

Explaining the Failure of Environmental Law in China

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I. Introduction

China has experienced remarkable economic growth in recent decades, with an average annual growth of approximately ten percent. As a result of this unprecedented and miraculous growth, China's economy has expanded impressively and is now the second largest economy in the world (with a nominal GDP of USD 10.36 trillion in 2014), behind only the United States. China is currently the world's largest exporter, largest manufacturer, largest holder of foreign exchange reserves, and second-largest destination of foreign direct investment (FDI). Concurrently, living standards have increased across the board in China, which has raised hundreds of millions of people out of absolute poverty and placed China within the ranks of upper-middle-income economies. In the words of Brandt, Ma, and

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Rawski,¹ “three and a half decades of reform has produced a genuine leap forward in the size of China’s economy and the prosperity of its citizens.”

China’s growth miracle, however, has not arrived without costs. Certain economic, political and social problems, including corruption, inequality, financial inefficiency and other economic distortions, have become threats to China’s economic sustainability and social stability.² Environmental pollution is another serious challenge faced by the Chinese government and society. In fact, environmental pollution in China is so severe that Economy describes it as “an environmental disaster.”³ Similarly, Gilley concludes that “China’s environmental sub-system may have reached a point of near-collapse.”⁴ For example, a study by the Asian Development Bank reports that less than one percent of the 500 largest cities in China meet the air quality standards recommended by the World

¹ Loren Brandt, Debin Ma & Thomas G. Rawski, *From Divergence to Convergence: Reevaluating the History Behind China’s Economic Boom*, 52(1) JOURNAL OF ECONOMIC LITERATURE 45 (1999).

² Franklin Allen, Jun Qian & Meijun Qian, *Law, Finance, and Economic Growth in China*, 77 JOURNAL OF FINANCIAL ECONOMICS 57 (2005); MINXIN PEI, CHINA’S TRAPPED TRANSITION: THE LIMITS OF DEVELOPMENTAL AUTOCRACY (2006); Chang-Tai Hsieh & Peter J. Klenow, *Misallocation and Manufacturing TFP in China and India*, 124(4) QUARTERLY JOURNAL OF ECONOMICS 1403 (2009); John Knight, *Inequality in China: An Overview*, 29(1) WORLD BANK RESEARCH OBSERVER 1 (2014) and Elizabeth J. Perry, *Growing Pains: Challenges for a Rising China*, 143(2) DAEDALUS 5 (2014).

³ Elizabeth Economy, *The Great Leap Backward? The Costs of China’s Environmental Crisis*, 86(5) FOREIGN AFFAIRS 39 (2007).

⁴ Bruce Gilley, *Comparing National Sustainability in China and India*, in CHINA, INDIA AND THE END OF DEVELOPMENT MODELS 225 (Xiaoming Huang, Alex C. Tan & Sekhar Bandyopadhyay eds. 2012).

Health Organization, and seven of China's cities are among the ten most polluted cities in the world.⁵ Air pollution is detrimental and can be lethal to human health. According to estimations by the World Health Organization, air pollution in China led to the deaths of 470,649 people in 2008.⁶

In response to the increasing pressures caused by its deteriorating environmental conditions, the Chinese government has adopted a series of strategies in recent years to begin to pay the environmental debt that has been ignored for decades. For example, He et al. reports that by 2012, the Chinese government had promulgated twenty-eight environmental and resource laws and 150 national administrative regulations, joined approximately sixty international environmental conventions, and established more than 1300 national environmental standards.⁷ Huang et al. shows that 1764 government documents related to environmental protection were issued by different agencies of the Chinese government from 1999 to

⁵ Qingfeng Zhang & Robert Crooks, TOWARD AN ENVIRONMENTALLY SUSTAINABLE FUTURE: COUNTRY ENVIRONMENTAL ANALYSIS OF THE PEOPLE'S REPUBLIC OF CHINA (2012).

⁶ *Deaths Attributable to Outdoor Air Pollution*, WORLD HEALTH ORGANIZATION (2008), available at http://gamapserver.who.int/gho/interactive_charts/phe/oap_mbd/atlas.html (last visited June 13, 2015). The Global Burden of Disease study estimates that outdoor pollution in China contributed to 1.2 million premature deaths in 2010 (See Elizabeth Economy, *Environmental Governance in China: State Control to Crisis Management*, 143 (2) *Daedalus* 184 (2014)).

⁷ Guizhen He, Yonglong Lu, Arthur P.J. Mol & Theo Beckers, *Changes and Challenges: China's Environmental Management in Transition*, 3 ENVIRONMENTAL DEVELOPMENT 25 (2012).

2008.⁸ Various mandatory binding environmental targets were also included in the two most recent national Five Year Plans, the 11th (2006-2010) and 12th (2011-2015). The State Environmental Protection Administration (SEPA), the nation's main environmental protection agency—which was elevated to Ministry status in 2008 and renamed the Ministry of Environmental Protection (MEP)—even launched several high-profile crackdowns of various large projects that were in breach of environmental regulations between 2005 and 2007 in what the Chinese media had dubbed a series of “environmental storms.”⁹

However, the effects of these efforts have been modest at best, and the environmental quality in China has not been improved sufficiently to meet public health and safety requirements.¹⁰ Certain institutional weaknesses, such as legislative vagueness, lack of resources and governmental support for enforcement, local protectionism and restricted public participation, have all been identified in the current literature as being responsible for the ineffectiveness of China's environmental governance. Our understanding of China's environmental challenges has most certainly

⁸ Xibing Huang, Dingtao Zhao, Colin G. Brown, Ranrui Wu & Scott A. Waldron, *Environmental Issues and Policy Priorities in China: A Content Analysis of Government Documents*, 8(2) CHINA: AN INTERNATIONAL JOURNAL 220 (2010).

⁹ Thomas R. Johnson, *New Opportunities, Same Constraints: Environmental Protection and China's New Development Path*, 28(2) POLITICS 93 (2008).

¹⁰ Haakon Vennemo, Kristin Aunan, Henrik Lindhjem & Hans Martin Seip, *Environmental Pollution in China: Status and Trends*, 3(2) REVIEW OF ENVIRONMENTAL ECONOMICS AND POLICY 209 (2009); He *et al.*, *supra* note 7, and Siqu Zheng & Matthew E. Kahn, *Understanding China's Urban Pollution Dynamics*, 51(3) JOURNAL OF ECONOMIC LITERATURE 731 (2013).

been deepened by these studies. Unfortunately, a more fundamental factor, China's political regime, in which the Chinese Communist Party (hereafter the "Party") enjoys a monopoly on power, seems to have attracted less attention than it deserves in the literature. An important piece is therefore missing from the picture.

We will fill this gap in the literature by examining the role of China's political system in shaping China's current environmental status quo. We will show that economic growth has inexorably become an overriding objective that derives from the Party's desperation to maintain power because increased wealth accumulation supports the regime by appeasing the people, co-opting powerful elites, and strengthening the security apparatus. Environmental protection, is not vital to the Party's survival and therefore is sacrificed for economic growth, at least until pollution-related unrest endangers the Party. Consequently, ordinary citizens are deprived of the right to participate in environmental decision making, industrial enterprises are encouraged to expand at the cost of both the environment and citizens' health, and officials are incentivized to prioritize economic growth and fiscal revenue over environmental sustainability and human welfare. It is therefore not surprising to find both a rapidly growing economy and an environment that is nearly collapsed in China.

The remainder of this paper is organized as follows. Section II offers a brief overview of China's environmental problems, with

special attention to both air pollution and water pollution. Section III discusses the failure of China's environmental governance institutions, including its courts and regulatory agencies, in addressing environmental challenges. Section IV analyses how China's political system—its authoritarian nature, its legitimacy-pursuing efforts, and its decentralized power structure in particular—have contributed and continue to contribute to the current environmental disaster. Section V concludes.

II. China's Environmental Challenges

The problematic nature of China's environmental status has been widely documented on the basis of various independent sources. China's general environmental status is, also in a worldwide comparison, alarming (A); the most problematic environmental problem, also heavily discussed in China and causing serious health effect, is the disastrous air quality (B), but, although less pronounced in the media, water pollution is in fact as serious a problem as air pollution (C). This has led to the question whether the Chinese growth miracle will end because the environment can no longer keep pace (D).

A. Evidence of Environmental Deterioration in China: General

The severity of China's environmental challenges can first be illustrated by the scores that China has recently received under several existing comprehensive measures of environmental systems.¹¹ For example, when China is evaluated using the Environmental Performance Index (EPI), which "ranks how well countries perform on high-priority environmental issues in two broad policy areas— protection of human health from environmental harm and protection of ecosystems," its overall score is 43 out of 100, placing China 118th out of 178 countries in 2014.¹² Similarly, another measure, the Global Climate Risk Index (GDRI), which analyses retrospective economic and human losses from extreme weather (storms, floods, heat waves, etc.), places China among the twenty nations that are most vulnerable to climate change because of its environmental degradation.¹³ As a nation, China is also ranked as having one of the highest negative

¹¹ Summaries of the disastrous state of the environment in China have been provided by many. For two summaries see, *inter alia*, Srinivasan, *Regulating the Belching Dragon: Rule of Law, Politics of Enforcement, and Pollution Prevention in Post-Mao Industrial China*, 18(2) *COLO. J. INT'L ENVTL. L. & POL'Y* 267, 275-80 (2007); John Copeland Nagle, *How Much Should China Pollute?* 12 *VERMONT JOURNAL OF ENVIRONMENTAL LAW* 591 (2011).

¹² <http://epi.yale.edu/epi/country-profile/china> (last visited June 18, 2015). The EPI scores country performance in nine issue areas consisting of 20 indicators. It is a joint project between the Yale Center for Environmental Law and Policy (YCELP) and the Center for International Earth Science Information Network (CIESIN) at Columbia University, in collaboration with the Samuel Family Foundation and the World Economic Forum.

¹³ S. Kreft, D. Eckstein, L. Junghans, C. Kerestan and U. Hagen, *Who Suffers Most From Extreme Weather Events? Weather-related Loss Events in 2013 and 1994 to 2013*, *GLOBAL CLIMATE RISK INDEX 2015*, available at: <http://germanwatch.org/en/download/10333.pdf> (last visited June 18, 2015).

environmental impacts under the Environmental Impact Index developed by Bradshaw, Giam, and Sodhi.¹⁴

Further evidence regarding China's environmental deterioration can be found in several studies that attempt to quantify environmental costs. The World Bank¹⁵ estimates that in 2003, China exacted an environmental cost of 362-781 billion CNY, or 2.68-5.78 per cent of China's 2003 GDP.¹⁶ A joint report issued by the World Bank and the Development Research Center of the State Council of China (DRC) concludes that the costs of environmental degradation and resource depletion in China approached 10 per cent of GDP over the past decade – of that 10 per cent, air pollution accounted for 6.5 percent, water pollution 2.1 percent, and soil degradation 1.1 percent.¹⁷ Estimates by the Chinese Academy for Environmental Planning, a research institute affiliated with the MEP, are more conservative, reporting that the costs associated with environmental deterioration and loss of ecosystem services equalled three to four percent of GDP between 2008 and 2010.¹⁸

¹⁴ Corey J.A. Bradshaw, Xingli Giam & Navjot S. Sodhi, *Evaluating the Relative Environmental Impact of Countries*, 5(5) PLOS ONE e10440 (2010).

¹⁵ WORLD BANK, *COST OF POLLUTION IN CHINA: ECONOMIC ESTIMATES OF PHYSICAL DAMAGES* (2007).

¹⁶ The range of the estimate depends primarily on the valuation method (i.e., the willingness to pay approach versus the human capital approach) and the number of excess cases of mortality and morbidity.

¹⁷ WORLD BANK AND THE DEVELOPMENT RESEARCH CENTER OF THE STATE COUNCIL OF CHINA, *CHINA 2030: BUILDING A MODERN, HARMONIOUS, AND CREATIVE HIGH-INCOME SOCIETY* (2013).

The changing attitudes and behaviour of ordinary people also reflect the increasing environmental pressure faced by Chinese society. A survey conducted by the Pew Research Center in 2013 indicates that the Chinese public is becoming increasingly concerned about the state of their local environment: nearly half (forty-seven percent) of respondents rated air pollution as a very serious problem, which represented an increase of sixteen percentage points from 2008, and forty percent considered water pollution to be a very big problem, in comparison with twenty-eight percent in 2008.¹⁹ Another survey, the 6th cohort of the World Values Survey (WVS), shows that whereas sixty-six per cent of Chinese citizens in 1990 believed that the country's national priority should be economic growth, 56.6 percent of Chinese citizens in 2014 indicated that China's priority over the next ten years should be "protecting the environment, even at the expense

¹⁸ See "huanbaobu pilu 2008 nian quanguo huanjing jingji hesuan jiegou" ("the Ministry of Environmental Protection announced the outcomes of the 2008 national environmental accounting"), available at: <http://www.chinanews.com/ny/2010/12-28/2751156.shtml>; "huanjing guihuayuan wancheng 2009 nian zhongguo huanjing jingji hesuan baogao" (the Chinese Academy for Environmental Planning finished the national environmental accounting of 2009), available at <http://www.caep.org.cn/ReadNews.asp?NewsID=3105>; and "huanjing guihuayuan: 2010 nian woguo shengtai huanjing chengben da 1.5 wanyi" (the Chinese Academy for Environmental Planning: China's environmental costs reached 1.5 trillion in 2010), available at <http://finance.sina.com.cn/china/20130115/091914288855.shtml> (last visited June 25, 2015).

¹⁹ ENVIRONMENTAL CONCERNS ON THE RISE IN CHINA, available at <http://www.pewglobal.org/2013/09/19/environmental-concerns-on-the-rise-in-china/> (last visited July 3, 2015).

of economic growth.”²⁰ Furthermore, deteriorating environmental conditions have forced the victims of pollution—a population who often lacks both the political mechanisms to participate in the decisions that may affect their lives and the legal tools to resolve their grievances against polluting enterprises and their allies (local officials)—to look for more radical alternative solutions, such as protests or even riots.²¹ Unsurprisingly, the environment has thus become the leading source of social unrest in China.²²

Seven types of environmental problems were highlighted in an Asian Development Bank report: water pollution and water availability, air quality, solid waste management, natural disasters,

²⁰ 56 PERCENT OF CHINESE SAY ENVIRONMENT MORE IMPORTANT THAN GROWTH, *available at* <http://thediplomat.com/2014/09/56-percent-of-chinese-say-environment-more-important-than-growth/> (last visited July 3, 2015). According to a survey conducted by the Public Opinion Research Center of Shanghai Jiao Tong University, up to eighty percent of Chinese residents believe that environmental protection should be a higher priority than economic development. See SURVEY: GOVT NEEDS TO FOCUS MORE ON ENVIRONMENT, *available at* http://www.chinadaily.com.cn/china/2013-05/08/content_16486101.htm (last visited July 3, 2015).

²¹ For example, according to the vice-minister of SEPA, protests against pollution increased by twenty-nine percent each year between 1996 and 2005, a time during which 50,000 anti-pollution protests were recorded. According to the chief of Department of Politics, Laws, and Regulations of the Ministry of Environmental Protection, major environmental group events increased by 120 percent from 2011 to 2012. See CHINA: MASS PROTESTS CHALLENGE POLLUTERS, *available at* <http://climateandcapitalism.com/2014/04/07/china-mass-protests-challenge-polluters/> (last visited June 25, 2015). For certain cases of environmental protests in recent years, see ENVIRONMENTAL PROTESTS IN CHINA, *available at* <http://factsanddetails.com/china/cat10/sub66/item1895.html> (last visited June 25, 2015).

²² Economy, *supra* note 6.

land degradation, deteriorating biodiversity and inadequate forestry resources.²³ In comparison with other types of environmental problems, air pollution²⁴ seems to have attracted the most attention domestically and internationally, particularly after the winter of 2013, when “one of the worst environmental disasters in history”²⁵—nation-wide smog—descended upon China. This event led to the coining of a new word to describe the disastrous air quality in China: “airpocalypse.”²⁶

B. Life Threatening Air Pollution

The recent prevalence of smog in China seems to contradict the argument that air quality has been improved in most Chinese cities over the last decade (while it still exceeds the standards recommended

²³ Zhang & Crooks, *supra* note 5.

²⁴ We mainly focus on outdoor air pollution in this paper. For indoor pollution in China, see Junfeng Zhang, Denise L. Mauzerall, Tong Zhu, Song Liang, Majid Ezzati & Justin V. Remais, *Environmental Health in China: Progress towards Clean Air and Safe Water*, 375 LANCET 1110 (2010).

²⁵ Yuhua Wang, *Politically Connected Polluters under Smog*, 17(1) BUSINESS AND POLITICS 97 (2015).

²⁶ See, for example, CHINESE STRUGGLE THROUGH ‘AIRPOCALYPSE’ SMOG, available at <http://www.theguardian.com/world/2013/feb/16/chinese-struggle-through-air-pocalypse-smog> (last visited June 15, 2013). Two entries related to this event can also be found in Wikipedia: 2013 EASTERN CHINA SMOG (available at https://en.wikipedia.org/wiki/2013_Eastern_China_smog) and 2013 NORTHEASTERN CHINA SMOG (available at https://en.wikipedia.org/wiki/2013_Northeastern_China_smog, all last visited June 15, 2013).

by the World Health Organization).²⁷ There are two possible explanations for this contradiction. First, the argument is based on Chinese official statistics that are dubious, according to several studies. In certain cities, officials are known to have manipulated pollution data to meet regulatory targets;²⁸ thus, the level of air pollution may be understated. Second, official statistics have historically focused on certain primary pollutants, such as sulfur dioxide (SO₂), which have been shown to have stabilized or even to have declined in recent years, but have failed to account for secondary pollutants that are key contributors to smog in China, such as PM_{2.5}.²⁹ Unfortunately, recent

²⁷ He *et al.*, *supra* note 7, and Zheng & Kahn, *supra* note 10.

²⁸ Yuyu Chen, Ginger Zhe Jin, Naresh Kumar & Guang Shi, *Gaming in Air Pollution Data? Lessons from China*, NBER WORKING PAPER No. 18729 (2013), available at <http://www.nber.org/papers/w18729> (last visited July 3, 2015) and Dalia Ghanema & Junjie Zhang, 'Effortless Perfection': Do Chinese Cities Manipulate Air Pollution Data? 68(2) JOURNAL OF ENVIRONMENTAL ECONOMICS AND MANAGEMENT 203 (2014).

²⁹ According to a report issued by Greenpeace, PM_{2.5} is not a single pollutant but is instead a compound of pollutants existing in various forms. The sources of PM_{2.5} can be classified as primary or secondary. Primary PM_{2.5} refers to tiny solids or liquid droplets released directly into the air from a variety of sources, including cars, trucks, factories, construction sites, agriculture, unpaved roads, stone crushing, and burning of wood. Secondary PM_{2.5} is formed in the air when gases undergo chemical change or indirectly formed when gases from burning fuels react with sunlight and water vapour. Precursor gases involved in secondary formation include SO₂, nitrogen oxide (NO_x), ammonia (NH₃), and various hydrocarbons referred to as volatile organic compounds (VOCs). These gases can be produced by fuel combustion in motor vehicles, at power plants, and in other industrial processes. Recent studies show that the proportion of primary PM_{2.5} particles is decreasing, whereas that of secondary particles is on the rise. See GREENPEACE, TRACING BACK THE SMOG: SOURCE ANALYSIS AND CONTROL STRATEGIES FOR PM_{2.5} POLLUTION IN BEIJING-TIANJIN-HEBEI (2013), available at [http://www.greenpeace.org/eastasia/Global/eastasia/publications/reports/climate-energy/2013/Tracing%20back%20to%20the%20smog%20\(English%20of%20report\).pdf](http://www.greenpeace.org/eastasia/Global/eastasia/publications/reports/climate-energy/2013/Tracing%20back%20to%20the%20smog%20(English%20of%20report).pdf) (last visited May 10, 2015).

studies have found that China is among the regions with the highest concentration of $PM_{2.5}$,³⁰ and the level of $PM_{2.5}$ concentration has significantly increased in most Chinese provinces between 2001-2003 and 2008-2010.³¹

The diameters of $PM_{2.5}$ particles are 2.5 micrometres or less. In comparison with larger particles, such as PM_{10} , that have an aerodynamic diameter between 2.5 and 10 micrometres and typically lodge in the trachea (upper throat) or in the bronchi, $PM_{2.5}$ are recognized to have a more severe impact on human health because of their small diameter, their toxicity, their long suspension time, and the long distances they can travel. A report issued by Greenpeace concludes that “the microscopic $PM_{2.5}$ particles penetrate deep into the lungs, and further into the bloodstream, causing inflammation, respiratory problems, coagulation of blood and toxic effects on many internal organs, including the brain. The result is increased risk of

³⁰ Aaron van Donkelaar, Randall V. Martin, Robert J. D. Spurr, Easan Drury, Lorraine A. Remer, Robert C. Levy, & Jun Wang, *Optimal Estimation for Global Ground-level Fine Particulate Matter Concentrations*, 118 JOURNAL OF GEOPHYSICAL RESEARCH: ATMOSPHERES 5621 (2013).

