deterrence to be effective, there must be:

- (1) A credible likelihood that the violation will be detected;
- (2) Swift and predictable responses to violations;
- (3) Appropriate and meaningful punitive measures; and
- (4) A perception among the regulated community and the public that all of these elements are present.

## 2. Assessing Penalties and Other Punitive Measures

Appropriate punitive measures are critical for establishing the necessary credible threat to assure regulated enterprises will comply with the rules. Punitive measures range from monetary penalties (fines), property seizures, facility closures, other injunctive relief, and imprisonment. In order for the punitive measures to be effective and deter noncompliance, at a minimum, they should recover any economic benefit associated with a violation. Bad actors should not gain an economic advantage over enterprises that complied with the rules. Other factors relevant to the imposition of appropriate punitive measures are gravity of the harm, history of noncompliance, ability to pay, deviation from the standards or emission limits, cooperation of the violator in remedying the environmental harm, and other factors as justice may require.

In China, the amended *Environmental Protection Act* and *Air Pollution Prevention and Control Act* have both raised the level of penalties against the polluters. The *Air Pollution Prevention and Control Act* in particular has included a section on air pollution-related legal liabilities.<sup>90</sup>

For financial penalties, the *Environmental Protection Act* and the *Air Pollution Prevention and Control Act* provide a fine-per-day mechanism and set no limits on the total amount of fines charged against the polluters.<sup>91</sup> The criteria for implementation of the fine-per-day mechanism has been detailed in the *Regulation on Implementation of Fine-Per-Day Mechanism by the Environmental Protection Agencies*, which came into effect on the same day as the amended *Environmental Protection Act*.<sup>92</sup> In 2015, the fine-per-day mechanism was applied in 715 cases, with total fines of about 0.57 billion RMB.<sup>93</sup>

87. *Air Pollution Prevention Act*, *supra* note 12, ch. 5.

88. *Air Pollution Plan*, *supra* note 9, §8.

89. Supreme People's Court, *The Supreme People's Court Opinion on Comprehensive Enhancement of Environmental Resource Trial Work to Provide Vigorous Judicial Safeguards to Promote Construction of an Ecological Civilization*, §3-5 (June 23, 2014), <http://www.chinacourt.org/law/detail/2014/06/id/147914.shtml>.

90. *Air Pollution Prevention Act*, *supra* note 12, ch. 7.

91. Standing Committee of the National People's Congress, *Environmental Protection Act* (2014), art. 59. *Air Pollution Prevention Act*, *supra* note 12, art. 123.

92. Ministry of Environmental Protection of China, *Regulation on Implementation of Fine-Per-Day Mechanism by the Environmental Protection Agencies* (2014).

93. Wang Canfa et al., *New Environmental Protection Act Implementation Evaluation Report (Simplified version) (Part 2)* (2016), [http://mp.weixin.qq.com/s?\\_\\_biz=MzA4NTg1MDg5MQ==&mid=509517030&idx=2&sn=cd2d02ac67106180aab81d9ae96f1cf2#rd](http://mp.weixin.qq.com/s?__biz=MzA4NTg1MDg5MQ==&mid=509517030&idx=2&sn=cd2d02ac67106180aab81d9ae96f1cf2#rd).

For administrative penalties, the *Environmental Protection Act* and the *Air Pollution Prevention and Control Act* both provide that the Environmental Protection Bureaus (EPBs) can apply serious penalties on enterprises, including limiting operation and suspending operation.<sup>94</sup> An accompanying implementation regulation also has been issued to assist environmental officials with implementation in practice.<sup>95</sup> With approval by the corresponding governments, polluting enterprises can be ordered to cease operation or shut down.<sup>96</sup> However, the local governments may lack intention to approve the penalties due to other concerns, especially the possible negative effects on local economy.<sup>97</sup>

