

Chronic Noncompliance and Ineffective Enforcement in Guangzhou

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ABSTRACT

Industrial pollution is the most important cause of China's current environmental crisis. This article concentrates on those firms that continue to seriously deviate from compliance even though they have been repeatedly caught and punished for breaching environmental regulations. This chronic noncompliance is explained through examining formal and informal enforcement activities by the state and by civil society, respectively. Guangzhou, a metropolis located in the heart of the Pearl River Delta, has been selected for this study because of data availability, its relatively more mature civil society, and its political status as a provincial capital. We employ both publicly available government law enforcement data and fieldwork-based first-hand data from individual firms. Special attention is given to the period 2007–2015, during which market fluctuations after the 2008 global financial crisis could have affected the firms' compliance decisions. Formal monitoring and enforcement by the local environmental agencies are found to have

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improved compliance, but the regulatory effectiveness was still constrained by the low probability of catching noncompliance and/or insufficient penalty upon conviction. Enforcement activities by civil society played an increasingly visible, yet still complementary, role. Overall, the existing enforcement activities are still inadequate to fundamentally reverse this pattern of chronic noncompliance.

Keywords: Enforcement and compliance; Environmental pollution; Governance; Crime and punishment; China

Incumplimiento crónico y cumplimiento ineficaz en Guangzhou

RESUMEN

La contaminación industrial es la causa más importante de la actual crisis ambiental de China. Este artículo se concentra en aquellas empresas que continúan desviándose seriamente del cumplimiento a pesar de que han sido atrapadas y castigadas repetidamente por infringir las regulaciones ambientales. Este incumplimiento crónico se explica a través del examen de las actividades de cumplimiento formales e informales del estado y la sociedad civil, respectivamente. Guangzhou, una metrópolis ubicada en el corazón del delta del río Perla, ha sido seleccionada para este estudio debido a la disponibilidad de datos, su sociedad civil relativamente más madura y su estatus político como capital provincial. Empleamos tanto datos públicos de aplicación de la ley del gobierno como datos de primera mano basados en el trabajo de campo de empresas individuales. Se presta especial atención al período 2007-2015, durante el cual las fluctuaciones del mercado después de la crisis financiera mundial de 2008 podrían haber afectado las decisiones de cumplimiento de las empresas. Se encuentra que el monitoreo formal y la aplicación por parte de las agencias ambientales locales han mejorado el cumplimiento, pero la efectividad regulatoria aún se vio limitada por la baja probabilidad de que no se detecte el cumplimiento y / o la sanción insuficiente de la condena. Las actividades de cumplimiento por parte de la sociedad civil desempeñaron un papel cada vez más visible, pero aún así complementario. En general, las actividades de cumplimiento existentes aún son inadecuadas para revertir fundamentalmente este patrón de incumplimiento crónico.

Palabras clave: Aplicación y cumplimiento; Contaminación ambiental; Gobernanza; Crimen y castigo; China

长期环保违规与广州政府执法的研究

摘要

工业污染是中国当前环境危机最重要的原因。本文聚焦于那些多次因违反环境法规而受到惩罚然而却持续不改的公司。我们研究政府的正式和公民社会的非正式执法活动，从而来解释这种长期违规现象。位于珠江三角洲腹地的大都市广州由于其数据的可获得性、相对成熟的公民社会和作为省会的政治地位，被选为本次研究的对象。由于2008年全球金融危机后的市场波动可能特别影响到公司的环保合规决定，2007-2015年成为研究的重点时段。我们采用了公开的政府执法数据和公司层面基于实地调查的第一手数据。我们的研究发现，尽管当地环境机构的正式监测和执法已经改善了合规情况，但发现违规现象可能性低和(或)定罪后处罚不严仍然限制了监管的有效性。虽然只是辅助，公民社会的执法活动发挥了日益明显的作用。总之，现有的执法活动还不足以从根本上扭转这一长期违规局面。

关键词：执法与合规；环境污染；治理；犯罪与处罚；中国

1. Introduction

China is facing environmental crises on several fronts (Wu and Edmonds 2017). Numerous countermeasures have been actively implemented, including increasingly more stringent standards and laws, shutting down more polluting plants, and initiating more ambitious pollution-control programs. However, the overall impacts on the behavior of polluting firms may

be less positive than what the regulations intend. Despite increasingly sophisticated and rigorous environmental standards and regulations, illegal pollution and other forms of violation remain rampant. The rapid growth of citizen complaints and even of protests triggered by pollution in recent years also show the ineffectiveness of China's overall environmental law enforcement (Steinhardt and Wu 2016).

The existing literature on polluting behavior at plant level mainly focuses on the economic and institutional aspects of the firms, assuming polluting firms are rational agents and they make decisions by calculating the expected costs of compliance and the expected penalties for noncompliance. If the former exceeds the latter, an individual firm will be more likely to choose noncompliance. Weak laws and/or law enforcement could result in low expected penalties and, therefore, a high probability of noncompliance by firms.

Many studies on environmental compliance and enforcement, including those concentrating on China, adopt this approach and they tend to focus on the formal rules and the mechanisms for implementing them. On the government's part, considerable academic attention has been given to explaining the "enforcement gaps"; these are mainly caused by high costs, limited budgets, shortages of personnel and necessary expertise, and a variety of institutional problems (Arguedas 2008; Blackman and Harrington 2000; McAllister et al. 2010; Pan, Wang, and Wang 2005; Russell and Vaughan 2003). On the regulatees' part, existing literature suggests that polluting firms' behavior is mainly shaped by environmental laws and policies and, more importantly, by their enforcement, as polluting firms are driven by utility maximization rationales and their managers make decisions based on comparing various costs and benefits (Xu 2011).

Another strand of scholarship has proved that neither formal nor in-

formal enforcement mechanisms can alone ensure consistent compliance. Empirical evidence from both industrialized and developing countries suggests that effective government regulation and law enforcement and public participation are mutually supportive (Gunningham 2009; Thornton, Gunningham, and Kagan 2005).

A third strand of literature suggests that noncompliance with environmental regulations is a consequence of comprehensive factors that include not only the incentives and sanctions created by the formal regulations, but also by a variety of determinants such as the design of policy instruments, the political consensus on law enforcement intensity, the degree of heterogeneity and the capacity of regulatees, and the pressures from private intervention (Pargal et al. 1997; Weaver 2014). Specialized literature on environmental regulation and compliance in China also suggests that corporate compliance behavior can be affected by informal mechanisms such as the political connections (of the polluting firms), features of ownership, general developmental modes, and public monitoring and participation (Van Rooij 2010; Wang et al. 2003, 2008; Xie, Yuan, and Huang 2017).