³¹ See BOTTOM UP OR TOP DOWN? ANOTHER WAY TO LOOK AT AN AIR QUALITY PROBLEM, available at <http://epi.yale.edu/the-metric/bottom-or-top-down-another-way-look-air-quality-problem> (last visited July 4, 2015). Ma *et al.* estimate daily $PM_{2.5}$ concentrations in China with fused satellite aerosol optical depth (AOD) as the primary predictor and find that over ninety-six percent of the Chinese population lives in areas that exceed the Chinese National Ambient Air Quality Standard Level 2 standard (annual mean concentration of $PM_{2.5}$ being 35 $\mu\text{g}/\text{m}^3$). See Zongwei Ma, Xuefei Hu, Lei Huang, Jun Bi, & Yang Liu, *Estimating Ground-Level $PM_{2.5}$ in China Using Satellite Remote Sensing*, 48(13) ENVIRONMENTAL SCIENCE AND TECHNOLOGY 7436 (2014).

death from heart attack, stroke, lung cancer and respiratory diseases, and increased risk of asthma and respiratory infections.”³²

The adverse effects of PM_{2.5} in particular and Total Suspended Particles (TSP)³³ in general on Chinese citizens’ health have been confirmed by numerous empirical studies. For example, Ebenstein et al. examine the relationship between income, pollution, and mortality in China from 1991-2012 and find that whereas GDP growth is associated with increased life expectancy, air pollution appears to be a countervailing force that reduces life expectancy.³⁴ These authors estimate that a 100 µg/m³ increase in PM₁₀ exposure is associated with a decline in life expectancy of 1.5 years at birth and 2.3 years by age five and further show that this negative association is driven by elevated cardiorespiratory mortality rates. In comparison with southern China, northern China³⁵ suffers more from air pollution

³² GREENPEACE, THE HEALTH IMPACT FROM COAL POWER PLANTS IN BEIJING, TIANJIN AND HEBEI (2013), available at <http://www.greenpeace.org/eastasia/publications/reports/climate-energy/2013/health-impacts-coal-power/> (last visited May 10, 2015).

³³ TSP consist of particles with a diameter of 100 micrometres or less and therefore include both PM₁₀ and PM_{2.5}.

³⁴ Avraham Ebenstein, Maoyong Fan, Michael Greenstone, Guojun He, Peng Yin & Maigeng Zhou, *Growth, Pollution, and Life Expectancy: China from 1991-2012*, 105(5) AMERICAN ECONOMIC REVIEW 226 (2015).

³⁵ China can be divided into southern China and northern China based on the line formed by the Huai River and the Qinling Mountain range. For more details, see Douglas Almond, Yuyu Chen, Michael Greenstone & Hongbin Li, *Winter Heating or Clean Air? Unintended Impacts of China’s Huai River Policy*, 99(2) AMERICAN ECONOMIC REVIEW 184 (2009) and Yuyu Chen, Avraham Ebenstein, Michael Greenstone, and Hongbin Li, *Evidence on the Impact of Sustained Exposure to Air Pollution on Life Expectancy from China’s Huai River*

because of China's special winter heating policy that was designed to serve the residents in northern China.³⁶ China's heating systems are primarily coal-based and technically inefficient, which means that incomplete combustion of coal in these boilers leads to severe air pollution. Almond et al. find that annual average TSP concentrations are approximately 300 mg/m³ higher in northern cities and conclude that "Chinese heating policy led to higher pollution concentrations in northern China."³⁷ Chen et al. further show that life expectancies are approximately five and a half years lower in the north because of an increased incidence of cardiorespiratory mortality and that the 500 million residents of northern China during the 1990s therefore experienced a loss of more than 2.5 billion life years because of the winter heating policy.³⁸ Moreover Xiao et al. find that winter heating affects the air quality over a much larger area than reported by Chen et al. The PM_{2.5} levels during heating season increased in over three-quarters of central and eastern China and the population

Policy, 110(32) PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA 12936 (2013).

³⁶ China's heating system was established during the first three decades of the Planned Economy (1950-1980). During this period, heating was considered a basic right and the government provided free heating for homes and offices either directly or through state-owned enterprises. However, due to budgetary limitations, the Chinese government limited the heating entitlement to areas located in northern China. See Almond *et al.*, *supra* note 35 and Chen *et al.*, *supra* note 35.

³⁷ Almond *et al.*, *supra* note 35.

³⁸ Chen *et al.*, *supra* note 35.

affected by the increased air pollution during the heating season exceeded 800 million in 2012.³⁹

Several studies conducted by Greenpeace have found even more evidence regarding the lethal effects of PM_{2.5}. Greenpeace reports that in 2010, the number of premature deaths caused by PM_{2.5} in four major Chinese cities, i.e., Beijing, Shanghai Guangzhou, and Xi'an, measured 2,349, 2,980, 1,715, and 726, respectively.⁴⁰ Greenpeace also shows that PM_{2.5} pollution caused by the 192 coal-fired power plants within the Jingjinji region (Beijing, Tianjin, and Hebei) is responsible for an estimated 9,900 premature deaths within the region in 2011, allocated as 2,000 deaths in Beijing, 1,200 in Tianjin, and 6,700 in Hebei.⁴¹ In addition to the 9,900 premature deaths, the health impact also includes 11,110 cases of asthma, 12,100 cases of chronic bronchitis, 1,010 hospital admissions, and 59,500 outpatient visits. Greenpeace moreover finds that the PM_{2.5} pollution generated by 387 power plants located in Shandong, Shanxi, and Inner Mongolia should be blamed for an estimated 83,500 premature deaths in Mainland China.⁴² Other

³⁹ Qingyang Xiao, Zongwei Ma, Shenshen Li & Yang Liu, *The Impact of Winter Heating on Air Pollution in China*, 10(1) PLOS ONE e0117311 (2015).

⁴⁰ GREENPEACE, DANGEROUS BREATHING: PM_{2.5}, MEASURING THE HUMAN HEALTH AND ECONOMIC IMPACTS ON CHINA'S LARGEST CITIES (2012), available at <http://www.greenpeace.org/eastasia/Global/eastasia/publications/reports/climate-energy/2012/Briefing%20Dangerous%20Breathing%20-%20Greenpeace.pdf> (last visited May 8, 2015).

⁴¹ Greenpeace, *supra* note 32.

⁴² GREENPEACE, THE HEALTH IMPACTS OF COAL POWER PLANTS LOCATED IN SHANDONG, SHANXI AND INNER MONGOLIA (2013), available at

health impacts attributable to coal-fired power plants within these three provinces include 108,400 children suffering from asthma, 140,500 cases of chronic bronchitis, and 2,210 infant deaths.⁴³

Air pollution also means economic costs. Chen and He report that as a result of excessive emissions of PM_{2.5}, PM₁₀, and ozone pollutants, more than 371,000 residents of China lost their lives in 2007;⁴⁴ the corresponding health costs (the sum of medical expenses and wage loss caused by illness or premature deaths) totalled 618.052 billion CNY, approximately 87 per cent of which resulted from excess PM_{2.5} concentrations.⁴⁵ Similarly, Matus *et al.* show that as the result of PM₁₀ and ozone-related pollution, welfare costs (the sum of net wages lost as a result of pollution and losses in leisure time value) in China increased from US\$ 22 billion in 1975 to US\$ 112 billion in 2005.⁴⁶ These authors further estimate that the damage to human health from air pollution in China measured from approximately 6 per cent to 9 per cent of China's GDP between 1995 and 2005.⁴⁷

[http://www.greenpeace.org/eastasia/publications/reports/climate-energy/2013/health impacts coal shandong/](http://www.greenpeace.org/eastasia/publications/reports/climate-energy/2013/health%20impacts%20coal%20shandong/) (last visited May 10, 2015).

⁴³ *Id.*

⁴⁴ Sumei Chen & Lingyun He, *Welfare Loss of China's Air Pollution: How to Make Personal Vehicle Transportation Policy*, 31 CHINA ECONOMIC REVIEW 106 (2014).

⁴⁵ *Id.*

⁴⁶ Kira Matus, Kyung-Min Nam, Noelle E.Selin, Lok N. Lamsal, John M. Reilly & Sergey Paltsev, *Health Damages from Air Pollution in China*, 22 GLOBAL ENVIRONMENTAL CHANGE 55 (2012).

⁴⁷ *Id.*

As the main precursor gases associated with the formation of secondary PM_{2.5}, SO₂ and NO_x are generally understood to have had different evolutionary paths in China. In terms of SO₂ reduction, the Chinese government has made considerable headway since 2006. Whereas total SO₂ emissions increased by 25 per cent from approximately 20 million tons in 2000 to approximately 25 million tons in 2005, the trend began to reverse in 2006: SO₂ emissions declined by 12.6 per cent during the 11th Five-Year Plan period (2006-2010) and were estimated at 21.85 million tons in 2010.⁴⁸ The driving force behind the decline in SO₂ emissions is the wide application of flue-gas desulfurization (FGD) devices in power plants that were installed in response to a new governmental policy.⁴⁹ Consequently, the annually average ambient SO₂ concentrations in 113 key cities decreased from 57 to 42 µg/m³,⁵⁰ and the acid rain problem in Chinese cities (which is believed to be caused mainly by SO₂

⁴⁸ Zhang & Crooks *supra* note 5, at 58.

⁴⁹ An important component of the 11th Five-Year Environmental Plan was the installation of desulfurization facilities on thermal power plants that were built before 2004 and that were violating emission standards, combined with the closure or renovation of thermal power plants that were more than 20 years old or with an installed capacity below 100 megawatts (MW). By the end of 2010, eighty percent of the coal-fired thermal power stations in China had been fitted with sulfur scrubbers (Zhang & Crooks *supra* note 5).

⁵⁰ Shuxiao Wang & Jiming Hao, *Air Quality Management in China: Issues, Challenges, and Options*, 24(1) JOURNAL OF ENVIRONMENTAL SCIENCES 2, 3 (2012).

emissions) was alleviated, as measured by both the frequency and by the average precipitation pH value.⁵¹

By contrast, the growth trend of NO_x emissions is more worrisome. As the consequence of a combination of factors, including the constructions of new power plants, the rapid increase of vehicles in the population, and the lag of NO_x emission control measures, NO_x emissions have increased rapidly – from 11 million tons in 1995 to 26.1 million tons in 2010.⁵² Shi et al. further show that NO_x emissions have exceeded SO₂ emissions since 2009, and the achievements on curbing acid rain through SO₂ reduction are therefore compromised by the increased levels of NO_x emissions.⁵³ As NO_x emissions are one of the most important precursors of ozone, increased levels of NO_x emissions not only contribute to the severity of PM_{2.5} pollution but also lead to high ozone concentrations⁵⁴ in many Chinese areas, including Beijing, the Pearl River Delta, and the Yangtze River Delta.⁵⁵

⁵¹ Z. Lu, D.G. Streets, Q. Zhang, S. Wang, G.R. Carmichael, Y.F. Cheng, C. Wei, M. Chin, T. Diehl & Q. Tan, *Sulfur Dioxide Emissions in China and Sulfur Trends in East Asia Since 2000*, 10(13) *ATMOSPHERIC CHEMISTRY AND PHYSICS* 6311 (2010).

⁵² B. Zhao, S.X. Wang, H. Liu, J.Y. Xu, K. Fu, Z. Klimont, J.M. Hao, K.B. He, J. Cofala & M. Amann, *NO_x Emissions in China: Historical Trends and Future Perspectives*, 13 (19) *ATMOSPHERIC CHEMISTRY AND PHYSICS* 9869 (2013).

⁵³ Yun Shi, Yin-Feng Xia, Bi-Hong Lu, Nan Liu, Lei Zhang, Su-Jing Li, & Wei Li, *Emission Inventory and Trends of NO_x for China, 2000-2020*, 15(6) *JOURNAL OF ZHEJIANG UNIVERSITY-SCIENCE A (APPLIED PHYSICS & ENGINEERING)* 454 (2014).

⁵⁴ For the health effects associated with ground-level ozone, see *HEALTH EFFECTS OF OZONE*, available at <http://www.epa.gov/groundlevelozone/health.html> (last visited July 8, 2015). For the seriousness of health problems caused by ozone pollution in China, see *OZONE ADDS TO DANGERS OF POLLUTANTS*, available at

C. Heavy Pollution of Ground and Surface Waters

In comparison with air pollution, water pollution in China is even more challenging. In Smith's words, "if the air is bad, the water is far worse."⁵⁶ For example, according to one 2012 report, "up to forty percent of China's rivers were seriously polluted" and "twenty percent were so polluted their water quality was rated too toxic even to come into contact with."⁵⁷ It is estimated that eighty percent of China's rivers have no fish remaining in them.⁵⁸ The 2013 State of the Environment Report Review issued by the MEP shows that although the overall water quality in the river basins has been improving since 2009, the water quality of certain main rivers – including the Yellow River, the Songhua River, and the Hai River – has further deteriorated.⁵⁹ The same report also shows that 11.5 percent of Chinese lakes were heavily polluted, 1.6 percent were moderately polluted, and 26.2 percent were lightly polluted, as measured in 2013.

http://usa.chinadaily.com.cn/china/2013-08/01/content_16859235.htm (last visited July 8, 2015).

⁵⁵ Wang & Hao, *supra* note 50.

⁵⁶ Richard Smith, *China's Communist-Capitalist Ecological Apocalypse*, 71 REAL-WORLD ECONOMICS REVIEW 19 (2015).

⁵⁷ CHINA'S WATER POLLUTION CRISIS, *available at* <http://thediplomat.com/2013/01/forget-air-pollution-chinas-has-a-water-problem/> (last visited July 11, 2015).

⁵⁸ So Eric Orts, *Environmental Law with Chinese Characteristics*, 11 WM. & MARY BILL RTS. J. 545 (2003).

⁵⁹ 2013 STATE OF ENVIRONMENT REPORT REVIEW, *available at* <http://chinawaterrisk.org/resources/analysis-reviews/2013-state-of-environment-report-review/> (last visited July 11, 2015).

As a consequence of pollution, nearly half of 634 Chinese rivers, lakes and reservoirs tested in 2011 failed to meet drinking standards during all or part of the year.⁶⁰

The quality of groundwater in China is also poor. It is estimated that the supply of drinking water for seventy percent of the total population – and more than ninety-five percent of the rural population – comes from groundwater.⁶¹ Unfortunately, ninety percent of China's shallow groundwater is polluted, and an alarming thirty-seven percent is so foul that it cannot even be treated for use as drinking water.⁶² Even the quality of seawater off the coast of China is poor. Seawater monitoring in 2007 showed that twenty-five percent of

⁶⁰ Tao Tao & Kunlun Xin, *Public health: A Sustainable Plan for China's Drinking Water*, 511 *NATURE* 527 (2014).

⁶¹ Wening Lu, Shaohua Xie, Wenhan Zhou, Shaoui Zhang & Ailin Liu, *Water Pollution and Health Impact in China: A Mini Review*, 2 *OPEN ENVIRONMENTAL SCIENCES* 1 (2008).

⁶² A report issued by the Ministry of Land and Resources in 2014 shows that among 4,778 spots in 203 cities monitored by the Ministry of Land and Resources, underground water quality is ranked "relatively poor" in 43.9 percent and "very poor" in another 15.7 percent. According to China's underground water standards, water of relatively poor quality can be used for drinking only after proper treatment. Water of very poor quality cannot be used as a source of drinking water. The report further shows that on a year-by-year basis, water quality has worsened in 754 monitored spots and has improved in only 647 areas. See CHINA'S UNDERGROUND WATER QUALITY WORSENS: REPORT, available at http://news.xinhuanet.com/english/china/2014-04/22/c_126421022.htm (last visited July 11, 2015). A report issued by the MEP in 2015 paints a similar picture. See MEP RELEASES THE 2014 REPORT ON THE STATE OF ENVIRONMENT IN CHINA, available at http://english.mep.gov.cn/News_service/news_release/201506/t20150612_303436.htm?COLLCC=3256922435& (last visited July 11, 2015). See also Jane Qiu, *China to Spend Billions Cleaning Up Groundwater*, 334 *SCIENCE* 745 (2011).

all monitoring stations were Class IV⁶³ or worse, forty-nine percent were Class II or III, and twenty-six percent were Class I. The total area that was worse than Class I and was thus unsuitable for marine fisheries or marine natural reserves totalled 145,000 km², which is equivalent to an area extending seaward for 10 kilometres along the full length of China's coastline from the Republic of Korea to Vietnam.⁶⁴ According to the "2014 Report on the State of the Environment in China" issued by the MEP, the ratio of seawater reaching Class I standards was 28.6 percent in 2014, representing only a slight increase of 2.6 percentage points after seven years.⁶⁵

Water pollution in turn leads to serious health problems. For example, Ebenstein finds that a deterioration of water quality by a single grade (on a six-grade scale)⁶⁶ increases the death rate resulting

⁶³ The water quality classification system for seawater (GB3097-1997) defines four seawater quality classes as follows: Class I for marine fishery and marine natural reserves; Class II for aquaculture and human contact; Class III for areas of industrial use and seashore scenic and tourist activities (i.e., without direct contact); and Class IV for coastal harbour and ocean development. See SEA WATER QUALITY STANDARD, available at http://english.sepa.gov.cn/standards_reports/standards/water_environment/quality_standard/200710/t20071024_111791.htm?COLLCC=3256941022& (last visited July 11, 2015).

⁶⁴ Zhang & Crooks, *supra* note 5, at 44.

⁶⁵ MEP, THE 2014 REPORT ON THE STATE OF ENVIRONMENT IN CHINA, available at http://english.mep.gov.cn/News_service/news_release/201506/t20150612_303436.htm?COLLCC=3256922435& (last visited July 11, 2015). The report further shows that the part of the entire sea area that failed the Grade IV seawater quality standard amounted to 52,280 km² in the spring, 41,140 km² in the summer, and 57,360 km² in the autumn.

⁶⁶ The water grade is measured on a six-point scale, as established by the Chinese government based on the purported use: drinkable water (grades I and II), undrinkable but suitable for human contact (grade III), appropriate

from digestive cancer (including oesophageal, stomach, and liver cancer) by 9.7 percent.⁶⁷ Because digestive cancers are responsible for nearly one million (980,000) deaths in China per annum, almost 93,000 deaths could be averted annually by improving China's water by one grade. Digestive cancer is not the only health problem associated with water pollution. Other health impacts of water pollution, such as colorectal cancer, mental health problems, oxidative damage, DNA migration and cytotoxicity, have also been confirmed in recent studies.⁶⁸ Water pollution health-related damage is particularly severe in rural areas. Liu reports that there are 459 cancer villages – villages in which cancer rates are significantly higher than normal.⁶⁹ Most such villages are clustered near rivers with the lowest grade of pollution on the government's six-grade scale. Some of these villages have cancer rates that are thirty times higher than national averages.

for general industrial water supply and recreational waters in which there is no direct human contact (grade IV), appropriate only for agricultural water supply and general landscape requirements (grade V), and essentially useless (grade VI). See Avraham Ebenstein, *The Consequences of Industrialization: Evidence from Water Pollution and Digestive Cancers in China*, 94(1) REVIEW OF ECONOMICS AND STATISTICS 186 (2012).