Although the *Environmental Protection Act* and the *Air Pollution Prevention and Control Act* both include the criminal penalties concept, the penalties lack specificity. Clearer provisions on criminal penalties could assist judicial practices. For example, in June 2013, the Supreme People's Court and the Supreme People's Procuratorate issued a judicial interpretation on pollution criminal cases, which has clearly explained relevant issues.<sup>98</sup> After issuance of the judicial interpretation, the number of environmental criminal cases increased significantly in 2014.<sup>99</sup>

#### D. Challenge 4: Detecting Noncompliance Through Traditional Monitoring and Inspections, and Through Mandatory Self-Monitoring, Self-Recordkeeping, and Self-Reporting

Efficient detection of noncompliance is essential for effective enforcement activities. Compliance monitoring can include activities such as inspections (announced and unannounced), requiring regulated enterprises to self-monitor, taking samples, and reviewing citizen complaints. Inspection activities broadly can be categorized as routine inspections, and those in response to a specific complaint or incident. The next generation of air monitoring technologies is assisting enforcement officers around the world to detect illegal pollution emissions in new ways and to carry out their responsibilities more efficiently. For example, the U.S. Environmental Protection Agency (EPA) requires continuous emission monitoring

of SO<sub>2</sub>, NO<sub>x</sub>, and other pollutants from combustion or industrial processes.<sup>100</sup>

Environmental regulations often require self-monitoring, self-recordkeeping, and self-reporting by enterprises to track their compliance and record the results for government review. Enforcement officials can impose these disclosure requirements on a specific facility via permits. Compared to inspections, self-monitoring, self-recordkeeping, and self-reporting, when done together, provide more extensive information on compliance. Information from self-monitoring, self-recordkeeping, and self-reporting often is used to target and prioritize enforcement, and serves as a basis for noncompliance response. However, this type of self-assessment is not an absolute substitute for government inspection and oversight. There needs to be a credible threat of enforcement for false representations, such as underreporting, to deter "gaming the system." Self-monitoring, self-recordkeeping, and self-reporting can assist with this if the rules are mandatory and the punishment for falsification is sufficiently severe.<sup>101</sup>

The amended *Environmental Protection Act* provides that the state should establish and improve the environmental monitoring and inspection system,<sup>102</sup> and requires self-monitoring and self-recordkeeping by significant emission sources.<sup>103</sup> The *Air Pollution Prevention and Control Act* also provides that the MEP is in charge of national air quality and pollution discharge monitoring, local EPBs are in charge of air quality and pollution discharge monitoring in their own administrative regions, and the pollution discharge entities shall be responsible for self-monitoring and self-recordkeeping.<sup>104</sup> The amended *Air Pollution Prevention and Control Act* also provides that authorized agencies can conduct on-site inspection, online monitoring, and remote-sensing monitoring, and inspected entities have to provide necessary information.<sup>105</sup> In February 2015, the MEP also issued the *Guidance on Promotion of Socialization of Environmental Monitoring and Inspection Services* to improve government supervision on environmental monitoring and inspection entities.<sup>106</sup>

Data integrity is critical to the success of a pollution control strategy. Policy decisions based on falsified emis-

94. *Environmental Protection Act*, *supra* note 91, art. 60. *Air Pollution Prevention Act*, *supra* note 12, art. 99.

95. Ministry of Environmental Protection of China, *Regulation on Implementation of Limiting Operation or Cease of Operation by Environmental Protection Agencies* (2014).

96. *Environmental Protection Act*, *supra* note 91, art. 60. *Air Pollution Prevention Act*, *supra* note 12, art. 99.

97. *New Environmental Protection Act Implementation Evaluation Report (Simplified version) (Part 2)*, *supra* note 93.

98. Supreme People's Court and the Supreme People's Procuratorate, *Interpretation on Several Issues Concerning the Application of Law in the Handling of Criminal Cases of Environmental Pollution* (June 17, 2014), [http://www.spp.gov.cn/flfg/sfjs/201306/t20130619\\_59706.shtml](http://www.spp.gov.cn/flfg/sfjs/201306/t20130619_59706.shtml).