Building upon the above literature, this study will explore how the formal and informal factors work together to affect the rational polluting behaviors of different firms and how various factors determine the effectiveness and efficiency of China's environmental regulatory activities. Formal factors main-

ly include the official regulatory system, the monitoring instruments, the administrative structures, and the alternative regulatory mechanisms voluntarily adopted by polluting firms. Informal factors refer to the political and social construction of the seriousness of compliance or noncompliance, the attitudes and beliefs of the regulatees, and the social pressures on the polluting firms to comply with the regulatory standards.

In this research, we chose to focus on one of the least environmentally friendly behaviors of polluting firms, namely, chronic noncompliance. These firms have been caught and punished numerous times for noncompliance with the environmental rules, but they still proceed without any significant changes to their polluting behavior. Guangzhou, the capital city of Guangdong province and a major site of pollution in the Pearl River Delta (PRD), is selected for an intensive case study because of data availability and representativeness in terms of pollution regulations and the polluting behavior of local firms. This paper is organized as follows. Section 2 introduces and explains the data and the analytical framework. Section 3 explains the features of chronic noncompliance with environmental regulation in Guangzhou. Section 4 examines the nature and effectiveness of the formal regulations related to pollution in Guangzhou. Section 5 examines the emerging informal approaches to monitor corporate pollution behavior in the case. Section 6 discusses the findings and concludes.

2. Data and Analytical Framework

2.1 Data

For this research, we have compiled a comprehensive dataset on the chronic offenses of corporate polluters in Guangzhou based on official environmental, provincial, and municipal enforcement data covering the period 2007–2015 (Table 1). The official data on inspections, penalties, and citizen reporting were acquired from the Annual Report on the State of Environment in Guangzhou (RSE) and other open-source documents available on the Guangzhou Environmental Protection Bureau (EPB) website. We also used the websites of the Institute of Public and Environmental Affairs (IPE) and the Guangdong Provincial EPB for supplementary sources of data. IPE is a Beijing-based nongovernment organization (NGO) specialized in creating interactive maps/data of industrial pollution to facilitate public participation in pollution control. The IPE data focuses on large polluting sources monitored by the Ministry of Environmental Protection (MEP) and is a useful source for researchers to find information about sanctions related to the state-monitored sources (SMSs). In addition, the first author of the paper conducted six interviews with district-level EPB officers and staff of environmental NGOs (ENGOs), which provides contextual data for our interpretation and analysis.

To identify cases of chronic polluting firms, we created a set of criteria that can be easily applied

with open-source data: (1) the firms that have committed three or more violations, or received three or more specific penalties (*i.e.*, fines, suspension, or shutdown); (2) the firms that are subjected to one-year interagency supervisions jointly conducted by the EPBs and Bureaus of Discipline Inspection (BODI) at the municipal or provincial level (*gua pai du ban*); and (3) the firms are included in the Environmental Noncompliance Blacklist (ENCB) disclosed by the Guangzhou EPB. The ENCB is an important supplement to the formal regulatory system focusing on large pollution sources, as it strengthens law enforcement on the small-sized polluters in scattered locations on the periphery of cities and the areas where the reach of state regulation is scarce. (More details of the ENCB and its implementation in Guangzhou will be provided in Section 4.)

Applying the criteria to our dataset, we have identified 65 out of the 250 polluting firms as chronic offenders. Among them, 37 were SMSs, mostly large state-owned enterprises (SOEs), monitored directly by the MEP. The remaining 28 cases were mainly small-sized plants subjected to prioritized monitoring by local EPBs and included in the ENCB for enhanced law enforcement. There are at least 18 blacklisted factories included in our dataset and, by the time of writing this paper, none of these polluting firms have been removed from the prioritization lists.

2.2. Analytical Framework

To analyze the formal and informal enforcement activities and how they might reverse chronic noncompliance, we adopt the framework based on the economic calculation of costs and benefits responding to enforcement activities, as explained in the introduction section. The benefits of noncompliance are mainly the saved costs to comply with certain environmental laws and policies, such as those for mitigating emissions. The costs of noncompliance are the expected penalty, resulting of two factors namely, the probability of catching noncompliance and the penalty for noncompliance. A key research question is how to effectively deter environmental noncompliance. With different data and methodology, other studies have concluded that detection probability is more important (Grogger 1991), or that punishment severity is more important (Friesen 2009), or that both are important (Earnhart and Friesen 2012).

Environmental noncompliance is one of the most important causes of China's current environmental crises (Xu 2011, 2013). Noncompliance cannot be deterred without a high-enough proportion of cases being caught and punished (Guo et al. 2014; Xu 2011). Catching noncompliance by firms is predominantly reliant on effective techniques of monitoring, reporting, and verification (MRV) designed, deployed, and executed by government regulatory agencies at various levels. However, the positive correlation between the deployment of MRV techniques and

Table 1. Data Sources

Types of Data	Sources of Data	
Regular administrative penalties (2007–2015)	Annual Report on the State of Environment in Guangzhou (2008–2015) (Guangzhou EPB 2008–2016)	
	The Guangzhou Yearbook (2008–2015) (Editing Committee 2008–2016)	
	The Institute of Public & Environmental Affairs, Database on the environmental performance of enterprises (IPE 2018)	
Enforcement campaigns (2007–2015)	Report on the Implementation of the Listed Supervision of the Prioritized Environmental Pollution Problems (Guangzhou EPB and Guangzhou Bureau of Discipline and Inspection 2008–2016)	
	The Guangzhou Yearbook (2008–2015) (Editing Committee 2008– 2016)	
Information about citizen reporting (2007–2015)	Annual Report on the State of Environment in Guangzhou (2008–2015) (Guangzhou EPB 2008–2016)	
	The Guangzhou Yearbook (2008–2015) (Editing Committee 2008–2016)	
First-hand information from fieldwork	1 officer from a district-level EPB in Guangzhou	Interview conducted by Lin Peng on August 14, 2015
	1 staff from an ENGO, Guangzhou Environmental Protection (GEP)	Interviews conducted by Lin Peng on April 13, 2016, May 3, 2016, and May 8, 2018
	2 staffs from an ENGO, Liu Xi He Ecological Protection Center (LAUKAI)	Interviews conducted by Lin Peng on April 13, 2016, May 7, 2016, and April 5, 2017
	A public hearing hosted by the Guangzhou Municipal People’s Congress	Participatory observation conducted by Lin Peng on April 12, 2018
	A project evaluation session hosted by a district-level water bureau in Guangzhou	Participatory observation conducted by Lin Peng on May 9, 2018

the effective deterring and sanctioning of environmental violations might be hindered by inadequate regulatory capacity and other institutional factors (Lo et al. 2012; McAllister et al. 2010). The “enforcement gap” caused by weak

bureaucratic capacity is particularly significant in industrializing countries like China. For instance, continuous emission monitoring systems (CEMSs) have been widely used in the United States to provide accurate data on SO₂

emissions and to monitor compliance (Stranlund and Chavez 2000), while the poorer quality of CEMSs in China often fails to achieve such accuracy and they are mainly used to provide guidance for occasional site inspections (Pan, Wang, and Wang 2005; Xu 2011).