⁶⁷ *Id.*

⁶⁸ Lu *et al.*, *supra* note 61.

⁶⁹ Lee Liu, *Made in China: Cancer Villages*, 52(2) ENVIRONMENT: SCIENCE AND POLICY FOR SUSTAINABLE DEVELOPMENT 8 (2010).

D. The End of the Chinese Miracle?

Air pollution and water pollution are just part of the big picture. China still suffers from other types of environmental degradation, such as soil pollution,⁷⁰ desertification, loss in biodiversity and local climatic change.⁷¹ It may therefore not be an exaggeration to claim that the current growth model “is ravaging China’s environment, ruining the health of Chinese people, rendering more and more of the country unliveable, driving the country to ecological collapse and threatening to bring the whole planet down with it.”⁷² Powerful and resolute actions are urgently required to rehabilitate China’s environment before the situation grows out of control. The Chinese government seems to have moved in the right direction, although its efforts thus far have been insufficient, inconsistent, and therefore largely ineffective. Ten years have passed since Pan Yue, the vice

⁷⁰ See the recent study by Lee and others providing a meta study on data from seventy-two Chinese mining areas and finding that “the soil surrounding the mining areas are seriously polluted by heavy metals emitted from mining activities. Moreover, soil pollution by heavy metals continues to pose high carcinogenic and non-carcinogenic risks to the public, especially to children and those living in the most severely polluted regions” (Zhiyuan Lee, Zongwei Ma, Tsering Jan van der Kuijk, Zengwei Yuan, Lei Huang, *A Review of Soil Heavy Metal Pollution from Mines in China: Pollution and Health Risk Assessment*, 468-469 *SCIENCE OF THE TOTAL ENVIRONMENT* 843 (2014)). And see also Dustin D. Drenguis, *Reap What You Sow: Soil Pollution Remediation Reform in China*, 23(1) *PACIFIC RIM LAW & POLICY JOURNAL* 171 (2014)).

⁷¹ Economy, *supra* note 3; Zhang & Crooks, *supra* note 5 and *Pollution and Health in China: Confronting the Human Crisis*, *CHINADIALOGUE* (2014, special issue), available at https://s3.amazonaws.com/cd.live/uploads/content/file_en/7289/chinadialogue_health_journal.pdf (last visited July 11, 2015).

⁷² Smith, *supra* note 56, at 20.

minister of SEPA, warned that the Chinese miracle “will end soon because the environment can no longer keep pace,”⁷³ yet the state of China’s environment seems to have worsened. Why does addressing China’s environmental degradation seem to be an insurmountable challenge? In the next section, we will attempt to answer this question by exploring the role played by China’s environmental governance institutions, such as regulatory agencies and the courts.

III. Causes of Environmental Disaster in China: Growth-driven or Governance Failure?

After having described the alarming state of the environment in China, the question obviously arises whether it is merely economic growth that is the cause of this environmental disaster or whether it is rather the lack of adequate institutions and instruments that contributes to the disastrous environmental quality in China. Economic literature has held that economic growth may lead to more pollution, but that on the condition that adequate institutions accompany this growth, higher income levels should not necessarily lead to a worsening of environmental quality (A). However, the problem is that environmental legislation in China is rather general

⁷³ See SPIEGEL, Interview with China’s Deputy Minister of the Environment: THE CHINESE MIRACLE WILL END SOON, available at <http://www.spiegel.de/international/spiegel/spiegel-interview-with-china-s-deputy-minister-of-the-environment-the-chinese-miracle-will-end-soon-a-345694.html> (last visited July 13, 2015).

and vague (B) and that an adequate enforcement is equally lacking. Private enforcement is difficult since access to justice for pollution victims is restricted and the court system largely unreliable (C). Compared to private enforcement the regulatory agencies, tasked with public enforcement, do relatively better (at least compared to the courts), but also China's environmental regulatory agencies still suffer from many weaknesses (D). We therefore conclude that it is mainly a failure of effective governance which is the main source of China's environmental tragedy (E).

A. Economic Growth and Pollution

Environmental pollution is certainly and primarily a result of China's extraordinary economic growth, rapid industrialization, and large-scale urbanization. Environmental pollution seems to be an inevitable by-product of economic growth, at least for the early stages of such growth, as argued by the Environmental Kuznets Curve (EKC) hypothesis.⁷⁴ Using Chinese provincial data over 1985-2005, Song, Zheng, and Tong indeed find that there is a long-run co-integrating

⁷⁴ The EKC hypothesis suggests that pollution follows an inverted-U-shape relationship with income growth: when income is at a relatively low level, pollution increases with economic growth, but this correlation pattern becomes inversed after the income level reaches a certain threshold, beyond which the pollution trend will become negative as the economy continues to grow. For an elaboration of this EKC hypothesis see Gene M. Grossman & Alan B. Krueger, *Environmental Impacts of a North American Free Trade Agreement* (NBER Working Paper No. 3914, 1991); Gene M. Grossman & Alan B. Krueger, *Economic Growth and the Environment*, 110(2) *QUARTERLY JOURNAL OF ECONOMICS* 353 (1995) and for a summary of the literature see Michael G. Faure, *Does Environmental Law Matter?*, in *DOES LAW MATTER? ON LAW AND ECONOMIC GROWTH* 385 (Michael G. Faure & Jan Smits eds. 2011).

relationship between per capita emissions of three pollutants (waste water emission, waste gas emission, and solid waste generated) and per capita GDP.⁷⁵ Chong, Guan, and Guthrie show that the economic growth (measured by gross regional production per capita) has been one of the primary factors contributing to the changes in carbon emissions in China's megacities, such as Beijing, Shanghai, and Tianjin.⁷⁶ Yang, He, and Chen reveal that increased income can safely predict increased emissions of CO₂ and industrial gas in most cases.⁷⁷

More specifically, industrial production, power generation, and transportation have been found to be the most important sources of environmental pollution – particularly air pollution.⁷⁸ One PM_{2.5} emissions inventory study for China indicates that, on average, industrial activity is responsible for 68.6 percent of total PM_{2.5} emissions, 4.5 percent is from transportation, and 20.4 percent is from

⁷⁵ Tao Song, Tingguo Zheng & Lianjun Tong, *An Empirical Test of the Environmental Kuznets Curve in China: A Panel Cointegration Approach*, 19 CHINA ECONOMIC REVIEW 381 (2008). See for similar results Junyi Shen & Yoshizo Hashimoto, *Environmental Kuznets Curve on County Level: Evidence from China* (Osaka School of International Public Policy, Discussion Papers in Economics and Business, Paper No. 04-09, 2004).

⁷⁶ Wang Hei Bruce Chong, Dabo Guan & Peter Guthrie, *Comparative Analysis of Carbonization Drivers in China's Megacities*, 16(4) JOURNAL OF INDUSTRIAL ECOLOGY 564 (2012).

⁷⁷ Haisheng Yang, Jie He & Shaoling Chen, *The Fragility of the Environmental Kuznets Curve: Revisiting the Hypothesis with Chinese Data via an 'Extreme Bound Analysis'*, 109 ECOLOGICAL ECONOMICS 41 (2015).

⁷⁸ For the sources of water pollution, see Dabo Guan, Klaus Hubacek, Martin Tillotson, Hongyan Zhao, Weidong Liu, Zhu Liu & Sai Liang, *Lifting China's Water Spell*, 48(19) ENVIRONMENTAL SCIENCE AND TECHNOLOGY 11048 (2014). These authors show that the manufacturing sector dominates contributions to water pollution.

the residential sector (more particularly resulting from construction works).⁷⁹ In the case of SO₂ emission, 30.5 percent result from power generation,⁸⁰ 63.2 percent from the industrial sector, and five percent from the residential sector. Zhao et al. shows that the power production, industrial, and transportation sectors accounted for 81.4-87.9 percent of total NO_x emissions during the 1995-2010 period and that the industrial sector exceeded the power production sector to become the largest source of NO_x emissions in 2009.⁸¹ A report issued by Greenpeace on PM_{2.5} sources in the Jingjinji area also confirms the important roles played by these three factors in PM_{2.5} generation.⁸² More pollution is therefore generated as more factories are established, with more coal being burned for electricity production, and with increasing production, sales, and use of private cars.

⁷⁹ Guoliang Cao, Xiaoye Zhang, Sunling Gong, Xinqin An & Yaqiang Wang, *Emission Inventories of Primary Particles and Pollutant Gases for China*, 56(8) CHINESE SCIENCE BULLETIN 781 (2011).

⁸⁰ See Lu *et al.*, *supra* note 51, who argue that power plants are the main sources of SO₂, contributing even more than fifty percent of total emissions.

⁸¹ Zhao *et al.*, *supra* note 52.

⁸² The report shows that coal-fired power generation is the largest single source for industrial PM_{2.5} pollution in Jingjinji, with coal-fired power stations emitting nine percent of primary PM_{2.5}, sixty-nine percent of SO₂ and forty-seven percent of NO_x. Industrial production of steel, cement and brick are other major sources of PM_{2.5} emissions that account for forty-nine percent of primary PM_{2.5}, twelve percent of SO₂ and seventeen percent of NO_x in that region. The contribution by the transport sector to PM_{2.5} pollution appears more substantial in Beijing than in Tianjin and Hebei. That sector accounts for forty-five percent of total NO_x emissions in Beijing. See Greenpeace, *supra* note 29.

However, economic growth is neither the only nor the most important driving force behind China's environmental degradation. Pollution can be abated by technological innovations, by adjustments in pricing of resources and environmental services, and (more importantly) by legal and policy interventions. Whether and to what extent these strategies will be adopted, however, depends on certain institutional factors, such as how quickly the legislature will react to public concerns, how impartial the courts are in hearing cases, and how effective regulatory agencies are at enforcing regulations. It has been well-described in the literature that economic growth should not necessarily be accompanied by environmental degradation under condition that appropriate institutions⁸³ and instruments⁸⁴ are designed to internalize externalities in an appropriate manner. In other words, environmental degradation is more likely a consequence of governance failure (or institutional failure) than an outcome of market failure. It is only when appropriate institutions and instruments to remedy the market failure (resulting from the negative environmental externality) are not designed that environmental degradation will persist. Indeed, evidence shows that there are dramatic differences in environmental performance among similarly

⁸³ See on the smart design of those institutions further in MICHAEL G. FAURE & GÖRAN SKOGH, *THE ECONOMIC ANALYSIS OF ENVIRONMENTAL POLICY AND LAW: AN INTRODUCTION* (2003).

⁸⁴ See on the design of smart instruments for environmental policy in NEIL GUNNINGHAM & PETER GRABOWSKY, *SMART REGULATION. DESIGNING ENVIRONMENTAL POLICY* (1998).

situated countries in terms of economic performance, which suggests that environmental results are not merely a function of economic development but also a consequence of policy choices.⁸⁵ Esty and Porter demonstrated empirically that economic development and environmental protection go hand in hand with the improvement of a country's institutions, and more particularly the environmental regulatory regime⁸⁶ but the reverse is also the case: countries with weak governance structures will experience lower environmental quality.⁸⁷ Governance structures (institutions and instruments) are hence important to prevent environmental degradation.⁸⁸

B. Vague Legislation, Failing Bureaucracy

Studies have demonstrated that China is not an exception to this rule,⁸⁹ and we therefore must look beyond the economic factors and

⁸⁵ Daniel C. Esty & Michael E. Porter, *National Environmental Performance: An Empirical Analysis of Policy Results and Determinants*, 10(4) ENVIRONMENT AND DEVELOPMENT ECONOMICS 391 (2005).

⁸⁶ *Id.* at 391, 393.

⁸⁷ *Id.* at 424-425.

⁸⁸ For a summary of the empirical evidence in that respect see Michael G. Faure, *Effectiveness of Environmental Law: What Does the Evidence Tell us?*, 36(2) WILLIAM & MARY ENVIRONMENTAL LAW AND POLICY REVIEW 293 (2012).

⁸⁹ See, for example, Yanrui Wu, *Regional Environmental Performance and Its Determinants in China*, 18(3) CHINA & WORLD ECONOMY 73 (2010), who shows that regional environmental efficiency is affected by both the stringency of regulatory enforcement and the awareness of environmental protection among the broader communities, and Jie He & Hua Wang, *Economic Structure, Development Policy and Environmental Quality: An Empirical Analysis of Environmental Kuznets Curves with Chinese Municipal Data*, 76 ECOLOGICAL ECONOMICS 49 (2012), who find that reinforcing environmental

pay more attention to the role of specific institutions,⁹⁰ such as the legislative process, the judicial system and the regulatory regime, in shaping China's environmental landscape. A prominent feature of China's legislation is that most legal rules remain poorly drafted and are characterized by excessive generality and vagueness. It has been argued that laws and regulations in China are intentionally drafted in broad terms to allow for sufficient flexibility in implementation to meet diversified local conditions in a quickly changing environment.⁹¹ For this reason, certain drafting techniques, such as the use of general principles, undefined terms, broadly worded discretion, omissions, and general catch-all phrases, are frequently used in Chinese legislation to create a wide scope for administrative discretion in interpretation. Environmental legislation in China follows this style. For example, Beyer concludes that the language of China's environmental laws is "highly general, often vague and aspirational."⁹² In addition, this author finds that "actions are encouraged but rarely

regulation reduces pollution concentrations (but the impact can vary at different income levels).

⁹⁰ We mainly focus on environmental institutions in this article and therefore pay little attention to the effects of other policies that might affect the environment, such as energy policies, pricing of environmental resources and services, carbon tax and carbon emissions trading. For a detailed discussion on how environmental policies can be used to address China's environmental problems, see OECD, *OECD ECONOMIC SURVEYS: CHINA 2013* (2013).

⁹¹ Stanley Lubman, *Bird in a Cage: Chinese Law Reform After Twenty Years*, 20 *NORTHWESTERN JOURNAL OF INTERNATIONAL LAW AND BUSINESS* 383 (2000).

⁹² Stefanie Beyer, *Environmental Law and Policy in the People's Republic of China*, 5(1) *CHINESE JOURNAL OF INTERNATIONAL LAW* 185, 205, 206 (2006).

required and even where concrete duties are stated, only little guidance is provided on procedures and specific goals"; finally, there is a "lack of definitions in Chinese environmental laws," and there is "virtually no environmental case law to guide the interpretation of undefined terms." Similarly, Qiu and Li claim that China's environmental legislation "tended to be vague, granted too much flexibility, lacked feasibility, and potentially resulted in overlapping authority."⁹³ In the words of Briggs, "the objective inability of the central government to create and implement practical and enforceable environmental laws is therefore the key obstacle to Chinese pollution victims seeking a policy solution from Beijing."⁹⁴ And recently Drenguis held that "China's environmental remediation laws are ambiguous, poorly enforced, and often entirely unobserved."⁹⁵

For example, Article 25 of China's revised Environmental Protection Law (which came into effect on 1 January, 2015)⁹⁶ states the following:

⁹³ Xin Qiu & Honglin Li, *China's Environmental Super Ministry Reform: Background, Challenges, and the Future*, 39(2) ENVIRONMENTAL LAW REPORTER 10152, 10161 (2009).

⁹⁴ Adam Briggs, *China's Pollution Victims: Still Seeking a dependable remedy*, 18 THE GEORGETOWN INTERNATIONAL ENVIRONMENTAL LAW REVIEW 305, 314 (2006).

⁹⁵ Drenguis, *supra* note 70, at 171.

⁹⁶ For a Chinese version of the law, see http://www.npc.gov.cn/npc/xinwen/2014-04/25/content_1861279.htm. For an English version, see <https://www.chinadialogue.net/Environmental-Protection-Law-2014-eversion.pdf>. See for an analysis of the power politics in the revision of China's environmental protection law Lei Zhang, Guizhen He, Arthur Mol and Xiao Zhu, *Power Politics in the Revision of China's Environmental Protection Law*, 22(6) ENVIRONMENTAL POLITICS 1029 (2013).

“where the discharge of pollutants by enterprises, public institutions, and other businesses in violation of laws and regulations has caused or may cause serious pollution, the environmental protection administrative departments of the people’s governments at or above the county level and other departments with environmental protection supervision and administration functions may seize or impound the facilities or equipment causing the discharge of pollutants.” However, this provision is too vague to actually identify responsible agents and define responsibilities. Who are the “other departments with environmental protection supervision and administration functions”? What type of situation can be defined as “may cause serious pollution,” and how can “serious pollution” be differentiated from minor pollution? What if the responsible departments ignore their duties, or what if enterprises refuse to follow the orders from these departments or sue the departments for misuse of the authority granted by Article 25? Without clear answers to these questions, any department can interpret the law in ways favourable to themselves, which is thus likely to cause controversies in implementation. Business owners and investors will also be perplexed by such provisions because they will not know what is actually prohibited and what can be called to account through legal measures. In other cases there is evidence that the way in which particular instruments are designed shows flaws. For example pollution charges were introduced at the end of the last century on “air emissions, waste

water discharges, noise, solid waste and radioactive waste.”⁹⁷ The charge rates were in practice not indexed to inflation as a result of which the real value eroded over time, resulting of course in “weak incentive(s) for further pollution reduction.”⁹⁸ Efforts to raise the charge met, not surprisingly, “strong opposition from industry.”⁹⁹

Bureaucratic politics – i.e. conflicts between the environmental ministry and non-environmental ministries and local governments who are more concerned with economic growth, industrial development, and increasing fiscal revenue than with environmental quality – also contribute to China’s weak environmental legislation. Alford and Liebman report that when China attempted to revise its Air Pollution Prevention and Control Law in the mid-1990s, strong opposition from politically powerful actors, such as the State Planning Commission and provincial governments, nullified the efforts to improve China’s air quality by strengthening environmental regulation.¹⁰⁰ Zhu and Ru also indicate that passage of the 2003 Environmental Impact Assessment Law took five years because of

⁹⁷ David O’Connor, *Applying Economic Instruments in Developing Countries: From Theory to Implementation*, 4 ENV’LL & DEV. ECON. 96 (1989).

⁹⁸ *Id.* at 96-97.

⁹⁹ *Id.* at 97.

¹⁰⁰ William P. Alford & Benjamin L. Liebman, *Clean Air, Clear Processes? The Struggle over Air Pollution Law in the People’s Republic of China*, 52(3) HASTINGS LAW JOURNAL 703 (2001).

resistance from other powerful interests within the government.¹⁰¹ Significant compromises were made to help with the passage of the law, and the role of environmental assessment in addressing environmental pollution was therefore greatly undermined.

C. Limited Access to Justice

In addition to understanding the laws on the books, we must also know how the law is implemented in action. No law, no matter how elaborate, can affect behaviour without effective enforcement. In general, legal enforcement can be divided into two categories: private enforcement that is initiated by private litigation and public enforcement that relies on public authorities such as the SEC or tax collection agents.¹⁰² We therefore must examine the enforcement of environmental laws and regulations in China in terms of private versus public enforcement. In other words, we will discuss the role of courts versus that of regulatory agencies in environmental protection. Let us first review the possibilities of private enforcement in China.

Courts in China are renowned for their lack of independence from political interference.¹⁰³ The most powerful influence comes

¹⁰¹ Da Zhu, & Jiang Ru, *Strategic Environmental Assessment in China: Motivations, Politics, and Effectiveness*, 88 JOURNAL OF ENVIRONMENTAL MANAGEMENT 615 (2008).

¹⁰² STEVEN M. SHAVELL, FOUNDATIONS OF ECONOMIC ANALYSIS OF LAW (2004).