99. Yuan Chunxiang, *Punish Criminals According to the Law and Protect Rule of Law, Analysis of Criminal Cases Around the Country in 2014*, PEOPLE'S COURT NEWSPAPER, May 7, 2015, at [http://rmfyb.chinacourt.org/paper/html/2015-05/07/content\\_97397.htm?div=0](http://rmfyb.chinacourt.org/paper/html/2015-05/07/content_97397.htm?div=0).

100. *See, e.g.*, U.S. EPA, Acid Rain Program, <https://www.epa.gov/airmarkets/acid-rain-program>.

101. *See, e.g.*, 18 U.S.C. §1001 (providing for penalties, including criminal sanctions such as jail time, for fraudulent and false statements to the government).

102. *Environmental Protection Act*, *supra* note 91, art. 17.

103. *Id.* art. 42. In addition, the MEP also issued two relevant regulations in 2013 entitled, *Rules on Self-Monitoring, Self-Measuring and Information Disclosure by National Significant Monitoring and Controlling Enterprises*, and *Rules on Supervisory Monitoring and Measuring, and Information Disclosure on Pollution Sources of National Significant Monitoring and Controlling Enterprises*.

104. *Air Pollution Prevention and Control Act*, *supra* note 12, arts. 23 & 24.

105. *Id.* art. 29. Article 30 also provides that if the entities could cause severe air pollution or if the evidence may go missing, the officials can seal off the site. Article 20 bans practices such as the temporary suspension of operation in order to avoid on-site inspections.

106. Ministry of Environmental Protection of China, *Guidance on Promotion of Socialization of Environmental Monitoring and Inspection Services* (Feb. 5, 2015), [http://www.mep.gov.cn/gkml/hbb/bwj/201502/t20150210\\_295694.htm](http://www.mep.gov.cn/gkml/hbb/bwj/201502/t20150210_295694.htm).

sions data or source data will undermine the credibility of an entire program. In addition, further discussion is required on: the availability and cost of technologies to manage, use, and distribute data effectively; procedures to ensure data integrity<sup>107</sup>; ways to improve public disclosure; and requirements and responsibilities, i.e., whether to hold senior enterprise technology and/or management officials liable in case of false data or insufficient information disclosure.

### E. Challenge 5: Complementing Enforcement With Compliance Assistance, Including Capacity-Building and Incentive Programs

In addition to enforcement through penalties or disincentives for noncompliance, it is important to implement parallel efforts to promote compliance through nonpunitive activities. These activities can include capacity-building and corresponding compliance strategies on the rules, technical assistance on monitoring and pollution control, and financial relief. These activities often are referred to as *compliance assistance*, and tend to be most successful when they incorporate local/regional considerations and are tailored to the needs of specific sectors. Financial incentives, such as preferential tax treatment, are also important, as cost is often a significant barrier to compliance. Strategies involving compliance assistance are most effective if backed by a credible threat of enforcement activities that punish and deter noncompliance.

Compliance assistance is a relatively new concept for Chinese regulators, law enforcement officers, and the regulated enterprises and individuals. The *Air Pollution Prevention and Control Action Plan* includes compliance incentives, such as tax benefits for “Energy Performance Contracting,” green loans and green bonds, as well as channeling private funding sources to the air pollution reduction projects.<sup>108</sup> The *Air Pollution Prevention and Control Act* provides that the national government will take measures such as financial subsidies, tax benefits, and government procurement to promote energy-efficient and new energy vehicles and ships.<sup>109</sup> The *Draft Environmental Tax Act* also provides that if the taxable air pollution and water pollution emission concentrations are less than 50% of national or local emission standards, the environmental tax can be deducted by one-half.<sup>110</sup> Better incorporation of compliance assistance into the legislative system and conversion of mindset among the relevant stakeholders, in particular the local EPB officials and regulated enterprises, would be greatly beneficial for the effective compliance and implementation of the air pollution rules.