Weaver (2014) has criticized the conventional scholarship on compliance and enforcement gaps that predominantly focused on the motivations of the regulatees. He then proposed a comprehensive framework to analyze noncompliance with public policies by adding factors related to the willingness and capacity of the regulatees. He also suggests that the technical and social aspects of policy instrument designs, such as the heterogeneity of regulation targets and the political constructs of seriousness of noncompliance, can have important effects on the compliant behavior of regulatees. Weaver's conceptualization of "compliance and enforcement regimes" provides a useful framework for this paper, although it falls short by focusing narrowly on formal rules made and implemented by governments and by failing to capture the widespread informal enforcement initiated by nongovernmental actors against noncompliant behavior.

This article intends to evaluate the instruments of formal and informal compliance regimes and their impact on chronic noncompliance behavior. As shown in Figure 1, the Y-axis shows compliance regimes measured in terms of formality. The most formal compliance regime mainly includes institutional and policy instruments set by

the formal regulatory bodies. The less formal regime includes the instruments of voluntary regulation established by enterprises and professional civil society organizations. The least formal one refers to more spontaneous and sporadic efforts made by local communities. The X-axis measures the instruments compliance regime by the degree of enforcement coerciveness. A combination of both formal compliance regime and coercive enforcement instrument lead to highest level of compliance.

3. Chronic Offenders in Guangzhou

Located in the heartland of the prosperous PRD, Guangzhou is a main growth engine of China's manufacturing industries and consequently, yet it suffers from serious industrial pollution. Textile manufacturing, paper making, electronics, and metal processing are the main sources of pollution. In addition, Guangzhou has a high concentration of power stations and industrial waste treatment facilities, and these can produce high levels of pollution if their emissions are not properly treated. Chronic environmental infringers discussed in below are all from the abovementioned sectors.

Chronic environmental infringers can be further divided into two broad categories based on the variation in types and frequencies of penalties imposed by the environmental regulators (Figure 1). The first group of chronic environmental offenders are often termed "nail polluters" (*wuran*

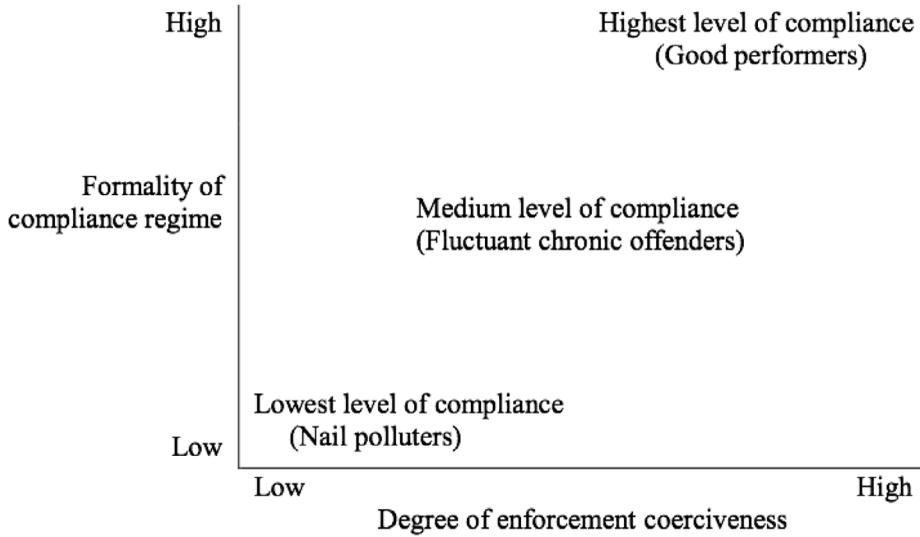


Figure 1. The analytical framework on the relationship between formality of compliance regime, degree of enforcement coerciveness, and compliance rates

dingzi hu). These polluting firms have received the highest frequency (once or more than once per year between 2007 and 2015) and the highest intensity (measured by the amount of fines and the number of coercive sanctions such as suspension, shutdown, and relocation) of penalties and yet have continued with new pollution emissions. The second type of chronic violators' noncompliant behavior is more fluctuating, with obvious ups and downs over time. In good years, polluting firms falling into this category would avoid any records of noncompliance in one year and then receive multiple warnings and penalties in the next because of their illegal emissions.

It is noteworthy that the enterprises with governmental and foreign ownerships can all be serious violators of environmental standards. Neither do SOEs and private companies demon-

strate any distinctive patterns in terms of their chronic noncompliant behavior. The diversity of ownership of polluting firms not only challenges the conventional proposition that foreign companies have better environmental performance or that private companies tend to do a better job in environmental compliance than SOEs, but it also shows a high degree of heterogeneity of targets of environmental enforcement (Wang and Jin 2007).

Another important feature of chronic corporate noncompliance in Guangzhou is that a large number of the violators are small plants. Many of these small polluters are scattered throughout the city outskirts or in “urban villages”—this is a peculiar phenomenon in the PRD due to the rapid uneven urban expansion into the rural areas, and this has left patches of formerly rural villages and their land enclaved in the

cities. These polluters often operate in the absence of governmental regulation and they can easily evade government inspections and sanctions by operating at night, secretly shutting off treatment facilities, concealing outlets, or simply abandoning the old factories and moving into new sites.

4. Formal Compliance Regime and Coercive Enforcement

China's environmental regulators mainly rely on formal administrative and legal enforcement instruments to deter and sanction those firms which breach the pollution limits. Most of the regulatory responsibilities, including daily monitoring, inspections, and administrative penalties, are decentralized downwards to the EPBs—these take charge mainly at municipality and county levels. The Guangzhou EPB is responsible for the regulation of the SMSs administered by the MEP and prioritized polluting sources at the municipal level. As grassroots level regulators, the district-level EPBs focus their law enforcement mainly on small polluters and they also assist the municipal EPB to regulate the prioritized sources.