¹⁰³ See generally Rachel E. Stern, *On the Frontlines: Making Decisions in Chinese Civil Environmental Law Suits*, 32 LAW & POL'Y, 79 (2010) and see

from local governments, which both select and pay the judges. This relationship pressures the judiciary to favour the local authorities in litigation that involves foreigners and parties from other parts of China, and the effectiveness of China's judiciary is severely impaired by such local protectionism.¹⁰⁴ Moreover, courts are reluctant to accept cases brought by ordinary citizens against the government; when faced with difficult or sensitive cases, courts may even close their doors, refusing to accept certain categories of cases,¹⁰⁵ as the Guangxi High People's Court did in 2004.¹⁰⁶ In addition to their weak position vis-à-vis the administrative bodies (not to mention against the Party itself) in the hierarchy of the party-state, courts in China also suffer from other weaknesses, such as a broad shortage of judges who are professionally competent, honest, and impartial.¹⁰⁷ Such a

Yuhong Zhao, *Environmental Dispute Resolution in China*, 16 J. ENVTL. L. 157, 162-64 (2004).

¹⁰⁴ Donald Clarke, *Power and Politics in the Chinese Court System: The Enforcement of Civil Judgments*, 10(1) COLUMBIA JOURNAL OF ASIAN LAW 1 (1996) and Pei, *supra* note 2.

¹⁰⁵ In practice cases may be refused by the Court for a number of reasons, in some cases simply because the case is politically sensitive. See Michael Faure and Liu Jing, *Compensation for Environmental Damage in China: Theory and Practice*, 31Pace ENVIRONMENTAL LAW REVIEW 226, 251-252 (2014).

¹⁰⁶ Veron Mei-Ying Hung, *China's WTO Commitment on Independent Judicial Review: Impact on Legal and Political Reform*, 52 AMERICAN JOURNAL OF COMPARATIVE LAW 52, 77 (2004) and Benjamin L. Liebman, *China's Courts: Restricted Reform*, 21(1) COLUMBIA JOURNAL OF ASIAN LAW 1 (2007).

¹⁰⁷ Prior to the 1995 Judges law, there were no requirements to be a judge except that one be a cadre. Since 2002, however, all new judges in China have been required to have earned a bachelor degree and pass the national unified judicial exam. In 2005, for the first time, more than fifty percent of Chinese judges had earned university degrees, which marks a sharp increase from 6.9

weak and corrupt judicial system can hardly be relied on by ordinary citizens to protect property rights or enforce contracts, particular when the infringing party is the government.¹⁰⁸

percent in 1995 (Liebman, *supra* note 106). The historically low level of judicial competence has resulted in many incorrectly decided cases. In 1999, the court system supervised and reviewed 96,739 cases and corrected the judgment in 21,862 of those cases (RANDALL PEERENBOOM, *CHINA'S LONG MARCH TOWARD RULE OF LAW* (2002)).

Evidence also shows that the judiciary has fallen prey to corruption: the annual statistics of judicial officials being prosecuted for charges of violating state laws and Party disciplines have steadily risen since 2003 (Titus C. Chen, *Recalibrating the Measure of Justice: Beijing's Effort to Recentralize the Judiciary and Its Mixed Results*, 21(75) *JOURNAL OF CONTEMPORARY CHINA* 499 (2012)). The investigations of Huang Songyou and Xi Xiaoming, two former vice presidents of the Supreme People's Court, reveal that there is corruption even at the highest level of the judicial system. For HUANG SONGYOU, see *CHINESE SUPREME COURT JUDGE GETS LIFE TERM*, available at http://news.xinhuanet.com/english2010/indepth/2010-01/20/c_13143957.htm (last visited July 28, 2015). For XI XIAOMING, see *CHINA'S ANTI-CORRUPTION CAMPAIGN HITS TOP JUDGE*, available at <http://thediplomat.com/2015/07/chinas-anti-corruption-campaign-hits-top-judge/> (last visited July 28, 2015).

¹⁰⁸ Wang reports that most firms in his field research include a stipulation when they sign contracts indicating that they will seek mediation rather than litigation in the event of a dispute (Yuhua Wang, *Court Funding and Judicial Corruption in China*, 69 *CHINA JOURNAL* 43 (2013)). However, this finding does not indicate that courts are completely irrelevant in China's social transformation. There has been a dramatic increase in commercial, civil, and administrative lawsuits since the early 1980s, which may be considered evidence that courts are performing a more important role in resolving various conflicts in Chinese society (Donald Clarke, Peter Murrell, & Susan Whiting, *The Role of Law in China's Economic Development*, in *CHINA'S GREAT ECONOMIC TRANSFORMATION* (Loren Brandt & Thomas G. Rawski eds. 2008)). Although far from being completely effective, courts in China do enforce a certain proportion of court judgments and arbitral awards, as demonstrated by some recent empirical studies (Peerenboom, *supra* note 107 and Xin He, *Enforcing Commercial Judgments in the Pearl River Delta of China*, 57 *AMERICAN JOURNAL OF COMPARATIVE LAW* 419 (2009)). Finally, politically connected firms prefer to use courts in case of a dispute (Yuen Yuen Ang & Nan jia, *Perverse Complementarity: Political Connections and the Use of Courts among Private Firms in China*, 76(2) *JOURNAL OF POLITICS* 318 (2014)). In general, it can be argued that courts play a more important role in more developed areas, such as Beijing, the Yangzi River Delta, and the Pearl River Delta, for more politically connected firms, and when the economic and political interests of the local governments are not involved.

Therefore, it is unsurprising to find that the courts play only a marginal role in China's environmental governance. In response to severe environmental degradation, increasing environmental disputes, and the need for more professional trials, China had established over 130 environmental courts¹⁰⁹ in fifteen provinces by 2013.¹¹⁰ Even the Supreme People's Court established a tribunal for environment cases in 2014 to better implement the revised Environmental Protection Law.¹¹¹ However, it seems that few or no significant improvements have resulted from such institutional innovations, as most environmental disputes continue to be addressed through alternative mechanisms, such as the letters and visits system,¹¹² rather than

¹⁰⁹ The environmental courts take various judicial forms: standalone environmental tribunals (*renmin fating*), environmental trial divisions (*shenpan ting*), designated environmental panels (*heyi ting*) and environmental circuit courts (*xunhui fating*). For a more detailed introduction to these judicial forms, see Minchun Zhang & Bao Zhang, *Specialized Environmental Courts in China: Status Quo, Challenges, and Responses*, 30(4) *JOURNAL OF ENERGY & NATURAL RESOURCES LAW* 361 (2012).

¹¹⁰ Rachel Stern, *The Political Logic of China's New Environmental Courts*, 72 *CHINA JOURNAL* 53 (2014).

¹¹¹ See CHINA'S SUPREME COURT SETS UP ENVIRONMENT CASES DIVISION, available at http://news.xinhuanet.com/english/china/2014-07/03/c_133458061.htm (last visited July 28, 2015).

¹¹² According to the Regulations on Letters and Visits, "letters and visits" means that citizens, legal persons and/or other organizations can provide information, make comments or suggestions and/or lodge complaints regarding the people's governments at all levels and the relevant departments of the people's governments at or above the county level through correspondence, E-mails, faxes, phone calls, visits, etc., and these are to be addressed by the relevant administrative departments according to law. See REGULATIONS ON LETTERS AND VISITS, available at http://www.gjxfj.gov.cn/2006-03/07/content_6399309.htm (last visited July 30, 2015).

through the judicial system.¹¹³ Some environmental courts had to survive such a “case-hungry” situation by hearing completely irrelevant cases, whereas other environmental courts were eliminated because they had not handled any cases in over more than ten years.¹¹⁴

Pollution victims are discouraged from seeking help from the courts for several reasons.¹¹⁵ First, the costs of suing the perpetrators are considerable. The plaintiffs must pay not only front-loaded case acceptance fees but also attorney fees, fees for soliciting evidence, etc.¹¹⁶ In addition, these fees are typically not reimbursed even if they win the cases. The plaintiffs therefore must carefully weigh the expected value of court-brokered justice against the real costs of initiating and following through with the legal procedure. Second,

¹¹³ Zhang and Zhang report that over the 2000-2006 period, there were 309,800 (2000), 447,731 (2001), 525,766 (2002), 611,016 (2003), 682,266 (2004), 696,482 (2005) and 687,409 (2006) environmental disputes reported to environmental regulatory agencies through letters and visits. By contrast, over the 2004-2010 period, there were only 10,482 (2004), 8,941 (2005), 11,214 (2006), 12,844 (2007), 13,314 (2008), 15,197 (2009), and 12, 018 (2010) environmental cases that entered the courts. These authors conclude that only approximately one percent of environmental disputes have entered the courts (Zhang & Zhang, *supra* note 109).

¹¹⁴ Zhang & Zhang, *supra* note 109.

¹¹⁵ Rachel Stern, *From Dispute to Decision: Suing Polluters in China*, 206 *China Quarterly* 294 (2011); Wenxuan Yu, *zhongguo huanjing fating mianlin de tiaozhan jiqi yingdui (The Challenges Faced by China's Environmental Courts and Their Countermeasures)*, 7 EU-CHINA ENVIRONMENTAL GOVERNANCE PROGRAM RESEARCH REPORTS (2013), available at <http://www.ecegp.com/chinese/DataBase/UploadFile/20150605145006759.pdf> (last visited July 30, 2015). Faure & Liu, *supra* note 105, at 251-255.

¹¹⁶ See on this and other problems for victims in China which create barriers to access to justice Joseph McMullin, *Do Chinese Environmental Laws Work? A Study of Litigation as a Response to the Problem of Fishery Pollution in China*, 26 *PACIFIC BASIN LAW JOURNAL* 142 (2009).

environmental litigation not only is time and energy-consuming but also can be technically intractable.¹⁷⁷ It is difficult for victims to demonstrate that there is pollution, either because polluting factories adopt strategies to avoid inspection – such as polluting only at night, building secret underground discharge pipes, and storing wastewater in pools that flood during rainstorms – or because local environmental regulatory agencies that are in charge of monitoring pollution and collecting relevant information and that are believed by the courts to be the most reliable sources of evidence often refuse to cooperate when requested by victims.¹⁷⁸ It may be difficult to prove that there is a causal relationship between pollution and the economic losses suffered by victims because certain damages, e.g., reductions in fish populations, might (also) be caused by other factors unrelated to pollution, such as overfishing or overcrowding.¹⁷⁹ In some cases industry pays of pollution victims with monthly symbolic amounts of compensation to which the victims become addicted as a result of

¹⁷⁷ See Benjamin van Rooij, *The People vs Pollution: Understanding Citizen Action Against Pollution in China*, 19 J. CONTEMP. CHINA 55, 57 (2010), (explaining that a lot of recent literature has focussed on how victims and the public act against pollution in China).

¹⁷⁸ Those obstacles related to discovery are just one of the many procedural hurdles that victims claim in private enforcement of environmental law in China. For more details see Briggs, *supra* note 94.

¹⁷⁹ Although the burden of proof rests with the defendant to prove that pollution did not cause damages (this follows from Art. 66 of the New Tort Liability Law of 2009), local courts routinely rule against plaintiffs because of doubts regarding causation. Cases involving many small enterprises are particularly challenging because individual responsibility is difficult to untangle. Small companies are also more likely to be unregistered, so tracking down an owner to sue can be problematic (Stern, *supra* note 115).

which they no longer have any demand to go to court even though pollution continues to cause damage which creates substantially more social costs than the payments to the victims.¹²⁰ Finally, judges are granted considerable discretion in deciding whether to accept a case and routinely refuse cases because they might affect social stability or annual court evaluations or because they follow ad hoc confidential regulations that instruct courts to refuse certain types of cases or handle them in a certain manner.¹²¹

Even for those cases that are heard in the courts, most are minor criminal cases, such as fire-starting by negligence and illegal logging, which are committed by some of China's least-educated, most-disadvantaged, and powerless rural residents as a result of poverty, mistake, or bad luck.¹²² In other words, law enforcement in China carefully and intentionally targets small-time rule-breakers

¹²⁰ This problem has been recently referred to in the literature as "the compensation trap." See for details Benjamin van Rooij, Anna Lora Wainwright, Yunmei Wu & Yiyun Zhang, *The Compensation Trap: The Limits of Community-Based Pollution Regulation in China*, 29(3) PACE ENVIRONMENTAL REV. 701 (2012).

¹²¹ Stern reports that there was a rumour during her field work that there was a Supreme People's Court memo that ordered lower courts to refuse to hear major environmental cases (Stern, *supra* note 115). The pressure may also come from local governments, who shelter large polluters because of their contribution to the local economy. See also on the difficulties of getting an environmental case into court in China, Houfu Yan, *zhongguo huanjing sifa xianzhuang pinggu ji zhengce jianyi (An Estimation of the Current Situation of China's Environmental Judiciary and Policy Recommendations)*, 10 EU-CHINA ENVIRONMENTAL GOVERNANCE PROGRAM RESEARCH REPORTS (2014), available at <http://www.ecegp.com/chinese/DataBase/UploadFile/20150609064703359.pdf> (last visited August 1, 2015).

¹²² Stern, *supra* note 115.

rather than assembling substantial and important cases against large-scale polluters. It is difficult to believe that the major polluters, such as powerful state-owned power plants, will be deterred by such a strategy that is politically astute but environmentally harmful.

D. Improving but Still Weak Public Enforcement

Compared with environmental courts, regulatory agencies, namely, the SEPA (the MEP after 2008) and its local branches, seem to have played a much more important role in environmental protection in China. In the early 1980s, during the process of national administrative reform, the ancestor of the MEP, the Environmental Protection Agency (EPA) was established as part of the newly formed Ministry of Urban and Rural Construction and Environment Protection. In December of 1984, the EPA became the National Environmental Protection Agency (NEPA), which was directly under the command of the State Council. In 1998, the NEPA was further upgraded to the SEPA, which was enshrined with formal ministry status as the MEP in March 2008. Compared with its ancestors, the MEP now not only is at the cabinet level but also has a vote in the State Council's decision-making processes. In addition, because its status as a cabinet member is protected by law and cannot be readily changed by the State Council, the MEP's status as the central

environmental protection entity has been substantially stabilized.¹²³ Therefore, the establishment of the MEP has been argued to “demonstrate the strong political will and commitment of China’s central government to environmental protection.”¹²⁴

A core mission of the MEP (and its ancestors) is to implement China’s environmental laws and regulations. Certain measures that are supportive of its mission have been adopted gradually, and most of these were adopted before the establishment of the MEP. For example, the SEPA established the Bureau of Environmental Supervision in 2003 and tasked it with responsibilities such as to “supervise the implementation and enforcement of environmental guidelines, policies, programs, laws, administrative regulations, rules and standards.”¹²⁵ The entire supervisory system has therefore been significantly professionalized. According to the 2013 Annual Report of Environmental Statistics issued by the MEP, there are now 2,923 environmental supervision departments and/or divisions at all levels that employ a total of 63,000 inspection staff, which is approximately

¹²³ For a more detailed discussion on the evolution of the MEP see Qiu & Li, *supra* note 93.

¹²⁴ *Id.* at 101.

¹²⁵ See MAJOR RESPONSIBILITIES OF THE BUREAU OF ENVIRONMENTAL SUPERVISION, available at http://english.mep.gov.cn/About_SEPA/Internal_Departments/200910/t20091015_162416.htm (last visited August 2, 2015).

one-third of all the environmental staff employed at all levels.¹²⁶ In addition, a network of regional supervision centres (RSCs) was established in 2006. These were intended to strengthen SEPA's capacity to supervise the regulatory performance of subnational levels of government (provinces; counties, and others) as well as to address certain other issues (e.g., transboundary issues) that were proving difficult to manage.

Thanks to the efforts of its environmental regulatory agencies, China has witnessed a remarkable increase in both the number of administrative sanctions against polluting enterprises and in the average fine per case between 1998 and 2006.¹²⁷ This trend has not changed following the transition from the SEPA to the MEP. During the 11th Five-Year Plan period (2006-2010), the MEP launched a series of five campaigns against environmental pollution in cooperation with nine other departments.¹²⁸ As a result of these campaigns, over 10,000 environmental violations were recorded and investigated, and 2,587 cases were identified for further action. As a result of the latter, 744 enterprises were closed down, 841 enterprises were ordered to cease production while problems were rectified, 810 enterprises were

¹²⁶ Available at http://zls.mep.gov.cn/hjtj/nb/2013tjnb/201411/t20141124_291864.htm (last visited August 2, 2015).

¹²⁷ Benjamin van Rooij, & Carlos Wing-Hung Lo, *Fragile Convergence: Understanding Variation in the Enforcement of China's Industrial Pollution Law*, 32(1) LAW & POLICY 14 (2010).

¹²⁸ Zhang & Crooks, *supra* note 5.

ordered to make treatment improvements within a prescribed period of time, and 119 persons were prosecuted for violations of the law. Since 2010, more than 100,000 environmental cases have been investigated by the MEP and its local branches annually, and the responsible parties have accordingly received administrative sanctions.¹²⁹

Unfortunately, China's environmental regulatory agencies continue to suffer from certain inherent weaknesses that weaken the effectiveness of legal enforcement. First, there are fundamental conflicts of overlapping authority between environmental agencies and other departments.¹³⁰ Under the current legal framework, in addition to the MEP, there are other governmental agencies that are responsible for environmental protection activities in certain areas. For example, the State Oceanic Administration (SOA) is responsible for the environmental protection of marine areas, the Ministry of Land and Resources (MLR) is charged with the responsibility for geological environmental protection, the State Forestry Administration (SFA) is responsible for terrestrial ecological protection, including nature

¹²⁹ See the ANNUAL REPORTS OF ENVIRONMENTAL STATISTICS (2010, 2011, 2012, and 2013) issued by the MEP, available at <http://www.mep.gov.cn/zwgk/hjtj/> (last visited August 3, 2015).

¹³⁰ Qiu & Li, *supra* note 93; World Bank, *Strengthening China's Environmental Protection Administrative System: Analysis and Recommendations*, (Discussion Papers 66535, 2009), available at <https://openknowledge.worldbank.org/bitstream/handle/10986/12323/NonAsciiFileNameo.pdf?sequence=1> (last visited August 5, 2015) and Bo Zhang & Cong Cao, *Four Gaps in China's New Environmental Law*, 517 NATURE 433 (2015).

reserve management, and the Ministry of Agriculture (MOA) is in charge of protecting aquatic ecology and the general environment in rural areas. Such a fragmented and patchwork structure of environmental governance will naturally lead to conflicts of interest, overlapping responsibilities, and ambiguity in cross-boundary environmental issues. Conflicts of interest arise because these agencies have responsibilities for both resource development/utilization and for resource (environmental) protection. These objectives may conflict with one another in certain circumstances, and the integrity and effectiveness of environmental regulation will therefore be weakened. Overlapping responsibilities occur when the responsibility to create and maintain a unified environmental regulation and legal enforcement that is granted to the MEP by the Environmental Protection Law is significantly undermined because it is now required to share this responsibility with the aforementioned agencies who are responsible for environmental protection with respect to marine areas, geological areas, terrestrial ecology, and rural areas. Under the current governance framework, there is no protocol for addressing cross-boundary pollution problems by granting power, assigning responsibilities, and/or coordinating resources and activities. Considerable delays may therefore occur when cross-boundary pollution problems can only be handled on a case-by-case basis.