107. Article 20 of the *Air Pollution Prevention and Control Act* bans the falsification of emission data.

108. *Air Pollution Plan*, *supra* note 9, §6.

109. *Air Pollution Prevention and Control Act*, *supra* note 12, art. 50.

110. See art. 13 of *Environmental Protection Tax Act (Draft)* (Sept. 3, 2016), [http://www.npc.gov.cn/npc/flcazqyj/2016-09/02/content\\_1996531.htm](http://www.npc.gov.cn/npc/flcazqyj/2016-09/02/content_1996531.htm).

### F. Challenge 6: Requiring Information Disclosure and Promoting Public Participation

Access to information is key to effective public participation in order to fill the gaps where government fails to act, to spur government to act more swiftly or forcefully, and to enhance government enforcement efforts. China’s amended *Environmental Protection Act* provides that citizens and entities are entitled to open environmental information, public participation, and supervision of environmental protection.<sup>111</sup> The MEP, local environmental protection bureaus, and key pollution discharge enterprises are all required to open relevant environmental information to the public.<sup>112</sup> Research showed that in 2015, even though the national and local governments did a much better job of opening environmental information, there were still 36% of sample cities that failed to publicize their lists of key pollution-discharging enterprises.<sup>113</sup>

#### I. Sharing Scientific Data to Reduce Pollution

The judiciary,<sup>114</sup> scientists, academics, and environmental organizations<sup>115</sup> could play a bigger role in information disclosure and public participation.<sup>116</sup> Research institutes and scientists also could play a bigger role in providing authoritative and policy-relevant interpretations of complicated scientific data. All of these measures assist the public in understanding government air pollution reduction actions and challenging their conclusions and decisions.

#### 2. Engaging the Public

Public participation can take many forms, including providing input on draft legislation, monitoring and reporting environmental violations, publicizing legal requirements and violations, and initiating citizen suits. The MEP pub-

111. *Environmental Protection Act*, *supra* note 91, art. 53.

112. *Id.* arts. 54, 55.

113. Wang Canfa et al., *New Environmental Protection Act Implementation Evaluation Report (Simplified version) (Part 1)* (2016), [http://mp.weixin.qq.com/s?\\_\\_biz=MzA4NTg1MDg5MQ==&mid=509517024&idx=1&sn=df867d082c4c2fbd50e7bef9603b3a41#rd](http://mp.weixin.qq.com/s?__biz=MzA4NTg1MDg5MQ==&mid=509517024&idx=1&sn=df867d082c4c2fbd50e7bef9603b3a41#rd).

114. For example, the Supreme People’s Court highlights the importance of open information and public participation in environmental judicial areas, in §7 of the *Supreme People’s Court Opinion on Comprehensive Enhancement of Environmental Resource Trial Work to Provide Vigorous Judicial Safeguards to Promote Construction of an Ecological Civilization*, issued on June 23, 2014.

115. For example, one environmental organization has developed a series of pollution maps, showing timely monitoring data around the country. See Institute of Public & Environmental Affairs, *Pollution Maps*, <http://www.ipe.org.cn/pollution/index.aspx>. Ma Jun, Director of IPE, has also developed a cellphone application, which can provide timely monitoring data of air quality of hundreds of cities and pollutant emissions by thousands of enterprises around the country. More than three million people have downloaded this application. See *Data App Pushes Chinese Factories to Cut Pollution*, REUTERS, Apr. 17, 2015, at <http://www.reuters.com/article/us-china-pollution-apps-idUSKBN0N81MB20150417>.