4.1. Formal Monitoring and Inspection to Catch Noncompliance

Most administrative and financial resources for monitoring pollution in China in general or in Guangzhou in particular are devoted to prioritized areas identified by governments at all administrative levels, i.e. centrally, provincially, and municipally prioritized sources. The centrally prioritized pol-

luting sources, or the SMSs, are usually large polluters directly managed by the MEP under the Automatic Monitoring Management Program (AMMP). The Guangzhou EPB then generates a more inclusive monitoring lists by adding polluting sources prioritized at the provincial and municipal levels to the MEP SMS catalog. In practice, the local EPBs do not always differentiate between the locally prioritized sources and the SMSs. All the SMSs under the AMMP are required by the MEP to install automatic monitoring and reporting systems that can submit real-time pollution data and serve as the primary source of compliance-monitoring information for the environmental regulators. In Guangzhou, the automatic monitoring systems installed at the SMSs became fully operational in 2009, and similar devices were gradually deployed to the locally prioritized sources in the following years.

Besides formal monitoring, inspection is another important administrative enforcement instrument for China's environmental regulators. Before the deployment of the automatic monitoring systems, inspection was actually the most important method used by local EPB officers to collect information on pollution and execute sanctions. Even after the diffusion of the automatic monitoring systems, inspection is still an important instrument by which the local environmental regulators can detect and catch the small polluting firms insufficiently covered by the formal monitoring system.

Inspection mainly takes two forms, namely regular monitoring in-

spections and surprise field inspections or inspection sweeps. Regular inspections are conducted by the EPBs at municipal and district levels to confirm real-time monitoring information, locate key pollution sources, and spot environmental violations. The municipal EPB has been responsible for inspecting the centrally supervised SMSs and the prioritized pollution sources at the municipal level. The EPBs in various districts mainly inspect small factories within their jurisdictions.

Surprise field inspections are randomly conducted and often prompted by enforcement campaigns, environmental disasters, and citizen reporting. Inspections associated with enforcement campaigns are more likely to lead to tougher punishments such as suspension of production, temporary or even permanent closure, relocation, or detention of the owners of the polluting firms. For instance, in 2012, the municipal EPB coordinated several interagency field inspections targeting industrial pollution along the Liuxi River, an important drinking water source of the city suffering from serious environmental deterioration. Official statistics show that in 2012, 905 factories were penalized after these inspection operations, including 14 cases of permanent closures and six cases of forced relocation (Guangzhou EPB; Guangzhou BODI 2008–2016).

However, there are deep-rooted problems that have affected the effectiveness of the inspections such as weak regulatory capacity of the enforcement authorities, and political pressures from

the pro-development sectors of local governments. Inspection requires substantial inputs of financial resources and manpower to ensure the effective detection of noncompliant behavior. Even in the relatively more affluent regions, like the PRD, local EPBs are still handicapped by persistent shortage of funding and personnel to carry out necessary inspections. According to the information we collected from the interviews, a typical district-level EPB in Guangzhou (with no more than 70 full-time staff) is responsible for monitoring more than 10,000 plants, most of which are small private firms. Because many small factories exhibit polluting activities irregularly or evade inspections, it is extremely challenging for the undermanned law enforcers to detect and catch these small offenders.

The second persistent challenge for effective inspections stems from the pressures from the local governments that prioritize economic development over environmental protection. According to the interviews we conducted with district-level environmental protection officers on August 14, 2015, too frequent and too strict inspections might be considered as “interfering” with the enterprises’ operation and not conducive for “building business friendly environment.”

4.2. Administrative Penalties on Noncomplying Polluting Firms

We have identified two major types of penalties on noncompliance. The first type utilizes administrative laws and mainly targets the corporate interests of

the polluting firms which would make noncompliance costly and therefore compel them toward compliance in the future. The second type activates civil criminal laws and addresses the personal interests of the decision makers or managers of the polluting firms. Criminal prosecution could possibly result in the imprisonment of the managers, and such a consequence could deter their intentions of noncompliance.

In China, environmental regulators have traditionally been more reliant on administrative penalties to deter and punish violations of environmental standards committed by the polluting firms. The forms of administrative penalties, which have degrees of coerciveness from low to high, mainly include orders requiring correction within a time limit, fines, suspension of operation, closure, relocation, and detention.

The most frequent form of administrative penalties against environmental violations is pollution fine. But, scholars have long criticized this form of penalty for being too weak to inflict sufficient financial hardship on the polluting firms and to thereby deter noncompliance with environmental regulations. China used to adopt a “per event” fine system, under which the financial penalties had a maximum limit and, according to China’s Administrative Penalty Law, polluting firms were fined only once even if they violated the same environmental standards over an extended period. For both large polluters (such as SOEs) and smaller private companies, the monetary penalties caused by the traditional pollution fines were so small that it made economic

sense for the polluters to continue their illegal discharges rather than to invest in pollution abatement.

Alarmed by the unacceptable environmental pollution and widespread ecological deterioration, the Chinese government began to strengthen its environmental law enforcement in the 11th Five-Year-Plan (2006–2010) by adopting more stringent standards and applying more intrusive policy instruments, which did lead to tougher sanctions. The official statistics of Guangzhou show that the value of pollution fines has increased significantly since 2007 (Figure 2).

More progress in China’s environmental law enforcement has taken place since 2014, when the National People’s Congress (NPC) introduced important amendments to the Environmental Protection Law and significantly increased the financial penalties for environmental infringements. The updated legislation, coming into force in January 2015, canceled the cap on pollution fines and allowed the environmental regulators to fine infringers on a daily basis. The modified EPL also gave enforcement officers more coercive power by allowing them to seize and confiscate production equipment and even detain the owners of the polluting firms. Although it is still too early to make any judgment about the impacts of the new environmental legislation on pollution control, the new legal measures have begun to inflict greater hardship on the polluting firms which breach the environmental standards. In 2015, the first year of the implementation of the new EPL, the Guangzhou

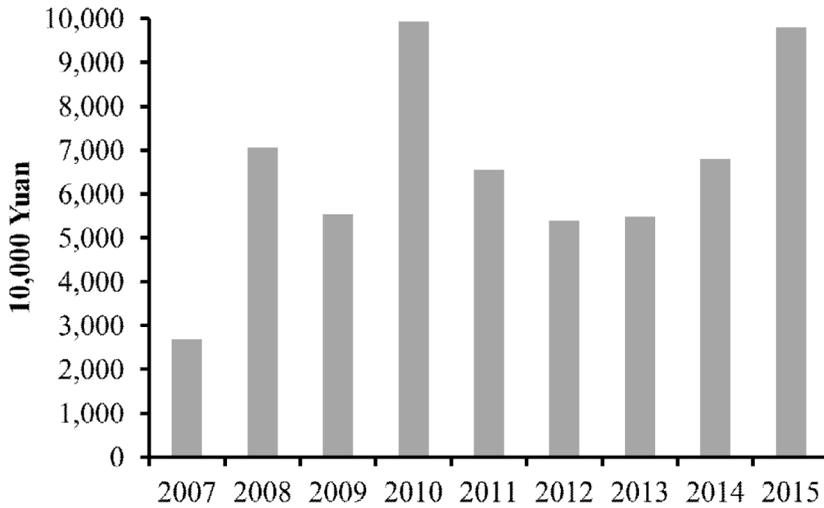


Figure 2. Annual total value of pollution fines (2007–2015)
(Guangzhou EPB 2008–2016)

EPB levied continuing fines on four polluting firms. In 2016, the Yuehua power station, an SOE and a major electricity generator in the city, became the first large polluting firm to have continued fines imposed upon it; these fines for illegal air pollution had record-breaking value totaling 5.4 million yuan, which is the largest ever in China.