Second, in pursuing its goal of regulatory enforcement, the MEP and its local branches are bound by certain resource restrictions. There are approximately 210,000 employees of environmental protection agencies and their affiliated institutions at all levels of government in China, of which only 1.4 percent are employed at the national level (in the MEP and its affiliated research institutes), 6.9 percent at the provincial level, 22.2 percent at the municipal level, and 64.7 percent at the county level.¹³¹ On the national level, the MEP and its affiliated research institutions or semi-managerial offices employ fewer than 3,000 staff personnel in total, which compares poorly with the MEP's counterparts in other countries, particularly the United States Environmental Protection Agency (EPA), which has approximately 17,000 employees.¹³² Approximately 130,000 environmental protection employees work at the county level, many of whom are inadequately qualified or trained and/or have no relevant qualifications at all, thereby limiting their ability to detect violations and rendering them susceptible to corruption during the legal enforcement process. In addition, at the county level, "outdated testing equipment, limited capacity for on-line monitoring and a shortage of vehicles are common problems associated with resource constraints," and "poor management practices can result in poor

¹³¹ See MEP, ANNUAL REPORT OF ENVIRONMENTAL STATISTICS 2013, available at <http://zls.mep.gov.cn/hjtj/nb/2013tjnb/> (last visited August 6, 2015).

¹³² World Bank, *supra* note 130.

delegation, confusing and/or conflicting objectives and/or coordination difficulties among units.”¹³³ McMullin therefore concluded “A weak environmental regulatory system in China allows for the occurrence of regular pollution accidents, and for the resultant chronically poor water quality. The most obvious problems facing the Chinese regulatory system is that limited funding makes government agencies ill-equipped to perform complex and technical investigations.”¹³⁴

Finally – and most importantly – the effective implementation of environmental laws and regulations is in large part the responsibility of local regulatory agencies,¹³⁵ given the decentralized nature of China’s environmental protection system.¹³⁶ Although the MEP has the authority to supervise environmental protection activities

¹³³ Carlos Wing-Hung Lo, Gerald E. Fryxell, Benjamin van Rooij, Wei Wang & Pansy Hongying Li, *Explaining the Enforcement Gap in China: Local Government Support and Internal Agency Obstacles as Predictors of Enforcement Actions in Guangzhou*, in JOURNAL OF ENVIRONMENTAL MANAGEMENT 227, 228 (2012).

¹³⁴ McMullin, *supra* note 116, at 182.

¹³⁵ See Zachary Tyler, *Transboundary Water Pollution in China. An Analysis of the Failure of the Legal Framework to Protect Downstream Jurisdictions*, 19(2) COLUMBIA JOURNAL OF ASIAN LAW 572, 593-96 (2005-2006).

¹³⁶ According to Article 16 of the previous version of China’s Environmental Protection law (enacted in 1989), “local people’s governments at various levels shall be responsible for the environmental quality of areas under their jurisdiction and shall take measures to improve the quality of the environment”. See ENVIRONMENTAL PROTECTION LAW OF THE PEOPLE’S REPUBLIC OF CHINA, available at <http://www.china.org.cn/english/environment/34356.htm>, (last visited August 8, 2015). In practice, this means that the responsibility for overseeing environmental compliance rests with local environmental agencies, particularly with those agencies at the county level.

nationwide, the reality is that it lacks both the administrative power and the financial tools to significantly influence the environmental regulatory performance of its local branches.¹³⁷ Local MEP branches depend on local governments for their funding, which also approve promotions and allocate resources and personnel.¹³⁸ This dependence leaves local SEPA branches financially vulnerable, which makes it difficult for them to resist the intense pressure from local officials who are motivated to pursue economic growth at the cost of environmental quality¹³⁹ – even at the cost of local residents' health.¹⁴⁰

¹³⁷ World Bank, *supra* note 130.

¹³⁸ See generally on the center-local dynamics in the enforcement of environmental standards in China, Hong Lan, Michael A. Livermore and Craig A. Wenner, *Water Pollution and Regulatory Cooperation in China*, 44(2) CORNELL INTERNATIONAL LAW JOURNAL 349 (2011).

¹³⁹ Tong reports that when local elites (including both government officials and enterprise managers) in six metropolitan areas (Beijing, Shanghai, Guangzhou, Shenyang, Chengdu, and Lanzhou) were asked to assign environmental protection a priority relative to other objectives, it was ranked fourth out of five – progress in science and technology received the highest number of votes, economic growth ranked a close second, population control third, and environmental protection fourth (just ahead of social equality). See Yanqi Tong, *Bureaucracy Meets the Environment: Elite Perceptions in Six Chinese Cities*, 189 CHINA QUARTERLY 100 (2007). It should not be surprising to find that local officials take such an indifferent attitude towards environmental protection. After all, they are rewarded (by promotions or pay raises) for delivering economic growth rather than for improving environmental quality (Hongbin Li & Li-An Zhou, *Political Turnover and Economic Performance: The Incentive Role of Personnel Control in China*, 89 JOURNAL OF PUBLIC ECONOMICS 1743 (2005) and Jing Wu, Yongheng Deng, Jun Huang, Randall Morck & Bernard Yeung, 2013. *Incentives and Outcomes: China's Environmental Policy*, (NBER, Working Paper No. 18754, 2013).

¹⁴⁰ Benjamin van Rooij, *Implementation of Chinese Environmental Law: Regular Enforcement and Political Campaigns*, 37(1) DEVELOPMENT AND CHANGE 57 (2006); Bryan Tilt, *The Political Ecology of Pollution Enforcement in China: A Case from Sichuan's Rural Industrial Sector*, 192 CHINA QUARTERLY 915 (2007) and Christopher Marquis, Jianjun Zhang & Yanhua Zhou, *Regulatory*

Local governments are often highly reliant on the polluting industries which will obviously reduce their appetite to go tough on polluters.¹⁴¹

Enforcement is therefore inconsistent across regions and firms. This inconsistency is supported by many empirical studies. Wang and Wheeler showed that the effective implementation of the pollution levy at the provincial level is a function of provincial income and education: the higher the levels of income and education are, the higher the effective levy.¹⁴² In a subsequent study they reported that the geographic distribution of effective levies is correlated with China's provincial rates of urbanization and industrialization.¹⁴³ They conclude that the pattern of variation in effective levy rates across Chinese provinces is roughly consistent with the tenets of environmental economics, i.e., regulation is stricter in areas where incomes are higher, access to information is better, and pollution is

Uncertainty and Corporate Responses to Environmental Protection in China, 54(1) CALIFORNIA MANAGEMENT REVIEW 39 (2011).

¹⁴¹ McMullin, *supra* note 116, at 182 and Briggs, *supra* note 94, at p. 316 who argues: "The economic and political incentives for weak local enforcement are powerful." See further on lacking capacity and financial support at county level Liping Dai, *Tackling Diffuse Water Pollution from Agriculture in China: Drawing Inspiration from the European Union*, 10(2) UTRECHT LAW REVIEW 136, 141 (2014) (<http://www.utrechtlawreview.org>). See also Tilt, *supra* note 140.

¹⁴² Hua Wang & David Wheeler, *Pricing Industrial Pollution in China: An Econometric Analysis of the Levy System*, (World Bank Policy Research, Working Paper No. 1644, 1996).

¹⁴³ Hua Wang & David Wheeler, *Equilibrium Pollution and Economic Development in China*, 8 ENVIRONMENT AND DEVELOPMENT ECONOMICS 451 (2003).

heavier.¹⁴⁴ Another study analyses the determinants of the relative bargaining power that firms may have in their relationship with local environmental authorities involving the enforcement of pollution levies, and they report that (1) firms from the private sector appear to have less bargaining power than state-owned enterprises; (2) firms facing an adverse financial situation have more bargaining power and are more likely to pay fewer pollution levies than what they should be paying; and (3) the higher the social impact of a firm's emissions is (as measured by the presence and number of complaints), the less bargaining power the firm has with local environmental authorities.¹⁴⁵ Empirical evidence also shows that the enforcement of pollution fee collection is more lenient in the most downstream county of a province, where an externalization of the pollution problem to other provinces is possible.¹⁴⁶ Even worse, lax enforcement has been the rule rather than the exception.¹⁴⁷ For example, central government inspections in October 2006 revealed that local regulatory agencies

¹⁴⁴ Hua Wang & David Wheeler, *Financial Incentives and Endogenous Enforcement in China's Pollution Levy System*, 49 JOURNAL OF ENVIRONMENTAL ECONOMICS AND MANAGEMENT 174 (2005).

¹⁴⁵ Hua Wang, Nlandu Mamingi, Benoit Laplante & Susmita Dasgupta, *Incomplete Enforcement of Pollution Regulation: Bargaining Power of Chinese Factories*, 24 ENVIRONMENTAL AND RESOURCE ECONOMICS 245 (2003).

¹⁴⁶ Hongbin Cai, Yuyu Chen & Qing Gong, *Polluting Thy Neighbor: Unintended Consequences of China's Pollution Reduction Mandates*, JOURNAL OF ENVIRONMENTAL ECONOMICS AND MANAGEMENT (2015), available at <http://dx.doi.org/10.1016/j.jeem.2015.01.002> (last visited August 10, 2015).

¹⁴⁷ See also van Rooij & Lo, *supra* note 127 for a more detailed discussion on variation in the enforcement of China's environmental laws and regulations.

had checked only thirty percent of the projects for compliance with environmental regulations before approval, and nearly half of the projects checked did not implement required pollution controls.¹⁴⁸ In certain extreme cases, local officials actually prevent inspectors from enforcing regulations or pay them to overlook violations or to ignore orders to close down polluting plants.¹⁴⁹ For example, when the three-year “zero-hour operation” to clean up the Huai River targeted small factories along the river beginning in 1998, local officials attempted to keep plants running by combining small mills into larger units or by stopping daytime production but continuing to operate the plants at night. Scholars therefore classify environmental policy in China as characterized by an “implementation gap.”¹⁵⁰

The recent rise of citizen activism regarding environmental issues in China has been extolled and is expected to act as an antidote to the ineffectiveness of China’s environmental governance system¹⁵¹.

¹⁴⁸ C. FRED BERGSTEN, CHARLES FREEMAN, NICHOLAS R. LARDY & DEREK J. MITCHELL, *CHINA’S RISE: CHALLENGES AND OPPORTUNITIES* (2008).

¹⁴⁹ James Roumasset, Kimberly Burnett & Hua Wang, *Environmental Resources and Economic Growth*, in *CHINA’S GREAT ECONOMIC TRANSFORMATION* (Loren Brandt and Thomas G. Rawski eds., 2008).

¹⁵⁰ Briggs, *supra* note 94, at 311 (referring to the lacking capacity and inability of the central and local agencies to create and implement practical and enforceable environmental laws).

¹⁵¹ See, for example, Setsuko Matsuzawa, *Citizen Environmental Activism in China: Legitimacy, Alliances, and Rights-based Discourses*, 19(2) *ASIANETWORK EXCHANGE* 81 (2012), *CHINA’S ENVIRONMENTAL ACTIVISTS*, available at <http://www.ft.com/intl/cms/s/2/00be1b66-1f43-11e3-b80b-00144feab7de.html> (last visited August 10, 2015), and *WHY CITIZEN PARTICIPATION SHOULD BE ENCOURAGED IN CHINA’S 13TH FIVE-YEAR PLAN*, available at <https://www.chinadialogue.net/blog/7440-Why-citizen-participation-should->

Theoretically, the public has numerous ways in which to participate in environmental governance. For example, before environmental decisions are made, Chinese citizens can participate in environmental assessments that reveal their preferences and interests in public hearings, or they can express their concerns to those members of the Chinese People's Congress and Chinese People's Political Consultative Conference who are supposed to be their representatives; after decisions have been made, citizens can send complaint letters or visit government offices (letters and visits), bring their cases to the mass media, sue polluters in the courts, or even protest in the streets.¹⁵² However, none of the aforementioned methods has been found to be effective at improving China's environmental governance and hence at mitigating pollution threats, and the pressure from the bottom up still plays only "a very minimal role."¹⁵³ This participation failure or "participation gap"¹⁵⁴ mainly results from the ambivalent attitude of the party-state towards Chinese citizens, particularly citizen organizations, such as non-governmental organizations (NGOs), in

be-encouraged-in-China-s-13th-Five-Year-Plan/en (last visited August 10, 2015).

¹⁵² Wanxin Li, Jieyan Liu & Duoduo Li, *Getting Their Voices Heard: Three Cases of Public Participation in Environmental Protection in China*, 98 JOURNAL OF ENVIRONMENTAL MANAGEMENT 65 (2012).

¹⁵³ Genia Kostka, *Barriers to the Implementation of Environmental Policies at the Local Level in China* (World Bank Policy, Research Working Paper No. 7016, 2014).

¹⁵⁴ Genia Kostka & Arthur P.J. Mol, *Implementation and Participation in China's Local Environmental Politics: Challenges and Innovations*, 15(1) JOURNAL OF ENVIRONMENTAL POLICY & PLANNING 3 (2013).

view of their role as a double-edged sword: whereas they may help mitigate pollution problems and therefore be conducive to the rule of the Party, they may also endanger the communist regime by awakening people's consciousness of rights, igniting the process of social mobilization, and even challenging the legitimacy of the Party's monopoly on power. The party-state therefore walks a fine line between tolerating public participation and expression on the one hand and restricting, manipulating, or even repressing such activities on the other.¹⁵⁵

E. Summary: Governance Failure as the Main Source of the Environmental Tragedy

In summary, China's environmental tragedy is not only a result of rapid economic growth but also, and more importantly, a result of the systematic failure of governance, including legislative ambiguity, judicial apathy, and regulatory ineffectiveness, which is further compounded by additional factors, such as local officials' distorted incentives and the general lack of public participation.¹⁵⁶ We have

¹⁵⁵ Benjamin van Rooij, Rachel E. Stern & Kathinka Fürst, *The Authoritarian Logic of Regulatory Pluralism: Understanding China's New Environmental Actors*, REGULATION & GOVERNANCE (2014), available at <http://onlinelibrary.wiley.com/doi/10.1111/rego.12074/abstract> (last visited August 10, 2015).

¹⁵⁶ For a similar conclusion with respect to the relationship between institutional defects and industrial water pollution in China, see Xin Miao, Yanhong Tang, Christina W.Y. Wong & Hongyu Zang, *The Latent Causal Chain of Industrial Water Pollution in China*, 196 ENVIRONMENTAL POLLUTION 473, 475 (2015).

thus arrived at a better understanding regarding the contributors to China's environmental crisis with the help of the literature cited above. However, this is not the entire story. As the literature has shown, the nature of a regime – particularly the nature of the political institutions that distribute its power throughout society and determine whether a society is democratic – plays an important role in shaping a regime's environmental landscape¹⁵⁷. After all, such political institutions

¹⁵⁷ There are numerous studies on the relationship between democracy and environmental quality. For recent studies, see Margrethe Winslow, *Is Democracy Good for the Environment?*, 48(5) JOURNAL OF ENVIRONMENTAL PLANNING AND MANAGEMENT 771 (2005); Hossein Y. Farzin & Craig A. Bond, *Democracy and Environmental Quality*, 81 JOURNAL OF DEVELOPMENT ECONOMICS 213 (2006); Quan Li, & Rafael Reuveny, *Democracy and Environmental Degradation*, 50 INTERNATIONAL STUDIES QUARTERLY 935 (2006), Andrew B. Whitford & Karen Wong, *Political and Social Foundations for Environmental Sustainability*, 62(1) POLITICAL RESEARCH QUARTERLY 190 (2009), Thomas Bernauer & Vally Koubi, *Effects of Political Institutions on Air Quality*, 68 ECOLOGICAL ECONOMICS 1355 (2009), and Meilanie Buitenzorgy & Arthur P.J. Mol, *Does Democracy Lead to a Better Environment? Deforestation and the Democratic Transition Peak*, 48 ENVIRONMENTAL RESOURCE ECONOMICS 59 (2011). Daniel J. Fiorino, *Explaining National Environmental Performance: Approaches, Evidence, and Implications*, 44(4) POLICY SCIENCES 367 (2011) offers a survey on this topic. In general, the evidence shows that those countries with more democratic institutions have a greater tendency to improve environmental quality. Other political indicators, such as corruption and freedom, are also found to affect environmental performance. For the effects of corruption, see Heinz Welsch, *Corruption, Growth, and the Environment: A Cross-Country Analysis*, 9 ENVIRONMENT AND DEVELOPMENT ECONOMICS 663 (2004), Susmita Dasgupta, Kirk Hamilton, Kiran D. Pandey & David Wheeler, *Environment During Growth: Accounting for Governance and Vulnerability*, 34(9) WORLD DEVELOPMENT 1597 (2006), Matthew A. Cole, *Corruption, Income, and the Environment: An Empirical Analysis*, 62 ECOLOGICAL ECONOMICS 637 (2007), and Alexandra Leitão, *Corruption and the Environmental Kuznets Curve: Empirical Evidence for Sulfur*, 69 ECOLOGICAL ECONOMICS 2191 (2010). For the role of freedom, see Scott Barrett & Kathryn Graddy, *Freedom, Growth, and the Environment*, 5 ENVIRONMENT AND DEVELOPMENT ECONOMICS 433 (2000) and Joel Wood & Ian Herzog, *Economic Freedom and Air Quality*, (Fraser Institute, Research Studies), available at <http://www.fraserinstitute.org/uploadedFiles/fraser-ca/Content/research-new/research/publications/economic-freedom-and-air-quality.pdf> (last visited August 16, 2015).

determine the scope of information that is available and accessible to the public, the organizational structure of bureaucracy, the incentives and motivations of officials, the extent to which a government (and its officials) can be held accountable, and finally, the source of legitimacy that a regime may claim and rest upon. All the factors we have discussed, from legislative process to public activism, function, operate, and evolve within the context of a political system. It is therefore necessary to explore the role of China's political system – particularly its authoritarian nature – in contributing to the current environmental disaster directly or through the mechanisms we have discussed.

IV. Politics as a Fundamental Reason for China's Environmental Challenges

After having sketched that adequate institutions and instruments to deal with environmental problems are largely lacking in China, the question obviously arises what lays at the root of this governance failure. In this part we will argue that it is mainly the structure of China's political system that creates the governance failure. First we show that on the basis of traditional economic theory the government is best placed to provide public goods, such as environmental protection (A). However, it has also been shown that the nature of the political regime has an important influence on the ability of the government to provide those public goods; a democracy is more likely

than an authoritarian regime to provide environmental quality (B). We then show that China's political regime can largely be classified as authoritarian as a result of which preferences for environmental quality will be difficult to satisfy (C). This is partially related to the fact that the Chinese economy is based on an investment-driven growth pattern, largely supporting (polluting) heavy industry (D). Also the fact that within the party system there are no political rewards for environmental protection contributes obviously to the environmental degradation (E). The most problematic aspect is related to the fact that decentralized authorities are supposed to take environmental protection measures, but adequate transfers from the central government are largely lacking (F). In the end we conclude that all these factors together show that it is largely China's political system that causes the environmental degradation (G).

A. Public Goods and Political Regime

In mainstream economics, one justification for the existence of the state (government) is that it can correct market failures that arise in the provision of public goods, i.e., goods whose consumption is characterized by non-rivalry and non-exclusivity.¹⁵⁸ The social need in

¹⁵⁸ Non-rivalry means that consumption of the good by one individual does not reduce the availability of the good for consumption by others, whereas non-excludability implies that no one can be effectively excluded from consumption of the good. See generally Agnar Sandmo, *Public Goods*, in *THE NEW PALGRAVE DICTIONARY OF ECONOMICS* (Steven N. Durlauf & Lawrence E. Blume eds. 2008).

this regard for public goods cannot adequately be met by private suppliers because of “free-rider” problems, i.e., when people who cannot be excluded from enjoying the benefits of a public good may withhold payment for it in the hopes that others will pay their share. In other words, public goods can be systematically undersupplied by the market. However, the government can provide public goods with financing derived from tax revenues rather than from sales, which can eliminate the “free rider” problem and improve social welfare by guaranteeing sufficient supplies of public goods.¹⁵⁹

However, there is a significant difference in the provision of public goods between democratic and non-democratic countries. The logic is straightforward.¹⁶⁰ In a non-democratic regime, such as an autocracy, in which political influence is concentrated, a rational government leader will spend the public budget mainly on transfers targeted at politically influential groups.¹⁶¹ Spending on a

¹⁵⁹ See generally on the role of government as supplier of public goods also ARYE L. HILLMAN, *PUBLIC FINANCE AND PUBLIC POLICY: RESPONSIBILITIES AND LIMITATIONS OF GOVERNMENT* (2009)

¹⁶⁰ Martin C. McGuire & Mancur Olson, Jr., *The Economics of Autocracy and Majority Rule: The Invisible Hand and the Use of Force*, 34(1) *JOURNAL OF ECONOMIC LITERATURE* 72 (1996); BRUCE BUENO DE MESQUITA, ALASTAIR SMITH, RANDOLPH M. SIVERSON & JAMES D. MORROW, *THE LOGIC OF POLITICAL SURVIVAL* (2003) and Robert T. Deacon, *Public Good Provision under Dictatorship and Democracy*, 139 *PUBLIC CHOICE* 241 (2009).