116. One famous example is the Center for Legal Assistance to Pollution Victims (CLAPV), founded in 1998 by Wang Canfa, who is a leading environmental law professor at China University of Political Science and Law and received the Ramon Magsaysay Award in 2014 (considered the regional Nobel Prize). See Ramon Magsaysay Award Foundation, *Wang Canfa*, <http://www.rmaf.org.ph/newrmaf/main/awardees/awardee/profile/354>.



lished the *Environmental Protection Public Participation Regulation*, effective September 1, 2015.<sup>117</sup> The regulation provides multiple channels for public participation, including government-organized seminars and public hearings, government-distributed questionnaires, public comments submitted through phone calls, e-mails, fax, mails, and others.<sup>118</sup> The *Air Pollution Prevention and Control Act* provides that government agencies shall keep the personal information of citizens reporting violations confidential, and grant them rewards for confirmed violations.<sup>119</sup> However, some provinces/cities did not receive, handle, and respond to the public reporting effectively.<sup>120</sup>

In addition, the amended *Environmental Protection Act* provides that NGOs that meet certain criteria can file environmental public interest litigation.<sup>121</sup> Days after the amended *Environmental Protection Act* went into effect, the Supreme Court judicial interpretation on environmental civil public interest litigation went into effect as well, which provides details on NGOs filing environmental public interest litigation, including alleviating the burden of litigation fees.<sup>122</sup> In February 2015, the Supreme People's Court *Interpretation on the Application of the Civil Litigation Act* went into effect, with one chapter detailing procedural issues for lawyers to file public interest litigation, and for judges to hear and decide public interest cases.<sup>123</sup> In June 2015, the Supreme People's Court issued the *Interpretation on Several Issues of Utilizing Law in Adjudicating Environmental Tort Disputes*, which clarified various issues in environmental torts such as causation, evidence, and remedies.<sup>124</sup> However, there were only 42 environmental public interest cases with full records in 2015, due to strict restrictions on plaintiffs and lack of funding support and expertise for environmental organizations.<sup>125</sup>

### G. Challenge 7: Measuring and Managing the Effectiveness of Compliance Assistance and Enforcement Response

Efforts to build better compliance and enforcement systems must be based on a solid empirical foundation. Indi-

cators are a method of using information about complex phenomena in a logical and concise manner that can be readily understood and communicated to decisionmakers and other intended audiences. Compliance and enforcement indicators can assist responsible stakeholders to better measure and manage performance, better understand the effectiveness of activities, and communicate the results to interested parties.

China's evaluation system for local governments' air pollution mitigation efforts is an example of environmental performance measures used there. The *Air Pollution Prevention and Control Act* provides that the MEP and other national agencies are in charge of evaluating air quality improvement and air pollution reduction achievements of provinces, autonomous regions, and municipalities directly under the central government.<sup>126</sup> In turn, governments of provinces, autonomous regions, and municipalities directly under the central government are in charge of evaluating air quality improvement and air pollution reduction achievements of local governments in their own administrative regions.<sup>127</sup>

The *Environmental Protection Act* provides the environmental protection target responsibility system and government official performance evaluation system.<sup>128</sup> Environmental protection targets are considered part of the government official evaluation system and the evaluation results shall be open to the public.<sup>129</sup> In July 2014, six ministries including the MEP and the National Development and Reform Commission issued a detailed performance evaluation regulation on the implementation of the *Air Pollution Prevention and Control Action Plan*.<sup>130</sup> According to this detailed performance evaluation regulation, the central government provides two sets of evaluation systems: one on air quality improvement, and the other on air pollution prevention and control.

Well-designed performance evaluation mechanisms are critical to ensure effective and efficient implementation of national air pollution reduction targets, as well as to assure that the performance evaluation metrics are well-founded and the local EPBs are capable of implementation, to avoid cheating and distortion of information. In addition, an issue with strong Chinese characteristics is the important role played by the Communist Party leaders at national and local levels. In August 2015, the General Office of the CPC Central Committee and the General Office of the State Council of China jointly issued the *Regulation on the Accountability and Liabilities of Communist Party Leaders*

117. Ministry of Environmental Protection of China, *Environmental Protection Public Participation Regulation* (July 13, 2015), [http://www.mep.gov.cn/gkml/hbb/bl/201507/t20150720\\_306928.htm](http://www.mep.gov.cn/gkml/hbb/bl/201507/t20150720_306928.htm).