In recent years, the Chinese environmental authorities have also established a set of innovative policy instruments, such as interagency supervisions, to supplement the formal environmental laws and regulations by adding extra costs on the chronic noncompliant behavior of polluting firms. The PEPA is essentially an environmental information disclosure and rating system promoted in the early 2000s by the then Department of Science and Technology (DoST) and the State Environmental Protection Agency (SEPA) with direct assistance from an expert team from the

World Bank. After several years' pivotal experiments in two cities in Zhejiang and Inner Mongolia, the project began to be implemented nationwide by the end of the 11th Five-Year-Plan (2006–2010) (Li 2012; Wang et al. 2003). In this incentive-based pollution control project, the environmental performance of firms is rated by local EPBs from best to worst by using five colors—green, blue, yellow, red, and black—and the rating results would be disclosed via mass media and the Internet. Guangzhou adopted the PEPA system in 2007 and adopted a four-color rating system (green, blue, yellow, and red). Polluting firms coded in red would be subjected to more intense supervisions and sanctions jointly conducted by the local EPBs and BODIs and barred from deposit-refunds, performance bonds, and various green loans. As a complement to the PEPA system mainly covering the big polluting sources, the Guangzhou EPB also

established a municipal environmental performance disclosure system called the ENCB. Initiated in 2014, the ENCB specifically targets polluting firms which commit continued violations, and it focuses more on the small polluters which are difficult to detect and monitor by the formal regulatory system.

The interagency environmental supervision, conducted by the EPBs in conjunction with the BODIs, was initiated in 2006 as an instrument of political implementation aimed at adding political and economic costs on chronic noncompliance. The Rules for the Listed Supervision of the Cases of Environmental Infringements enacted by the MEP in 2009 specifically stated that the polluting firms listed on supervision by the environmental protection agencies and departments of discipline include polluters “failed to stop offences despite repeated investigations and penalties.” The involvement of the BODIs in environmental law enforcement is a method for not only enhancing the enforcement of environmental standards and rules, but it also enables the authorities to punish the owners of the polluting firms who serve in public office or who are members of the local People’s Congress or Political Consultative Conference, specifically addressing the barrier for effective environmental regulation created by political connections and protectionism. The implementation of interagency environmental supervisions has been associated with public reporting, severe and continued infringements disclosed by the PEPA, and pollution control priorities set by local EPBs. Supervised polluting firms

would usually be given six months to reverse their noncompliant behaviors by, for instance, reducing emissions to the levels required by the pollution control laws or investing sufficient money in improving their abatement facilities. If the supervised polluters failed to reduce illegal emissions within the given time limit and initiate new offenses, they could be forced to shut down or relocate.

These additional policy instruments have led to the growing number and severity of penalties against environmental violations in Guangzhou. For instance, the interagency environmental supervisions have resulted in a greater number of permanent shutdowns and relocations of polluting plants in Guangzhou (Figure 3). However, most of the harsh penalties were imposed on small factories without significant economic and social impacts. Large polluters, such as the SOEs and big foreign companies, targeted by the supplementary enforcement mechanisms, have rarely been forced to shut down or relocate even when their infringements have been more serious than those of the small polluters.

4.3. Criminal Prosecutions Against Decision Makers in Polluting Firms

Effective legal measures are largely absent in China to criminalize individuals who are found to be responsible for serious harm both to personal interests and to public resources. Prior to 1997, China’s pollution victims could initiate legal actions against polluters only for personal economic compensation and

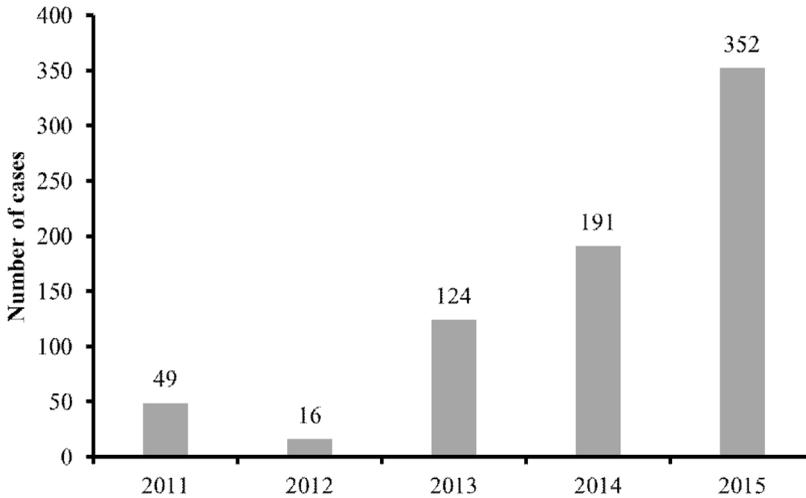


Figure 3. Cases of closure and relocation associated with interagency environmental enforcement in Guangzhou (Guangzhou EPB 2008–2016)

they can be easily frustrated by legal processes which are not only time-consuming and expensive but also technically challenging in the presentation of evidence. The 1997 Criminal Law for the first time included articles of “crime of major environmental pollution accidents,” but it has not become an enforceable instrument by which to punish the decision makers of the polluting firms mainly due to the lack of accurate definition of crimes, limited coverage of behaviors, and a high burden of proof for the plaintiffs. Even when the environmental offenders were sued, China’s legal authorities, such as the courts and procuratorates, did not have sufficient professionally trained personnel and the will to deal with environmental cases. The absence of enforceable laws and the weak capacity and will of the legal authorities have led to a very low number of criminal prosecutions against the owners of polluting firms. In Guang-

zhou, there was (before 2013) only one criminal prosecution relating to the serious illegal emission of pollutants; the person responsible for the infringement was sentenced to three years in prison.