¹⁶¹ Of course, this logic does not mean that the autocrat will not provide public goods at all. The autocrat still spends some tax revenue on public good provision because public goods, such as education and infrastructure construction, ultimately increase the autocrat's tax revenue via their contributions to GDP growth. However, because the autocrat places no value on the after-tax income of ordinary citizens, he produces lesser amounts of

with access to health care, etc.¹⁶³ Moreover, this conclusion is supported by other research.¹⁶⁴ In addition to education and public health, political and civil liberties – when conceived of as public goods – are found to be better protected in democratic regimes,¹⁶⁵ whereas infrastructure construction (measured by road intensity) and pollution control (measured by the lead content of gasoline) are shown to be supplied by dictatorial governments at levels far below democracies.¹⁶⁶ Finally, Bell shows that the gap widens between democratic and non-democratic regimes in the provision of public goods as these regimes consolidate. In other words, the longer regimes have been in power, the greater the public goods provision in democratic regimes relative to non-democratic regimes.¹⁶⁷

B. The Influence of the Political Regime on Environmental Quality

As a public good, the quality of the environment is also influenced by the nature of a regime and therefore follows the general

¹⁶³ David A. Lake & Matthew A. Baum, *The Invisible Hand of Democracy: Political Control and the Provision of Public Services*, 34(6) COMPARATIVE POLITICAL STUDIES 587 (2001).

¹⁶⁴ Bueno de Mesquita *et al.*, *supra* note 160 and Deacon, *supra* note 160.

¹⁶⁵ Bueno de Mesquita *et al.*, *supra* note 160.

¹⁶⁶ Deacon, *supra* note 160.

¹⁶⁷ Curtis Bell, *Buying Support and Buying Time: The Effect of Regime Consolidation on Public Goods Provision*, 55 INTERNATIONAL STUDIES QUARTERLY 625 (2011).

pattern of public goods provision we have just discussed.¹⁶⁸ Winslow finds a significant and robust negative linear relationship between urban air concentrations of three pollutants (SO₂, suspended particulate matter, and smoke) and a country's level of democracy: the higher the level of democracy is, the lower the ambient pollution level.¹⁶⁹ A similar conclusion is reached by Farzin and Bond, who also focus on air quality but use different dependent variables, including CO₂, NO_x, SO₂, and VOC.¹⁷⁰ Li and Reuveny examine the effect of democracy on five aspects of human-induced environmental degradation – carbon dioxide emissions, nitrogen dioxide emissions, deforestation, land degradation, and organic pollution in water – and find that the presence of democracy reduces all five types of environmental degradation.¹⁷¹ Whitford and Wong find evidence

¹⁶⁸ Note, however, that the research results concerning the relationship between the democratic form of government and environmental quality are not one dimensional. For example, Midlarsky reports that democracies are associated with worse environmental performance than autocracies (Manus I. Midlarsky, *Democracy and the Environment: An Empirical Assessment*, 35(3) JOURNAL OF PEACE RESEARCH 341 (1998)), and Ward finds mixed results for the direct effects of democracy on a variety of environmental sustainability indicators (Hugh Ward, *International Linkages and Environmental Sustainability: The Effectiveness of the Regime Network*, 43(2) JOURNAL OF PEACE RESEARCH 149 (2006)). A more balanced conclusion is reached by Buitenzorgy and Mol, who find an inverted U-shaped relationship between environmental performance (deforestation) and democracy: in earlier stages of democracy, deforestation rates increase as countries move towards higher levels of democracy; however, after reaching a certain level of democracy, more democracy leads to lower deforestation rates (Buitenzorgy & Mol, *supra* note 157).

¹⁶⁹ Winslow, *supra* note 157.

¹⁷⁰ Farzin & Bond, *supra* note 157.

¹⁷¹ Li and Reuveny *supra* note 157.

supporting the positive effects of democracy on environmental sustainability, based on the Environmental Sustainability Index compiled by the Yale Center for Environmental Law and Policy and Columbia University's Center for International Earth Science Information Network (which includes not only environmental quality but also biodiversity, ecosystem stress, exposure to natural disasters, etc.).¹⁷² Moreover, Bernauer and Koubi show that not only democracy per se but also the forms of democracy influence environmental quality (SO₂): presidential systems are more conducive than parliamentary systems to better air quality.¹⁷³

Several reasons can be marshalled in support of the claim that a democracy is more likely than an authoritarian regime to protect environmental quality. First, information regarding environmental issues flows more freely in democracies, which allows citizens to be more aware of environmental problems. Second, political rights are better protected in democracies, thereby paving the way for public involvement in environmental policy making by establishing environmental NGOs or even "Green" parties, for example. Third, thanks to regular and free elections, voters in democracies are better able to hold leaders accountable; when they are not satisfied with current environment-damaging policies, they may vote for and hence enthrone new parties who commit to policies that are more

¹⁷² Whitford & Wong, *supra* note 157.

¹⁷³ Bernauer & Koubi, *supra* note 157.

environmentally friendly. Finally, democracies are more likely to provide more effective governance, such as a professional civil service, a stronger legal system, and less corruption. In general, Winslow concludes that “a central argument is that many forms of environmental degradation benefit the few and harm the many. Inasmuch as elites tend to benefit from environmental degradation, while the costs are spread throughout the population, the sharing of power that occurs in democratic regimes can act to curb the degrading activities of the few.”¹⁷⁴

C. Political Repression and Environmental Quality in China

It is therefore not surprising to find that China has such a poor environmental performance, given the authoritarian nature¹⁷⁵ of its regime. In China, the flow of information is restricted. As a Freedom House report states, China is “still home to the world’s most sophisticated censorship apparatus” and is therefore assigned a score

¹⁷⁴ Winslow, *supra* note 157.

¹⁷⁵ China specialists have used different labels to describe the essential nature of the regime, such as “market-Leninism”, “neo-Leninism”, “soft-authoritarianism”, “neo-authoritarianism”, “resilient-authoritarianism” and “developmental autocracy” (Minxin Pei, *How China Is Ruled?*, 3(4) *American Interest* 44 (2008)). Regardless of the terms used by these specialists, a consensus reached is that, at its core, China remains a Leninist Party-State in which the Party plays the leading role in political life and enjoys a monopoly of power by excluding all other parties. According to the Polity IV scale, which is a score assigned to each country based on its level of democracy versus autocracy within its political system, with 10 indicating “strongly democratic” and -10 indicating “strongly autocratic”, China’s score in 2010 is -7. See POLITY IV COUNTRY REPORT 2010: CHINA, available at <http://www.systemicpeace.org/polity/China2010.pdf> (last visited August 21, 2015).

of eighty-six (0 is the best and 100 is the worst) in terms of freedom of the press.¹⁷⁶ A Chinese law professor admits that “since the founding of the People’s Republic, our systems have always been secretive: information was confidential on principle; disclosure was the exception rather than the rule.”¹⁷⁷ Even if there might have been significant improvement in this regard since the promulgation of the Regulation on the Disclosure of Government Information (which went into effect on May 1, 2008), it remains extremely difficult for ordinary citizens to acquire information regarding environmental quality. For example, the Chinese government once announced that 10 per cent of China’s farmland was contaminated, but when a Chinese lawyer requested the findings of a national survey on soil pollution from the MEP, he was denied on the grounds that such information is a state secret.¹⁷⁸ On March 17, 2014, the MEP and the Ministry of Land and Resources finally decided to release the results of the survey; notably, however, none of the raw data or full survey results were released to the public.¹⁷⁹

¹⁷⁶ FREEDOM HOUSE, FREEDOM OF THE PRESS (2015), *available at* https://freedomhouse.org/sites/default/files/FreedomofthePress_2015_FINAL.pdf (last visited August 21, 2015).

¹⁷⁷ ONE YEAR OF OPEN INFORMATION, *available at* <https://www.chinadialogue.net/article/show/single/en/3015-One-year-of-open-information-> (last visited August 21, 2015).

¹⁷⁸ HOW LONG CAN CHINA KEEP POLLUTION DATA A STATE SECRET?, *available at* <http://www.chinafile.com/conversation/how-long-can-china-keep-pollution-data-state-secret> (last visited August 21, 2015).

Political rights and civil liberties in China are systematically ignored, denied, and even trampled upon, although repression today is smarter, more selective, and more sophisticated.¹⁸⁰ According to the 2014 Freedom Ratings¹⁸¹ released by the Freedom House, China is characterized as “not free” with a score of 6.5 (1=best, 7= worst), with its civil liberties score assessed at 6 (1=best, 7=worst) and its political rights score assessed at 7 (1=best, 7= worst).¹⁸² Certainly, ordinary Chinese people have no say in the recruitment, promotion, and dismissal of officials at different levels, as the control and management of government personnel is the exclusive domain of the Party.¹⁸³ It is therefore extremely difficult (if not impossible) for Chinese officials to be held accountable for their misconduct. For

¹⁷⁹ SOIL POLLUTION IN CHINA STILL A STATE SECRET DESPITE RECENT SURVEY, available at <http://blogs.scientificamerican.com/guest-blog/soil-pollution-in-china-still-a-state-secret-infographic/> (last visited August 21, 2015).

¹⁸⁰ Minxin Pei, *China and East Asian Democracy: Is CCP Rule Fragile or Resilient?*, 23(1) JOURNAL OF DEMOCRACY 27 (2012).

¹⁸¹ A country or territory is assigned two ratings – one for political rights and one for civil liberties – based on its total scores for the political rights and civil liberties questions. Each rating of 1 through 7, with 1 representing the greatest degree of freedom and 7 the smallest degree of freedom, corresponds to a specific range of total scores. The average of a country’s or territory’s political rights and civil liberties ratings is called the Freedom Rating, and this figure determines the status of Free (1.0 to 2.5), Partly Free (3.0 to 5.0), or Not Free (5.5 to 7.0).

¹⁸² FREEDOM IN THE WORLD 2014: CHINA, available at: <https://freedomhouse.org/report/freedom-world/2014/china#.VdgzkY3ovIU> (last visited August 22, 2015).

¹⁸³ Michel Oksenberg, *China’s Political System: Challenges of the Twenty-First Century*, 45 CHINA JOURNAL 21 (2001) and RICHARD MCGREGOR, *THE PARTY: THE SECRET WORLD OF CHINA’S COMMUNIST RULERS* (2010).

example, although corruption has become increasingly common and more intense¹⁸⁴ in the reform era, few officials have been caught, prosecuted, and ultimately convicted. Pei analyses the data on corruption provided by the Central Commission for Discipline Inspection (which is the Party's highest institution of internal control and is tasked with enforcing internal rules and regulations and combating corruption and malfeasance in the Party) and concludes that "the probability of criminal penalties against corrupt officials are extremely low and, for all practical purposes, almost negligible."¹⁸⁵ Even the officials who are punished publicly, such as those officials who were removed from their positions in 2008 for their role in the Sanlu milk powder scandal that killed six infants and sickened an estimated 300,000, were ultimately appointed to new positions.¹⁸⁶

Chinese citizens therefore cannot influence the making of environmental policy and the legal outcomes associated with such policy by means of the electoral process, political participation (such

¹⁸⁴ Despite a highly publicized anti-corruption drive spearheaded by President Xi Jinping, in 2014, China was ranked No. 100 in Transparency International's Corruption Perceptions Index. This index scores 175 countries and territories based on how corrupt experts perceive them as, and lower rankings indicate higher amounts of corruption. See *CORRUPTION BY COUNTRY/TERRITORY*, available at http://www.transparency.org/country/#CHN_DataResearch (last visited August 25, 2015).

¹⁸⁵ MINXIN PEI, *CHINA'S TRAPPED TRANSITION: THE LIMITS OF DEVELOPMENTAL AUTOCRACY* 151 (2006).

¹⁸⁶ See *ANOTHER OFFICIAL REMOVED FOR ROLE IN SANLU MILK SCANDAL REAPPEARS*, available at <http://www.eeo.com.cn/ens/2013/0121/239132.shtml> (last visited August 25, 2015), and *CADRES RESURRECTED*, available at <http://www.eeo.com.cn/ens/2013/0814/248468.shtml> (last visited August 25, 2015).

as organizing independent environment-friendly parties), or other accountability mechanisms of the government. Although they may still be allowed to participate in environmental affairs through NGOs, which “pursue their interests within well-defined, yet unwritten political boundaries that assure the continued leadership of the Party and the government” and therefore should be deemed as “politically non-threatening,”¹⁸⁷ the party-state remains apprehensive about the potential risk that NGOs may become a base for opposition to the Party rule. This vigilance regarding the NGOs helps explain continued state restrictions and even repression against Chinese NGOs since various colour revolutions swept across parts of the former Soviet Union between 2003 and 2005.¹⁸⁸

D. The Investment-based Growth of China's Economy

In addition to the aforementioned features that are shared by all authoritarian regimes and that contribute to China's environmental degradation, there are certain unique institutional arrangements with Chinese characteristics that are also responsible for China's environmental tragedy. The most important is the “pro-growth” or “growth-oriented” strategy adopted by the Party since the reform era

¹⁸⁷ Drew Thompson & Xiaoqing Lu, *China's Evolving Civil Society: From Environment to Health*, 8 CHINA ENVIRONMENT SERIES 27, 27 (2006).

¹⁸⁸ JOHN W. TAI, BUILDING CIVIL SOCIETY IN AUTHORITARIAN CHINA: IMPORTANCE OF LEADERSHIP CONNECTIONS FOR ESTABLISHING EFFECTIVE NONGOVERNMENTAL ORGANIZATIONS IN A NON-DEMOCRACY (2015).

began at the end of the 1970s. Economic growth has been prioritized in the Party's agenda because the Party lacks legitimacy in the classic democratic sense, and it has therefore been forced to instead seek performance-based legitimacy by continuously improving the living standards of Chinese citizens.¹⁸⁹ In other words, it can be argued that

¹⁸⁹ For example, Perry concludes that “without democratic institutions capable of conferring procedural legitimacy, the ability of the PRC [People's Republic of China] to meet its pressing policy challenges will depend to some degree upon continued economic expansion capable of generating adequate employment opportunities and financing critical redistributive and other government-led programs” (Perry, *supra* note 2, at 8). Perry's view is shared by most scholars who study contemporary China across disciplines and seems to have become a common sense. Xu even claims that “in the post-Mao era, China's central leadership sees economic growth as a life and death matter for the regime” (Chenggang Xu, *The Fundamental Institutions of China's Reforms and Development*, 49(4) JOURNAL OF ECONOMIC LITERATURE 1076, 1088 (2011)). However, there are dissidents who claim that in addition to economic growth, other factors, such as ideology (Marxism, Maoism, nationalism, etc.), the morality of political elites, and other values and beliefs, are equally or even more important in shaping the Party's legitimacy (Bruce Gilley & Heike Holbig, *The Debate on Party Legitimacy in China: An Mixed Quantitative/Qualitative Analysis*, 18(59) JOURNAL OF CONTEMPORARY CHINA 339 (2009); Heike Holbig & Bruce Gilley, *Reclaiming Legitimacy in China*, 38(3) POLITICS & POLICY 395 (2010); Yanqi Tong, *Morality, Benevolence, and Responsibility: Regime Legitimacy in China from Past to the Present*, 16 JOURNAL OF CHINESE POLITICAL SCIENCE 141 (2011) and Yun-han Chu, *Sources of Regime Legitimacy and the Debate over the Chinese Model*, 13(1) CHINA REVIEW 1 (2013)). Certain recent empirical studies also show that economic development is not a significant predictor of regime support (and rising prosperity may even delegitimize rather than legitimize the rule of the Party) (Bruce Dickson, *Public Goods and Public Support in China*, (American Political Science Association, Annual Meeting Paper, 2010, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1642972 (last visited July 20, 2015) and Chu, mentioned in this note). In any event, the efforts of the Party to claim legitimacy seem to be paying off, as the majority of Chinese people show a certain degree of support for the current political regime and do not favour fundamental regime change (Bruce Gilley, *The Meaning and Measure of State Legitimacy: Results for 72 Countries*, 45(3) EUROPEAN JOURNAL OF POLITICAL RESEARCH 499 (2006); Jie Chen & Bruce J. Dickson, *Allies of the State: Democratic Support and Regime Support among China's Private Entrepreneurs*, 196 CHINA QUARTERLY 780 (2008) and Yang Zhong & Yongguo Chen, *Regime Support in Urban China*, 53(2) ASIAN SURVEY 369 (2013)). China is therefore classified as a “high legitimacy” state (Holbig and Gilley mentioned in this note, at 398).

there is an implicit social contract between the Party and the Chinese population pursuant to which the latter will not press for more democratic forms of government if the former delivers high levels of economic growth and prosperity.¹⁹⁰

In general, economic growth can be realized in two ways: by increasing the amount of the factors of production or by increasing the efficiency with which those factors are used. It is natural to argue that increased inputs (factors of production) – accumulated physical capital in particular, which includes machines, buildings, and infrastructure – will translate into expanded output, a notion that can be traced back to Harrod¹⁹¹ and Domar.¹⁹² However, basic economics teaches us that there are diminishing returns associated with the addition of any one factor of production. With a given labour force, adding increasingly more machines will produce more output – but at a steadily declining rate. Therefore, more investment (capital accumulation) can raise the level of total output but not its growth rate over the long run. As the famous Solow model has shown, regardless of the level of capital with which an economy begins, without technological progress, the economy will find itself at a steady

¹⁹⁰ Michael Trebilcock & Jing Leng, *The Role of Formal Contract Law and Enforcement in Economic Development*, 92(7) VIRGINIA LAW REVIEW 1517 (2006).

¹⁹¹ Roy Harrod, *An Essay in Dynamic Theory*, 49 ECONOMIC JOURNAL 14 (1939).

¹⁹² Evsey D. Domar, *Capital Expansion, Rate of Growth and Employment*, 14 ECONOMETRICA 137 (1946).

state in which there is no per capita growth.¹⁹³ To avoid diminishing returns, an economy must transform its growth style from investment-based growth to technology-based growth in which technological progress, efficiency improvements, and productivity growth play decisive roles in driving economic development. Indeed, historical evidence reveals that in the process of pursuing sustainable economic growth, winners (such as many economies in Western Europe and North America) and losers (such as the former Soviet Union) are distinguished from one another by their capability of changing their economies from investment-based economies to technology-based ones.¹⁹⁴

Unfortunately, China has been trapped in an investment-driven growth pattern since the beginning of the new century. As shown in figure 1, investment since 2003 has consistently exceeded 40 per cent of GDP. Dollar and Jones show that in terms of the average investment rate (ratio of investment to GDP) over 2000-2010, China outpaced all other countries in the world except two (Bhutan and Equatorial Guinea).¹⁹⁵ Similarly, Nabar and N'Diaye show that the investment share of GDP in China is higher than that in any industrial country or

¹⁹³ Robert M. Solow, *A Contribution to the Theory of Economic Growth*, 70 *QUARTERLY JOURNAL OF ECONOMICS* 65 (1956).

¹⁹⁴ YUJIRO HAYAMI & YOSHIHISA GODO, *DEVELOPMENT ECONOMICS: FROM THE POVERTY TO THE WEALTH OF NATIONS* (2005).