118. *Id.*

119. *Air Pollution Prevention and Control Act*, *supra* note 12, art. 31.

120. *New Environmental Protection Act Implementation Evaluation Report (Simplified version) (Part 1)*, *supra* note 113.

121. *Environmental Protection Act*, *supra* note 91, art. 58.

122. Supreme People's Court of China, *Interpretation on Several Issues Concerning Application of Law in the Trial of Civil Environmental Public Interest Litigation Cases* (2015), <http://www.chinacourt.org/law/detail/2015/01/id/148058.shtml>.

123. Supreme People's Court of China, *Interpretation on the Application of Civil Litigation Act*, ch. 13 (2015), <http://www.chinacourt.org/law/detail/2015/01/id/148091.shtml>.

124. Supreme People's Court of China, *Interpretation on Several Issues of Utilizing Law in Adjudicating Environmental Tort Disputes* (2015), <http://www.chinacourt.org/law/detail/2015/06/id/148253.shtml>.

125. *New Environmental Protection Act Implementation Evaluation Report (Simplified version) (Part 1)*, *supra* note 113.

126. *Air Pollution Prevention Act*, *supra* note 12, art. 4.

127. *Id.*

128. *Environmental Protection Act*, *supra* note 91, art. 26.

129. *Id.*

130. Ministry of Environmental Protection et al., *Detailed Implementation Rules on Evaluation Regulation on the Implementation of Air Pollution Prevention and Control Action Plan* (July 18, 2014), [http://www.mep.gov.cn/gkml/hbb/bwj/201407/t20140725\\_280516.htm](http://www.mep.gov.cn/gkml/hbb/bwj/201407/t20140725_280516.htm). The regulation is an implementation plan of the *Evaluation Regulation on the Implementation of Air Pollution Prevention and Control Action Plan*, issued by the State Council earlier in April 2014. See State Council, *Evaluation Regulation on the Implementation of Air Pollution Prevention and Control Action Plan* (Apr. 30, 2014), [http://www.gov.cn/zhengce/content/2014-05/27/content\\_8830.htm](http://www.gov.cn/zhengce/content/2014-05/27/content_8830.htm).

*and Government Officials for Ecological and Environmental Damages (Trial)*, which for the first time clearly provides that the local Communist Party leaders and government officials are responsible for the protection of ecological environment and resource conservation in their administrative regions. Article 4 of the Regulation also emphasizes these lifetime liabilities.<sup>131</sup>

#### **IV. Conclusion**

In recent years, air pollution issues have received unprecedented public attention in China. Partly for this reason, the Chinese government also has made significant efforts in air pollution reduction, including but not limited to making various legislative changes, and allocated a huge amount of funding support at both the national and local levels. However, no real progress can be claimed with only documents on paper. Compliance and enforcement are keys to cleaning up the air in China and around the globe.

In this Article, we discussed seven challenges to achieving effective compliance and enforcement with air pollution reduction rules in China. In this regard, global good practices can be useful references for the Chinese government and other stakeholders. However, such discussions and considerations are only useful when viewed and considered within the context of China's unique rulemaking and governance systems as well as its cultural background.

Air pollution is also closely connected to the issue of climate change, which often involves a broader range of players at the international venues. Therefore, it is also an important topic for Chinese legislators and policymakers to ensure compliance with international agreements, such as the Paris Agreement, through domestic rules and policies. As mentioned above, we believe that reductions of short-lived super pollutants, such as HFCs, methane, and black carbon, offer near-term cost-effective opportunities to both reduce air pollution and mitigate climate change.

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131. General Office of the CPC Central Committee and the General Office of the State Council of China, *Regulation on the Accountability and Liabilities of Communist Party Leaders and Government Officials for Ecological and Environmental Damages (Trial)* (2015), [http://news.xinhuanet.com/politics/2015-08/17/c\\_1116282540.htm](http://news.xinhuanet.com/politics/2015-08/17/c_1116282540.htm).