Major breakthroughs in China’s environmental criminal enforcement came from a special judicial interpretation made by the Supreme People’s Court (SPC) in 2013 that specified 14 circumstances that should be considered as “serious environment pollution” and five criteria for conviction without requiring evidences of specific harm or injuries caused by the violation, respectively. These new legal measures have granted new powers to environmental law enforcers to deter and sanction environmental infringements by specifically targeting the decision makers of the polluting firms.

In Guangzhou, the first conviction for environmental pollution crime

was made about four months after the SPC's new decision. By the end of 2013, 11 cases of environmental violations had been subject to criminal prosecution. In 2014, the cases handed over by

the environmental authorities to the local police departments had doubled. However, the number of criminal sentences had not increased substantially (Table 2).

Table 2. Cases of Criminal Prosecution in Guangzhou (Editing Committee 2008–2016; Guangzhou EPB 2008–2016)

	2013	2014	2015
Cases handed over to police	11	26	9
Number of convictions	3	2	2

So far, most of the prosecutions and sentences were associated with violations committed by small private enterprises and no SOEs and their managers were sued for serious illegal pollution. But, it deserves particular notice that two staff members, including a Korean citizen, from a Korean company, were jailed in 2015 because of the illegal discharge of a large amount of contaminants into a local river. This was not only the first criminal penalty against a foreign corporation, but it was also first criminal prosecution against foreign infringers in Guangzhou. Given the fact that enterprises with foreign ownerships have been enjoying favors from the local governments, the criminal penalties on the Korean company signaled the strength of the new legislation and the increasing determination of the local enforcement agencies.

However, the improvement of environmental legislation and the implementation of the newly established legal measures do not mean the disap-

pearance of the “enforcement gap”—this is characterized by the disparity between the increased law enforcement tasks and the insufficient regulatory resources and capacity. Although the new laws enable the authorities to sue and criminalize individuals responsible for illegal pollution emissions, the environmental authorities’ unwillingness to transfer cases to the legal authorities, the weak coordination between the environmental and legal authorities, and the lack of professional training and qualified staffs are important barriers to the effective enforcement of the new legislation.

To overcome such barriers for criminal prosecution against environmental offenders, in January 2014, the MEP and Ministry of Public Security issued a specific circular calling for the enhanced coordination between the environmental authorities and the public security forces in environmental law enforcement. Soon after the statement made by the central government, the

Guangzhou EPB established a specific coordinative mechanism with the local public security departments. The municipal Public Security Bureau also established a special division specializing in investigating environmental crimes. Despite all these efforts made by the local authorities, it still takes time to effectively implement these new mechanisms for environmental criminal enforcement. Our fieldwork found that the police forces were still poorly trained in the investigation of environmental cases and they were therefore unwilling to receive cases transferred from the environmental protection agencies.

5. Informal Compliance Regime and Noncoercive Citizen Enforcement

The informal compliance regime is characterized by active intervention in unregulated polluting behavior and enforcement of environmental standards by private citizens. Informal regulation takes many forms. In the context with well-established regulatory environment, citizen enforcement mainly takes the forms of citizen-initiated law suits and reporting. In developing countries, where environmental regulation is generally weak, typical citizen environmental enforcement usually happens outside of the institutional framework, such as public campaigns, resistance and boycotts led by NGOs and community leaders.

In China, citizen enforcement is profoundly structured and influenced by the authoritarian state, and public

participation in environmental law enforcement mainly takes on cooperative instead of confrontational approaches. The past decade has witnessed the growing impact of citizen enforcement on corporate environmental noncompliance (Johnson et al. 2018). As a response to increasing environmental pollution and inadequate regulatory resources, the Chinese government has, over the past decade, been trying to encourage public participation in reporting environmental offences and monitoring polluting plants. A variety of laws, institutions, and polices have been established by governments at various levels to enable and encourage ordinary citizens to monitor and report illegal discharges from polluting firms. On the other hand, the growth of the public's environmental awareness and the continued development of ENGOs during the past decade have also given rise to more vigorous citizen enforcement activities and they have also provided supplementary instruments to the formal environmental regulatory system.

5.1. Informal Reporting and Monitoring by Citizens

The major forms of informal enforcement of environmental regulation in China include citizen reporting and monitoring. Ordinary Chinese citizens can report illegal discharges to local EPBs through a variety of channels, such as telephone hotlines, official websites and the microblogs of EPBs, and conventional letter-and-visit systems. More importantly, the formal law enforcement activities conducted by the environmental regulators have become

increasingly interconnected with public reporting. To be more specific, citizen reporting has become an important cause for environmental inspections and sanctions. For instance, an important criterion for the environmental performance rating under the PEPA system is the frequency of public complaints. Only those firms receiving fewer than three public complaints can be coded “green,” the best score in the rating system. Many chronic polluters targeted by the interagency supervisions and ENCBs were also those polluters who were frequently reported by the local residents.

However, the effectiveness of citizen monitoring and reporting in China has been constrained by the general weakness of bureaucratic capacity of the local environmental authorities. The official statistics show that more than 90% of public complaints have been “properly handled” (*tuo shan chu li*) over the past five years (Figure 4). However, according to our interview on April 13, 2016, less than 70% of citizen reports of environmental offenses could be processed by the EPBs at the district level, these bodies being seriously undermanned and also preoccupied with other regulatory priorities. Furthermore, the official management of citizen reporting lacks transparency, and this makes it difficult for the complainants to verify the law enforcement activities and their real impacts on the reported polluting firms.

In the dataset compiled for this research, we find only a few chronic polluters with clear records of citizen

reporting and thereafter connect these reports of offenses with specific environmental sanctions. For instance, Meiye Textile, a Hong Kong-based textile company and an important supplier to many brand-name multinational corporations, was reported by an anonymous citizen on the website of the Guangzhou EPB for polluting the air of the local community in January 2013 (Guangzhou EPB 2013). Two months later, the Guangzhou EPB publicized a very specific response to the netizen who earlier complained through the same platform on its website. In this online statement, the Guangzhou EPB declared that the inspectors dispatched to the scene had not detected illegal emissions carried out by the reported enterprise. However, the enforcement agency also stated that the reported plant would be relocated as planned in June 2013 by the municipal government in a massive industrial relocation project (Guangzhou EPB 2013).