¹⁹⁵ David Dollar & Benjamin F. Jones, *China: An Institutional View of an Unusual Macroeconomy* (NBER, Working Paper No.19662, 2013).

emerging market during the 2006-2012 period.¹⁹⁶ Dollar and Jones thus conclude that “China appears unusual in its high rate of investment (now over forty-five percent) both compared to the world sample and to antecedent and remarkable growth experiences of other Asian countries.”¹⁹⁷ Perkins and Rawski further demonstrate that capital formation dominated China’s economic growth in the decade following 1995, accounting for 52.7 percent of GDP growth during the 1995-2000 period and 57.1 percent of GDP growth during the 2000-2005 period,¹⁹⁸ and Zheng, Bigsten, and Hu¹⁹⁹ and Kuijs²⁰⁰ reach a similar conclusion. In summary, investment in China has “been a major contributor to growth during this decade.”²⁰¹

¹⁹⁶ Malhar Nabar & Papa N'Diaye, *Enhancing China's Medium-Term Growth Prospects: The Path to a High-Income Economy* (IMF, Working Paper, No. WP/13/204, 2013).

¹⁹⁷ Dollar & Jones, *supra* note 195, at 6.

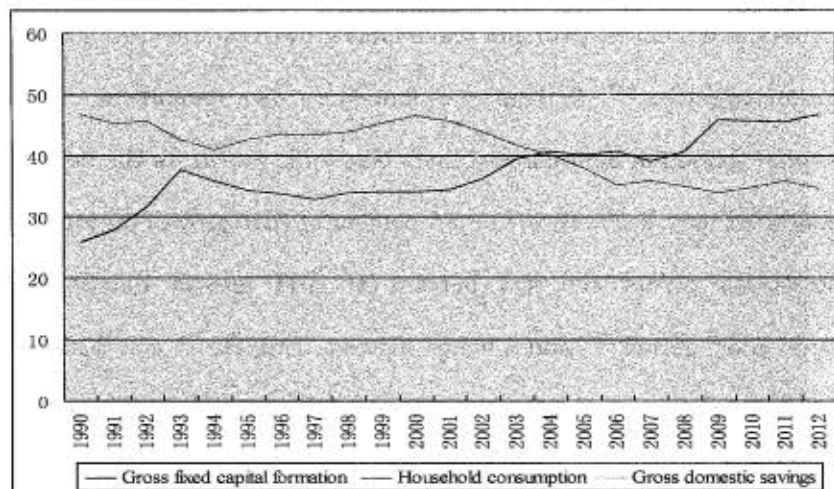
¹⁹⁸ Dwight H. Perkins & Thomas G. Rawski, *Forecasting China's Economic Growth to 2025*, in *CHINA'S GREAT ECONOMIC TRANSFORMATION* (Loren Brandt & Thomas G. Rawski eds., 2008).

¹⁹⁹ Jinghai Zheng, Arne Bigsten & Angang Hu, *Can China's Growth be Sustained? A Productivity Perspective*, 37(4) *WORLD DEVELOPMENT* 874 (2009).

²⁰⁰ Louis Kuijs, *China Through 2020: A Macroeconomic Scenario* (World Bank China Office, Research Working Paper No. 9, 2009).

²⁰¹ Eswar S. Prasad, *Is the Chinese Growth Miracle Built to Last?*, 20(1) *CHINA ECONOMIC REVIEW* 103 (2009).

Figure 1. Chinese Gross Savings, Investment (Gross Fixed Capital Formation), and Household Consumption as a Percentage of GDP: 1990-2012²⁰²



Industry (particularly heavy industry) and not the service sector has benefited disproportionately from China's investment boom. As He and Kuijs have shown, there is a positive cross-country correlation between the ratio of investment to GDP and the share of industry in value added, with China having the highest values for both ratios.²⁰³ In other words, "industry and investment go together."²⁰⁴ Guan et al.

²⁰² Source: World Development Indicators, available at http://data.worldbank.org/country/china#cp_wdi.

²⁰³ Jianwu He & Louis Kuijs, *Rebalancing China's Economy-Modelling a Policy Package* (World Bank China Research Paper No.7, 2007).

²⁰⁴ He & Kuijs, *supra* note 203, at 7. These authors report that industrial value added increased on average 12.6 percent annually during 1990 and 2006, and the share of industry in GDP rose from forty-two percent in 1990 to almost forty-nine percent in 2006 in current prices, which is among the highest for any country since the 1960s. In fact, the increase would have been larger but

further indicate that “capital investment creates a market demand for the large-scale production expansion of cement, steel and other highly emission-intensive processed materials, and associated electricity generation to support their production.”²⁰⁵ These emission-intensive industries are highly polluting, and capital investment thus contributes substantially to China’s environmental problems. For example, Minx et al. report that capital investments are responsible for sixty-one percent of CO₂ emission growth in China between 2005 and 2007.²⁰⁶ Similarly, Guan et al. find that capital formation is the largest contributor to production-related (as opposed to consumption-based) primary PM_{2.5} emissions, accounting for thirty-two to thirty-nine percent of the annual emissions during the 1997-2010 period.²⁰⁷

Why would the Chinese government not rebalance the sources of economic growth and turn to a technology-based growth model that

for the declining relative prices of industry. In constant 1995 prices, the share of industry in GDP rose from thirty-seven percent in 1990 to 53.5 percent in 2006. Over the 2003-06 period, industry contributed sixty percent to total GDP growth, in comparison with six percent from agriculture and thirty-four percent from the services sector.

²⁰⁵ Dabo Guan, Stephan Klasen, Klaus Hubacek, Kuishuang Feng, Zhu Liu, Kebin He, Yong Geng & Qiang Zhang, *Determinants of Stagnating Carbon Intensity in China*, 4 NATURE CLIMATE CHANGE 1017, 1019 (2014).

²⁰⁶ Jan C. Minx, Giovanni Baiocchi, Glen P. Peters, Christopher L. Weber, Dabo Guan & Klaus Hubacek, *A ‘Carbonizing Dragon’: China’s Fast Growing CO₂ Emissions Revisited*, 45(21) ENVIRONMENTAL SCIENCE & TECHNOLOGY 9144 (2011).

²⁰⁷ Dabo Guan, Xin Su, Qiang Zhang, Glen P. Peters, Zhu Liu, Yu Lei & Kebin He, *The Socioeconomic Drivers of China’s Primary PM_{2.5} Emissions*, 9 (2) ENVIRONMENTAL RESEARCH LETTERS 1 (2014).

is more sustainable and environment friendly? There are two reasons for this policy choice. First, technology-based growth is driven by a process of unceasing innovation, which in turn is driven by the risk-taking behaviour of entrepreneurs who are constantly trying to increase profits by introducing new goods and new production methods in response to changes in demand and to changes in production possibilities.²⁰⁸ Therefore, the key to converting a country's growth pattern from being investment-driven to becoming technology-based involves restructuring the institutional framework under which the economy operates to transfer decision-making power from bureaucrats to entrepreneurs. However, the Party's attitude towards entrepreneurs and their private enterprises is consistently unfriendly, making it unlikely that the Party will transfer its resource-allocation power to entrepreneurs. Haggard and Huang report that "despite the well-documented process of economic reform in China, the domestic private sector remains relatively small and subject to a variety of policy and economic constraints."²⁰⁹ This phenomenon might arise because the Party might reason that entrepreneurs who enjoy economic power and wealth today will gain political power in the future and therefore pose a threat to the

²⁰⁸ JOSEPH A. SCHUMPETER, *THE THEORY OF ECONOMIC DEVELOPMENT: AN INQUIRY INTO PROFITS, CAPITAL, CREDIT, INTEREST, AND THE BUSINESS CYCLE* (1961, original published in 1912); WILLIAM J. BAUMOL, *THE FREE-MARKET INNOVATION MACHINE: ANALYZING THE GROWTH MIRACLE OF CAPITALISM* (2002).

²⁰⁹ Stephan Haggard & Yasheng Huang, *The Political Economy of Private-Sector Development in China*, in *CHINA'S GREAT ECONOMIC TRANSFORMATION* 338 (Loren Brandt & Thomas G. Rawski eds., 2008).

supremacy of the Party.²¹⁰ After all, as McGregor states, entrepreneurs “were more like valued foster-children than part of the family.”²¹¹

Second, the transition from an investment-driven to a technology-based growth pattern should be accompanied by a process of systematic and extensive market liberalization such that entrepreneurs can be directed and motivated by a free market to meet actual social preferences with the most suitable production methods. In other words, a precondition for technology-based growth is an effectively functioning free market in which a level playing field is established and maintained for all types of enterprises, entrepreneurs are rewarded for their value (wealth)-adding rather than rent-seeking activities, and distorting economic policies and rules are eliminated. However, such a free market conflicts with the Party’s governance strategy. As Pei argues, China’s gradualist reform process allows the Party to generate rents in vital sectors, such as factor markets, and to use the rents to maintain political support among key constituencies.²¹² Powerful interest groups, such as state-owned enterprises (SOEs), reap impressive benefits from the current distorted policy environment. For instance, scarce financial resources have been systematically allocated to SOEs at a price that is far lower

²¹⁰ YASHENG HUANG, *SELLING CHINA: FOREIGN DIRECT INVESTMENT DURING THE REFORM AREA* (2003).

²¹¹ McGregor, *supra* note 183, at 228.

²¹² Pei, *supra* note 185.

than would have occurred in a more liberalized financial environment. In other words, SOEs are supported by financial rents created by distorted financial policies, without which it would be difficult or impossible for China's SOEs to survive, not to mention develop or profit.²¹³ Thus, any economic reform that may reduce economic distortion (and hence economic rents) will undermine the regime's survival and risk resistance or sabotage by the ruling elite. In other words, a rebalancing strategy is economically efficient but politically infeasible. In addition, distorted factor markets also help economic growth because repressed factor prices lower production costs, increase investment returns, and improve the international competitiveness of Chinese goods. Distorting factor markets has therefore become a powerful weapon used by the Chinese government to accelerate economic growth, at the cost of consumer welfare, economic efficiency, and long-term sustainability.²¹⁴

E. Lack of Political Rewards for Environmental Protection

The "growth-first" ideology has permeated the entire bureaucratic system and shaped the incentive structure of local

²¹³ For a more detailed discussion, see Guangdong Xu & Binwei Gui, *Why Are China's State-Owned Enterprises so Profitable? A Financial Repression Perspective*, in *MARKET INTEGRATION: THE EU EXPERIENCE AND IMPLICATIONS FOR REGULATORY REFORM IN CHINA* (Niels Philipsen, Stefan Weishaar & Guangdong Xu eds., 2016).

²¹⁴ For more detailed discussions on this issue, see Guangdong Xu, *Is China an Anomaly for the 'Law Matters' Hypothesis?*, 1(2) *ASIAN JOURNAL OF LAW AND SOCIETY* 339 (2014) and Guangdong Xu, *The Institutional Foundations of China's Unbalanced Economy*, 67 (9) *EUROPE-ASIA STUDIES*, 1351 (2015).

officials when confronted with the trade-off between economic performance and environmental quality. Although China is an authoritarian regime in which the Party is the sole source of power, its government is highly decentralized. This system is referred to as a “regionally decentralized authoritarian (RDA) regime”²¹⁵ that is both politically centralized and economically decentralized by region. On the one hand, the national government’s control is substantial in that the Chinese political and personnel governance structure has been highly centralized. Subnational government officials are appointed from above,²¹⁶ and the appointment and promotion of subnational government officials serve as powerful incentives for the national government to induce regional officials to follow the central government’s policies. On the other hand, the governance of the national economy is delegated to subnational governments. Regional economies are relatively self-contained, and subnational governments have the general responsibility for initiating and coordinating reforms, providing public services, and making and enforcing laws within their jurisdictions. This regime is argued to have decisively contributed to China’s miraculous economic growth by encouraging inter-regional competition around certain performance indicators, such as GDP

²¹⁵ Xu, *supra* note 189.

²¹⁶ More specifically, this personnel control system is a nested network in which the centre directly controls the key positions at the provincial level and grants each tier of subnational government the power to appoint key officials at the next level below. Each level of subnational government oversees the appointment, evaluation, promotion, and dismissal of its subordinate-level regional leaders.

(total or per capita), GDP growth rate, and FDI, and by using regional experiments to initiate and test new reform policies that weaken political resistance and reduce uncertainties.

In the Chinese context, national priorities set by the Party are operationalized through performance targets against which lower level agents are evaluated. The relative importance of different targets has been made explicit within the system. Performance targets are clearly labelled as soft (“guidance”) targets (*zhidao xing* or *yiban zhibiao*), hard targets (*ying zhibiao*) or “targets with veto power” (*yipiao fojue zhibiao*)²¹⁷. Social stability-related objectives and the implementation of the one-child policy are “veto” targets, which indicates that failure to meet those targets would (theoretically) result in automatic punishment. Economic goals, such as GDP growth, tax collection, and FDI inflow have long been hard targets that are tightly correlated with the prospects for promotion of local officials and that therefore incentivize them to pursue economic construction projects regardless of local conditions, public opinion, and even national law if they are understood to conflict with economic aims. Environmental and other targets have historically been classified as soft guidance targets, a powerful indication of the secondary importance of these values within the Chinese bureaucratic system.²¹⁸ In other words,

²¹⁷ Alex L. Wang, *The Search for Sustainable Legitimacy: Environmental Law and Bureaucracy in China*, 37 HARVARD ENVIRONMENTAL LAW REVIEW 365 (2013).

²¹⁸ *Id.*

these objectives have largely been left to the discretion of local governments to do as they please.

Such an evaluation system has proven to be a successful tool used by central authorities to pressure local governments to devote their attention to particular objectives. According to Minzner, these targets “are transmission belts by which vague central legal and administrative norms are operationalized into meaningful directives for local authorities to carry out.”²¹⁹ Evidence shows that local officials are indeed rewarded, such as by being promoted to a higher rank, for achieving the hard targets, such as GDP growth and tax revenue, but not for fulfilling certain soft targets, such as improving environmental quality. For example, Li and Zhou show that the likelihood of a provincial leader being promoted increases with better economic performance (measured by GDP growth), whereas the likelihood of termination decreases with poor economic performance.²²⁰ Guo

²¹⁹ Carl F. Minzner, *Riots and Cover-ups: Counterproductive Control of Local Agents in China*, 31(1) UNIVERSITY OF PENNSYLVANIA JOURNAL OF INTERNATIONAL LAW 53, 74 (2009).

²²⁰ Li & Zhou, *supra* note 139. However, Shih, Adolph, and Liu find no evidence that strong growth performance was rewarded with higher bureaucratic ranks. Instead, these authors find that factional ties with top leaders, educational qualification, and provincial revenue collection play substantial roles in cadre promotions (Victor Shih, Christopher Adolph & Mingxing Liu, *Getting Ahead in the Communist Party: Explaining the Advancement of Central Committee Members in China*, 106(1) AMERICAN POLITICAL SCIENCE REVIEW 166 (2012)). A more balanced conclusion is reached by Jia, Kudamatsu, and Seim, who find that connections and performance are complements in the Chinese political selection process (Ruixue Jia, Masayuki Kudamatsu & David Seim, *Political Selection in China: The Complementary Roles of Connections and Performance*, 13(4) JOURNAL OF THE EUROPEAN ECONOMIC ASSOCIATION 631 (2015)).

reports that fiscal revenue growth increases the probability that county chief executives will be promoted.²²¹ By contrast, Wu et al. report that local officials allocate fewer resources to environmental improvement projects than to transportation infrastructure construction because investments in transportation infrastructure yield a higher rate of economic growth (which leads to a greater likelihood of officials being promoted) than investments in environmental expenditures (which are in fact negatively related to cadres' promotion).²²²

Even worse, not only will successful implementation of soft environmental targets not lead to political rewards, but also, a failure to meet environmental targets will not lead to punishment.²²³

²²¹ Gang Guo, *Retrospective Economic Accountability under Authoritarianism: Evidence from China*, 60(3) POLITICAL RESEARCH QUARTERLY 378 (2007).

²²² Wu et al., *supra* note 139. However, Zheng et al. find that environmental improvements are positively associated with local officials' (city mayors') promotion odds, particularly when environmental improvements are measured by accounting indicators, such as annual expenditures on waste gas treatment facilities per GDP dollar, rather than by the more relevant public health variables, such as the ambient particulate concentration in the air (PM₁₀). In other words, even when local officials are motivated to pay attention to environmental issues, they prioritize investment in environmental infrastructure (which can be counted as part of GDP) over the actual contributions of such investment to pollution reduction (Siqi Zheng, Matthew E. Kahn, Weizeng Sun & Danglun Luo, *Incentives for China's Urban Mayors to Mitigate Pollution Externalities: The Role of the Central Government and Public Environmentalism*, 47 REGIONAL SCIENCE AND URBAN ECONOMICS 61 (2014))

²²³ Ran Ran, *Perverse Incentive Structure and Policy Implementation Gap in China's Local Environmental Politics*, 15(1) JOURNAL OF ENVIRONMENTAL POLICY AND PLANNING 19 (2013) and Ye Qi & Lingyun Zhang, *Local Environmental Enforcement Constrained by Central-Local Relations in China*, 24 ENVIRONMENTAL POLICY AND GOVERNANCE 204 (2014).

Therefore, it is not surprising to learn that local officials pay less or even no attention to environmental protection.²²⁴ The best survival strategy, as a local official admitted, is that “we try to maximize GDP and fiscal income, but we meet only the bare minimum of environmental standards.”²²⁵ Hence, a logical argument is that China’s environmental tragedy is more likely an intentional choice by the Party, which prioritizes economic growth “as a life and death matter for the regime”²²⁶ and transmits this intention to local agents by means of the cadre evaluation system. As Ran indicates clearly, “the incentives set by the central government regarding environmental policy implementation at local levels are perversely structured, meaning that the central government provides much more incentive for local governments’ non-implementation or poor implementation of its environmental policies than it provides for full implementation.”²²⁷ The party-state is not without the capacity²²⁸ to

²²⁴ See Miao and others who recently held: “local governments would rather chase GDP increase and local interest than enforce strict regulation on local companies ... lack of pressure from higher authority makes it difficult for bureaucrats to ensure the effectiveness and efficiency of supervision and surveillance” (Miao et al., *supra* note 156, at 475).

²²⁵ Kostka, *supra* note 153, at 16. Local officials maintain minimum levels of environmental standards to avoid environmental-related mass protests and collective petitions. Keeping stability in their jurisdiction remains the highest ranked binding target on the cadre evaluation sheet, and the occurrence of mass protests would certainly negatively impact a cadre’s career advancement.

²²⁶ Xu, *supra* note 189, at 1088.

²²⁷ Ran, *supra* note 233, at 17.

²²⁸ As Edin states clearly, “higher levels of the party-state through the cadre responsibility system mainly have the ability to implement their priority

motivate and mobilize local agents²²⁹ to address environmental problems but is just not interested in doing so, at least not before the environmental and the related health problems become the focus of social unrest that may endanger the survival of the regime.

F. Decentralization without Budget

The hypocritical attitude of the party-state towards environmental protection is further illustrated in an examination of China's public finance system and the fiscal relationship between central and local governments. There are certain institutional defects in China's public spending system. A report issued by the OECD²³⁰ concludes that "capital spending and public administration take a large and, until recently, increasing share of China's overall public spending." In contrast, the portion devoted to certain human capital and other development needs such as education, health, and science and technology appear somewhat low, both in relation to

policies...the Chinese party-state has the capacity to be selectively effective, that is, to implement its priority policies, and control its key local leaders and strategically important areas". Maria Edin, *State Capacity and Local Agent Control in China: CCP Cadre Management from a Township Perspective*, 173 CHINA QUARTERLY 35, 52 (2003).

²²⁹ Certainly, the individual benefits that accrue for local officials, such as luxurious entertainment, kickbacks, and bribes, which derive mainly from the process of economic marketization and industrial expansion, also motivate them to prefer economic growth over environmental quality (Graeme Smith, *Political Machinations in a Rural County*, 62 CHINA JOURNAL 29 (2009) and Graeme Smith, *Measurement, Promotions and Patterns of Behavior in Chinese Local Government*, 40(6) JOURNAL OF PEASANT STUDIES 1027 (2013)).

²³⁰ OECD, CHALLENGES FOR CHINA'S PUBLIC SPENDING: TOWARD GREATER EFFECTIVENESS AND EQUITY 45 (2006).

international standards and China's own goals. Similarly, another report shows that China's public spending on social protection and health as a share of GDP is significantly below average levels for OECD and upper-middle income countries.²³¹

This phenomenon is to a large extent caused by China's unbalanced fiscal relationship between its central and local governments. In terms of budgetary expenditure percentages, China is one of the most decentralized countries in the world.²³² In 2009, the central government accounted for just twenty percent of national budgetary expenditures.²³³ The remainder were distributed among the different levels of local governments: eighteen percent at the provincial level, twenty-two percent at the municipal (or prefectural) level, and forty percent at the county and township level. These high expenditure shares originate with the assignment of many costly and vital responsibilities to lower-level governments.²³⁴ For example,

²³¹ World Bank & DRC, *supra* note 17.

²³² Christine Wong, *Paying for Urbanization in China: Challenges of Municipal Finance in the Twenty-First Century*, in FINANCING METROPOLITAN GOVERNMENTS IN DEVELOPING COUNTRIES (Roy W. Bahl, Johannes F. Linn & Deborah L. Wetzel eds., 2013).

²³³ This ratio had further decreased to fifteen percent by 2014. See 2014 NIAN CAIZHENG SHOUZHI QINGKUANG (ON THE 2014 FISCAL REVENUE AND EXPENDITURE), available at http://www.gov.cn/xinwen/2015-01/30/content_2812441.htm (last visited September 3, 2015).

²³⁴ In the past, SOEs employed most workers and provided basic social services directly to their employees. However, reform of the SOEs shifted these obligations from the shoulders of the SOEs to that of local governments. In the words of Michelson, "the story of the shift from central economic planning to markets in post-1978 China is the story of dismantling socialist institutions and shifting the burden of health care, education, social welfare,

sub-national governments (province, prefecture, county and township) financed 93.3 percent of government expenditures on education, 98.5 percent of health care expenditures, 94.6 percent of social security expenditures, and 98.1 percent of environmental protection expenditures.²³⁵ Concurrently, the share of local fiscal revenue has remained low since China's 1994 fiscal reform, moving from 71.9 percent in 1992 to 44.3 percent in 1994, 51.1 percent in 1997, and then 50.8 percent in 2011.²³⁶

The misalignment between revenue and expenditures means that local governments must rely, at least in part, on transfers from the central government to finance their operations.²³⁷ In 2003, sixty-seven percent of provincial, fifty-seven percent of prefecture and sixty-six

infrastructural development and maintenance, and other services to local levels of governments, market actors, families, and individuals" (Ethan Michelson, *Public Goods and State-Society Relations: An Impact Study of China's Rural Stimulus*, in *THE GLOBAL RECESSION AND CHINA'S POLITICAL ECONOMY* 133 (Dali L. Yang ed., 2012)).

²³⁵ Xiao Wang & Richard Herd, *The System of Revenue Sharing and Fiscal Transfers in China*, (OECD Economics Department, Working Papers No. 1030, 2013).

²³⁶ Yan Zhang, *Unraveling the Gridlock on Fiscal Reform in China: Government, Market, and Central-local Relations*, in *A NEW ECONOMIC GROWTH ENGINE FOR CHINA: ESCAPING THE MIDDLE-INCOME TRAP BY NOT DOING MORE OF THE SAME* (Wing Thye Woo, Ming Lu, Jeffrey D Sachs & Zhao Chen eds., 2012). This ratio had increased to fifty-four percent by 2014. See 2014 NIAN CAIZHENG SHOUZHI QINGKUANG (ON THE 2014 FISCAL REVENUE AND EXPENDITURE), available at http://www.gov.cn/xinwen/2015-01/30/content_2812441.htm (last visited September 3, 2015).

²³⁷ Local governments are also forced to turn to land sales and other off-budget borrowing through local government financing vehicles (LGFVs) to finance their budgets, which leads to serious concerns regarding the financial vulnerability and sustainability of local governments. See, for example, Yuanyan Sophia Zhang & Steven Barnett, *Fiscal Vulnerabilities and Risks from Local Government Finance in China* (IMF, Working Paper No. WP/14/4, 2014).

percent of county and lower level expenditures were financed by central government transfers.²³⁸ In 2009, 46.8 percent of subnational government expenditures depended on net central government transfers.²³⁹ However, transfers from the central government are not sufficient to finance local governments' public services.²⁴⁰ Shen, Zhao, and Zou conclude that combining centralized revenues with decentralized expenditures "has resulted in insufficient financing and provision for core public services, and a default in the delivery of vital services in many poor localities."²⁴¹ In the environmental sector, Zhang and Crooks note that transfers "for the most part, only provide money for capital investment and, in any event, do not cover a hundred percent of the capital costs of the equipment and infrastructure being financed. A certain level of counterpart funding by the beneficiary government is required."²⁴² In addition, the transfers "do not contribute toward the costs of operating and

²³⁸ Chunli Shen, Xiaojun Zhao & Heng-fu Zou, *Fiscal Decentralization and Public Services Provision in China*, 15(1) ANNALS OF ECONOMICS AND FINANCE 135 (2014).

²³⁹ World Bank & DRC, *supra* note 17.

²⁴⁰ Several reasons have been identified for the failure of the transfer system to effectively alleviate local deficits (Qi and Zhang, *supra* note 233). First, the proportion of the general transfer payments is low. Second, the procedure for transfer payment allocation is not stringent, but the central government has great power regarding rent-seeking. Third, the system is not well regulated for transfer payments below the provincial level, so the transfer money reaching local governments is limited. In 2005, nearly twelve percent of transfer payments (or CNY 9.5 billion) did not reach their intended recipients.

²⁴¹ Shen, Zhao & Zou, *supra* note 249, at 139.

²⁴² Zhang & Crooks, *supra* note 5, at 115-116.

maintaining the equipment and infrastructure procured under the various programs, raising serious questions as to the sustainability of many of the investments, particularly in the poorer and more backward parts of the country where the environmental needs are greatest and local government finances are most seriously constrained.²⁴³

Consequently, a significant financial gap between the status quo and the desired state of China's environmental system has been identified. One report estimates that China's total expenditure on environmental protection activities is less than Europe's by 0.3-1.1 percent of GDP; over the long term, China's government expenditures related to the environment should be at least 0.5 percent of GDP above current levels to improve its environmental quality.²⁴⁴ Moreover, this estimate may be too conservative. Certain Chinese scientists claim that government expenditures on environmental protection should be at least 2.2 percent (as opposed to the current 1.3 percent) of GDP to prevent the situation from deteriorating further, whereas others claim it should be closer to three to four percent of GDP to improve the situation.²⁴⁵ Even worse, the official data (such as

²⁴³ See also Briggs, who equally holds that local level officials often lack the necessary assistance from the central government to enforce national environmental policies (Briggs, *supra* note 94, at p. 314).

²⁴⁴ World Bank & DRC, *supra* note 17.

²⁴⁵ See IS CHINA'S ENVIRONMENTAL TIDE TURNING? 4 THINGS TO WATCH, available at

the 1.3 percent of GDP) may have overestimated fiscal spending on environmental protection. Wu et al. report that the majority of government expenditures on environmental protection goes to urban environmental infrastructure construction (approximately sixty percent of total expenditure) rather than to industrial pollution source control (less than twenty percent of total expenditure in most of the years during the 1998-2004 period).²⁴⁶ However, most investment in urban environmental infrastructure construction, such as investment in gas supply projects, central heating, and landscaping, is not closely related to environmental pollution abatement. If these investments are excluded from the category of environmental protection expenditures, national environmental protection investment is reduced by approximately fifty percent.

By shifting the burden of providing public goods to local governments, the party-state can save its money for promoting economic growth, buying support from its constituents,²⁴⁷ and

<http://thediplomat.com/2015/05/is-chinas-environmental-tide-turning-4-things-to-watch/> (last visited September 4, 2015).

²⁴⁶ Shunze Wu, Yuantang Lu, Jinnan Wang, Yao Liu & Zhizhong Zhang, *Analysis and Suggestion on Distortion of Environmental Protection Investment in China*, (17)3 CHINA POPULATION, RESOURCES AND ENVIRONMENT 112 (2007).

²⁴⁷ For example, Pei argue that state control of economic resources (mainly through extensive and tight control of China's state-owned enterprises) gives the Party the ability to retain the loyalty of its key constituents in several ways, such as by appointing its loyal supporters as the senior or mid-level executives in state-controlled or state-owned enterprises (Pei *supra* notes 175 & 180). In addition, the strategy of "buying stability" (huaqian mai pingan, which literally means "paying cash for peace") has become the most prevalent means of pacifying aggrieved citizens involved in labour, land rights, and property disputes. See Ching Kwan Lee & Yonghong Zhang, *The Power of Instability:*

improving its repressive capacities.²⁴⁸ Concurrently, the decentralized power structure allows the central government (and hence the party-state per se) to distance itself from blame-generating situations in which local governments fail to adequately deliver public goods – such as maintaining and/or improving environmental quality – and maintain its legitimacy. As Lü put it clearly, “the Chinese central government is poised to benefit from social policy initiatives regardless of the success or failure of policy implementation. If a social policy is not well implemented at the local level, residents receive few policy benefits. Then citizens blame the local government because they hold it responsible for providing public goods and service, even though the implementation failure may be caused by insufficient transfers from upper levels of government. Conversely, if the policy is implemented successfully and local residents benefit, they credit the central government more than the local government, because state media tend to favour the central government, which initiated the policy and provides fiscal transfers to the local government.”²⁴⁹ Local

Unraveling the Microfoundations of Bargained Authoritarianism in China, 118(6) AMERICAN JOURNAL OF SOCIOLOGY 1475 (2013).

²⁴⁸ For example, it has been reported that China’s spending on internal public security (CNY 549 billion) overtook national defence (CNY 533.4 billion) in 2010. See BEIJING RAISES SPENDING ON INTERNAL SECURITY, available at <http://www.ft.com/intl/cms/s/f70936bo-4811-11e0-b323-00144feab49a> (last visited September 7, 2015).

²⁴⁹ Xiaobo Lü, *Social Policy and Regime Legitimacy: The Effects of Education Reform in China*, 108(2) AMERICAN POLITICAL SCIENCE REVIEW 423, 426 (2014). According to Fewsmith and Gao, the central government attempts to play the role of “mediator” between local governments and local residents and

governments at different levels thus act as “buffer zones” that protect the central government from citizens’ dissatisfaction and cushion the Party from potential legitimacy crises.²⁵⁰ This strategy appears to work well, as numerous studies show that the central government enjoys much higher legitimacy than local governments.²⁵¹

G. Summary: Its Politics, Stupid!

In summary, the blame for China’s environmental disaster rests at least in part – and perhaps primarily – with China’s political system, including its authoritarian governance style (under which information

therefore not only contain governance crises at the local level but also win support from the public (Joseph Fewsmith & Xiang Gao, *Local Governance in China: Incentives and Tensions*, 143(2) *DAEDALUS* 170 (2014)). More specifically, when public discontent erupts into crisis, the local government is able to resolve it, and the central government does not have to intervene. However, if the crisis is not successfully resolved at the local level, the central government can use their control over personnel to remove the responsible cadres from their positions, thereby reducing public anger. In discussing the growing number and intensity of peasant struggles in the Chinese countryside, So similarly concludes that China has been framed as a “split state”, with a “benign” centre and a “predatory” local apparatus, which in turn shapes the contours of peasant conflict (protesting against local governments rather than against the central state)(Alvin Y. So, *Peasant Conflict and the Local Predatory State in the Chinese Countryside*, 34(3-4) *JOURNAL OF PEASANT STUDIES* 560, 560 (2009)).

²⁵⁰ Chu, *supra* note 189, at 25.

²⁵¹ Lianjiang Li, *Political Trust in Rural China*, 30(2) *MODERN CHINA* 228 (2004); Lianjiang Li, *Political Trust and Petitioning in the Chinese Countryside*, 40(2) *COMPARATIVE POLITICS* 209 (2008); Miche’son, *supra* note 245 and Chu, *supra* note 189. However, see Zhong and Chen, who find that although popular trust towards local governments is indeed lower than trust towards the central government, the difference is not substantial (Zhong and Chen, *supra* note 189). Lewis-Beck, Tang, and Martini further show that citizens’ evaluation of the performance of local governments will influence their satisfaction with the central government (Michael S. Lewis-Beck, Wenfang Tang & Nicholas F. Martini, *A Chinese Popularity Function: Sources of Government Support*, 67(1) *POLITICAL RESEARCH QUARTERLY* 16 (2014)).

is censored, political and civil rights are disregarded, and the government is immune from the consequences of decision failures), its “growth first” strategy that prefers capital accumulation over improvements in productivity, and its unique central-local governmental structure under which local officials’ incentives are determined and fiscal responsibility is divided. Economic growth per se has also contributed to China’s environmental problems; however, under a different political regime in which the government’s decisions were determined, or at least influenced, by the preferences of ordinary citizens, China may have chosen a different growth pattern that relied less on industrial expansion and more on (environmentally friendly) service sector growth. Failures in environmental governance also led to China’s environmental tragedy, but the legislative process, judicial incentives, and regulatory agency functionality are all shaped by the underlying political infrastructure and reflect the policy priorities of the party-state. In China’s single-party regime, politics penetrates virtually every aspect of daily life and should thus be understood not only as a precondition or a background but also – and more importantly – as a direct cause when exploring economic, social, and environmental problems in China. In Minxin Pei’s succinct words addressing the root of China’s recent economic troubles, “It’s politics, stupid.”²⁵²

²⁵² MINXIN PEI, *THE ROOT OF CHINA’S ECONOMIC TROUBLES? IT’S POLITICS, STUPID*, available at

V. Concluding Remarks

China's economic miracle has been achieved with high environmental costs, such as substantial air pollution and water pollution, which have been shown to be detrimental or even life-threatening to the health of China's citizens. If these environmental and health costs are internalized in an analysis of China's economy, the real performance may be much gloomier than that trumpeted by the Chinese government. Environmental governance institutions, such as courts and regulatory agencies, certainly should be blamed for failing to perform their duties; however, governance failure is not the entire story. When a political regime in which regulatory institutions and the judicial system are embedded consistently prioritizes economic growth over environmental quality and sustainable development, regime stability and survival over citizens' rights (and over their health and welfare), and rent creation and distribution over the provision of public goods and services, there is not much room for environmental governance institutions to function. Thus, environmental disaster in China is more likely a result of political failure rather than of governance failure.

<http://asia.nikkei.com/Politics-Economy/Economy/The-root-of-China-s-economic-troubles-It-s-politics-stupid> (last visited September 9, 2015).

It may be argued that the Chinese government has changed its policy priorities and shown more enthusiasm about environmental protection in recent years. For example, at the beginning of the 11th Five Year Plan (2006), environmental targets were for the first time upgraded to “binding” status by the central government and thereafter became important criteria in cadre promotion decisions, particularly for “leading cadres” (governors, mayors, and county heads).²⁵³ The scope of binding environmental targets further widened from the original three in the 11th Five Year Plan to a total of nine in the 12th Five Year Plan. However, these targets have been shown to be problematic and therefore have negligible effects on turning the incentives of local officials in a more environmentally friendly direction.²⁵⁴ The most serious problem involves the tensions between these environmental targets and other competing targets, particularly indicators of economic growth.²⁵⁵ This is a common “multiple tasks”

²⁵³ Wang, *supra* note 224 and Kostka, *supra* note 153.

²⁵⁴ Kostka concludes that these targets are “(a) inappropriate to local circumstances and units of protection, (b) unscientific, (c) rigid, (d) arbitrarily inflated as they get passed down the administrative hierarchy, and (e) difficult to verify” (Kostka, *supra* note 153, at 10). Strictly implementing these targets leads only to inefficient outcomes. For example, in some localities, binding energy intensity targets were fulfilled at the end of the planning period using extreme and sometimes socially harmful measures, including cutting electricity to hospitals, homes and rural villages. Local governments also temporarily shut down energy-intensive companies for a given period of time only to allow the same enterprises to reopen at a later date.

²⁵⁵ See, for example, LOCAL GOVERNMENTS CAUGHT BETWEEN PRESSURE FOR CLEAN AIR AND INCREASED GDP, available at <https://www.chinadialogue.net/article/show/single/en/6660-Local-governments-caught-between-pressure-for-clean-air-and-increased-gdp> (last visited September 10, 2015), and THE COST OF CLEAN AIR, available at

problem: when agencies (local officials) who hold significant informational advantages over the principal (the central government) are assigned multiple tasks, they may be incentivized to focus on the tasks that are more measurable (such as GDP growth) and ignore those that are less measurable (such as environmental quality and citizen's welfare).²⁵⁶ Although it is possible, in principle, for the central government to establish a set of weights for various objectives and to apply these weights in performance evaluations, there are significant difficulties in making evaluation trade-offs and of measurement arising from perverse reporting incentives and technical problems.²⁵⁷ Without a fundamental political reform that shifts the power of evaluating, appointing, and discharging officials from the

<http://www.economist.com/news/china/21642214-measures-combat-air-pollution-are-biting-hard-industrial-areas-already-hit-economic> (last visited September 10, 2015).

²⁵⁶ Bengt Holmstrom & Paul Milgrom, *Multitask Principal-Agent Analyses: Incentive Contracts, Asset Ownership, and Job Design*, 7 JOURNAL OF LAW, ECONOMICS, & ORGANIZATION 24 (1991).

²⁵⁷ Knight argues that "even local GDP growth has at times been exaggerated by ambitious officials; the chances of misreporting are greater in the case of less measurable targets" (John Knight, *China as a Developmental State*, 37(10) WORLD ECONOMY 1335, 1344 (2014)). Similarly, Qi and Zhang conclude that evaluating the performance of local governments using data on environmental quality and the emissions of environmental pollutants is "a daunting challenge" for three reasons. First, assessing the environmental quality of multiple spatially heterogeneous regions depends on large-scale, comprehensive and high-quality data systems, which have been technically difficult to provide. Second, the current available data could be easily distorted, as local governments are responsible for providing the relevant information themselves without effective external supervision. Finally, the environmental quality of a region can be affected by the movement of pollutants across boundaries, thus making it difficult to identify the responsible body (Qi & Zhang, *supra* note 233, at 207-08).

party-state to ordinary citizens (who are the best judges of the quality of the environment they live in and in a better position than the central government to monitor the performance of local governments), a piecemeal patching strategy such as adjusting official evaluation criteria will not make a substantial difference.

However, political reform, or democratization, seems to be the last thing in which the Party is interested. Although political reform might improve China's environmental quality by empowering citizens and NGOs, by exposing polluting enterprises to public pressure and legal liability, and by holding public officials (local or central) accountable for their decisions, it would also deprive the Party of its monopoly power and the related benefits enjoyed exclusively by the ruling elites, including top bureaucratic positions, considerable economic rents, and social status. Political reform is thus intolerable to the Party, and environmental pollution (and other economic and social problems) can only be addressed in a piecemeal, half-hearted, and perfunctory manner under the current political regime. The only hope for Chinese citizens to enjoy a better environment under Party rule seems to be a hard landing of the economy or even an economic crisis that wipes out the inefficient, wealth-destroying, and environment-damaging enterprises. The good news is that given the unsustainable nature of China's investment-driven economy, an economic recession or even depression is not unimaginable and

actually highly likely in the near future.²⁵⁸ The bad news is, at that time, Chinese citizens will have other problems to worry about, such as unemployment, declining quality of life, and even social disorder, rather than environmental quality.

²⁵⁸ Xu, *supra* note 214.

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