Another rare case that shows direct linkage between citizen reporting and specific law enforcement actions against illegal polluting behavior was a bloc prosecution of polluting firms surrounding several high and elementary schools in the District of Baiyun, in Guangzhou, a suburban area with a high density of small enterprises that was particularly weak in environmental legal enforcement. At least eight polluting factories were stormed and clamped down by the local EPB in an enforcement campaign as a result of four years of petitioning by teachers and concerned parents in that area, who might have been affected by the pollution

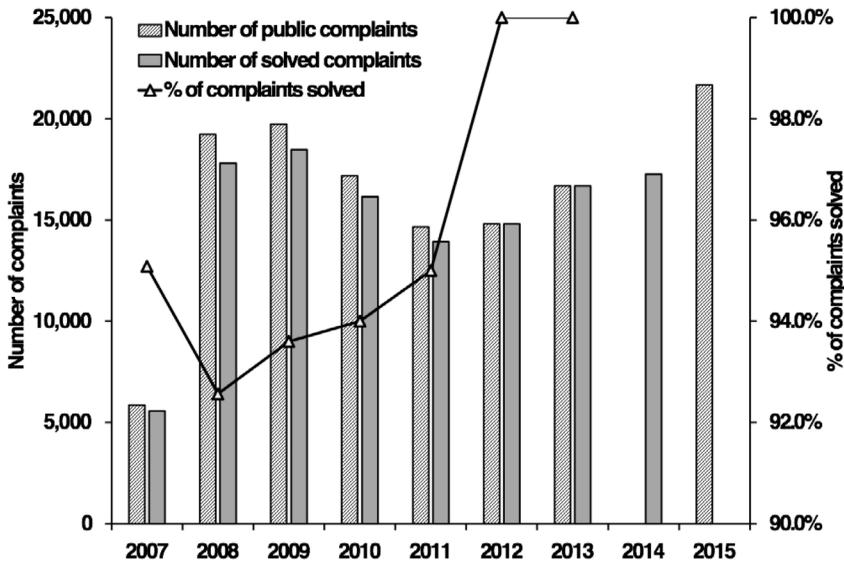


Figure 4. The number of public complaints on pollution in Guangzhou and the proportion of resolved cases (2007–2015) (Guangzhou EPB 2008–2016) (Data for 2014 and 2015 are not completely available)

(Wang 2014). Actually, the local EPB involved in the case did respond to the citizens’ reports of air pollution by fining and suspending production of some of the polluters. However, these sanctions were too weak to deter the environmental offenses and the continuing illegal air pollution was causing numerous respiratory symptoms among the students and teachers near these polluting plants. It was not until the frustrated petitioners brought the cases directly to the Ministry Education (and not the MEP) and attracted media attention in 2014, that tougher enforcement actions were implemented.

Compared with citizen reporting, which is usually individual-based, post facto and lack of systemic data, the monitoring of industrial pollution conducted by NGOs is relatively more organized and preemptive and has

more impacts on EPB actions and policy change. A representative example of such social initiatives in environmental enforcement is a nationwide pollution monitoring campaign led by IPE, a Beijing-based ENGO focusing on production chain environmental performance supervision. IPE uses the monitoring data of the SMSs disclosed by the EPBs at various levels to create Green Audit reports of the suppliers of multinational corporations in China and it has developed interactive web maps to encourage ordinary citizens to monitor pollution sources and report illegal discharges. Due to its success in facilitating public participation in environmental law enforcement by applying information and communication technologies (ICTs), IPE was in 2015 invited by the environmental authorities to participate in mobilizing citizen monitoring over wa-

ter pollution in urban areas (Wu 2017). IPE coordinated dozens of grassroots ENGOs across the country to join this campaign and form a network to facilitate the exchange of information and collaborative action.

In Guangzhou, some local NGOs also joined this network and became active participants in pollution control campaigns and private enforcement activities focusing on local environmental violations. One of the active Guangzhou-based ENGOs participating in the private monitoring of industrial pollution is Guangzhou Environmental Protection (GEP). Stemming from a volunteer group organized by several ordinary citizens concerned about the environmental deterioration in their home city, GEP has turned into a professional Green NGO specifically focusing on detecting and reporting illegal water pollution over the past few years. Besides carrying out independent investigations itself and also reporting on illegal pollutant emissions, GEP also relies on mobilizing local communities to detect and report illegal polluting sources. GEP's independent monitoring and mobilization of community participation have led to a growing number of detections of illegal emissions made by small polluting sources that are poorly covered by the formal regulatory system. To further enhance its capacity to deter environmental violations, GEP has been consciously trying to nurture and maintain cooperative relationships with the local environmental authorities and it has established regular coordinative mechanisms with the municipal and provincial EPBs and Water

Service Bureaus (WSBs). The GEP's proactive engagement with the government has been rewarded because the environmental authorities are becoming more responsive to citizen reporting and supportive of public participation in environmental law enforcement. For instance, in 2016, GEP and its community partners reported 37 cases of illegal emissions to the local environmental authorities and most of them were investigated. In the same year, GEP, along with several other grassroots and official social organizations, was invited by the municipal government to train citizens who had volunteered to serve as "citizen river chiefs," an innovative strategy designed to mobilize public participation in a top-down enforcement campaign aiming to curb urban water pollution. The rise of grassroots NGOs like GEP improved the capacity of mobilizing public participation and establishing partnership among potential pollution victims, NGOs and governmental regulators.

5.2. Civil Lawsuits Led by NGOs

NGO-led environmental public interest litigations have proven to be effective instruments to deter corporate environmental offenses and to enforce environmental standards in the industrialized countries. In China, however, "citizen suits" against environmental violations had been lacking because the laws did not provide articles for public participation in environmental litigation and for prosecution for infringing the public interests associated with the illegal polluting behavior of firms.

The newly-modified Environmental Protection Law passed in 2014 marked a watershed moment for China's private environmental enforcement by allowing NGOs to bring public interest environmental lawsuits. Although the new legislation still sets strict legal and even political limitations on the participation of nongovernmental prosecutors, such as registration at municipal administration and no records of any administrative and legal violations in three years, some professional ENGOs that had been advocating for public interest litigation immediately seized the newly-acquired opportunity to file lawsuits against the enterprises responsible for pollution incidents that severely harmed the local environment and communities. In 2015, among the 48 public interest cases in China, 41 of them were initiated by ENGOs and the government-sponsored Environmental Protection Federations (EPFs) (Li 2016). In Guangzhou, the first public interest case took place soon after the implementation of the updated EPL and the litigant was the All-China Federation of Environmental Protection (ACFEP).

Although the revised EPL did enable the NGOs to enforce environmental laws and deter noncompliant behavior of polluting firms with public interest litigation, effective implementation of the new legislation still needs to address numerous barriers such as, to name a few, the lack of professional knowledge and resources on the part of nongovernmental litigants and the weak capacity and will of the legal authorities to catch the infringers. The limitation

of the newly-empowered litigation was clearly shown in the first public interest case in Guangzhou. Although the infringers and illegal emissions were local, the plaintiff was the ACFEP, based in Beijing, and therefore, neither the local public procurator nor the municipal FEP were technically and politically prepared to file the environmental public interest litigation. More importantly, as an actor from the political capital of China, the involvement of ACFEP in this case showed the MEP's determination to set a precedent in the regulation of illegal industrial waste dumping and strengthen the law enforcement in this field. But as with enforcing the law on those small polluters operating on the periphery of the formal regulatory system, the local courts found it difficult to enforce the verdicts because the polluters responsible for the illegal dumping simply disappeared.

6. Conclusion and Discussion

Chronic noncompliance by polluting firms is one of the most serious challenges for China's policymakers and law enforcement agencies in the face of environmental degradation and widespread pollution in China. With rich empirical firm-level data derived from Guangzhou, we have examined both formal and informal environmental enforcement actions and their effects on corporate environmental behavior.

We found that combined efforts by both state agencies and civil society actors, represented by environmental NGOs, have not been able to funda-

mentally discourage or reverse some firms' repeated decisions to illegally pollute the environment. For large polluting firms (mostly SOEs, as well as some privately owned ones), although they are more visible and thus receive more monitoring and inspections by the formal law enforcement agencies, insignificant penalties, relative to their compliance costs or economic scale, makes it more attractive for them to evade the regulations. As for small polluting firms, although the penalties for them are significantly heavy relative to their sizes, the probability of being caught in their noncompliance remains low, given the inadequate bureaucratic capacity of the frontline environmental authorities for effective enforcement. Thus, many small firms would simply take risks in conducting polluting activities because, even when they are caught, it is not difficult or financially devastating to simply abandon and close down the business to evade punishment. New administrative and economic instruments have been introduced such as the repeated fine system and criminal prosecution against firm managers, but the impacts of these measures are yet to be clearly seen and be visible to all.

However, the general weakness of compliance and enforcement regimes in China's pollution control does not disguise the complexity of compliant behavior of firms (or lack of it) and the practices of environmental regulation in China. The experience of Guangzhou shows that barriers to the effective performance of compliance and enforcement regimes are complicated and that they vary across different types of firms

and violations.

For large polluters, like the SOEs and some high-profile privately-owned companies, the main barriers for environmental compliance include not only weak sanctions due to the problematic environmental legislation and policies, but also factors such as the political connections of the polluting firms or their owners and the local government's fear of increasing unemployment and the loss of revenue caused by the shutdown or relocation of big companies.

For small polluters, a persistent barrier to ensuring long-term compliance has been the passiveness of the frontline enforcement agencies. In practice, the catching and sanctioning of small polluters are not cost-efficient for the frontline law enforcers because of their continuing shortage of staff and lack of financial resources and the absence of reliable monitoring information about these small polluting sources. However, recent development and combination of both citizen and official enforcement mechanisms have improved the probability and efficiency of catching and punishing the small polluters. Statistics from both official and NGOs' sources have shown a growing number of detections and shutdowns of small factories which have repeatedly not complied with the environmental laws.

The effectiveness of compliance and enforcement regimes also varies with the types of contaminants discharged by the polluting firms. As shown by the experience of Guangzhou, illegal water pollution and the discharge of untreated industrial solid waste were

more easily caught and harsh penalties thereafter imposed. The reporting of illegal air pollution, on the other hand, was relatively more difficult to penalize. The main reason for such differences might be explained by the low visibility of air pollution and the difficulty of detecting and verifying it.

Our findings have confirmed the arguments in the regulatory literature derived from the experiences of both industrialized and industrializing countries, namely, that the sole reliance on either the formal government enforcement or the civilian enforcement cannot effectively ensure corporate compliance with the environmental regulations. Only with an effective combination of formal and informal enforcement mechanisms can any environmental compliance regime ensure the compliant behavior of firms. As shown by the case of Guangzhou, the central government's increased emphasis on pollution control and the continued strengthening of environmental legislation have led to enhanced law enforcement and tougher penalties against illegal polluters at the local level. From 2010, more polluting firms were subjected to political implementation of environmental rules jointly conducted by the EPBs and BODIs and forced to permanently shut down. The past few years have also witnessed the development of public participation in environmental regulation and this has led to the increased detection of environmental violations and more intrusive law enforcement activities launched by the government.

However, the positive correlation between enhanced law enforce-

ment and the decrease in chronic non-compliance with environmental rules was more likely to be observed among small polluters. The sheer scale and the elusive nature of the environmental violations by these polluters used to create major obstacles for effective law enforcement. Illegal emissions committed by small factories were extremely difficult to catch and punish by government enforcement agencies which were seriously undermanned and more preoccupied by the regulation of the larger pollution sources. For large polluting firms (mostly SOEs, as well as some privately owned ones), although they are more visible and thus subjected to more frequent and intense monitoring and inspections conducted by the government law enforcement agencies, insignificant penalties, relative to their compliance costs or economic scale, make it more attractive for them to evade the various laws. As for small polluting firms, although the penalties for them are significant relative to their size and scale, the probability of being caught in noncompliance remains low mainly due to the shortage of manpower and resources of the grassroots regulatory forces, and many would simply choose to take the risk; and, even when they are caught, it is also neither difficult nor economically devastating to simply abandon the business and evade the punishment.

The opening-up and expansion of political space for more involvement by public monitoring and NGO-led litigation is expected to make noncompliance by polluting firms more costly. Through the experience of Guangzhou,

where civil society has developed to a higher degree than in the rest of the country, it has been shown that there remain several obstacles preventing social pressure becoming effective in reversing the polluting firms' behaviors. The number of institutions and agencies involved in public monitoring and reporting are increasing, and they are mostly handled by the relevant EPBs. However, this rarely results in serious penalties. Environmental litigation led by NGOs has also just emerged and, if successfully carried out, can lead to significant penalties and consequences for the polluting firms. Nevertheless, the experiences of NGO-led public interest litigation against environmental violators in a Guangzhou lawsuit against illegal industrial pollution suggest that only a handful of experienced and well-funded NGOs are capable of environment litigation. Complex political relations can also impede the normal functioning of the legal process in an environmental pollution case.

Another important political factor for an increasing number of relocations of penalized polluting firms is the grand industrial restructuring being promoted by the local government. This project is aiming to attract high-end service industries and push out the polluting industries and it reflects a long-term policy being pursued by the Guangzhou municipal government. This project has been backed by sustained and strong political will from the municipal government and it serves as an important driving force behind many environmental law enforcement campaigns that have led to permanent shutdowns and

relocations of polluting factories.

Other than policy design, firm-specific, and other political reasons, there are other factors which are not directly related to environmental law enforcement but indirectly sustain the chronic noncompliance decisions at the firm level, such as market fluctuation and competition as well as the changing costs of compliance. For polluting firms, the resources for compliance consist nearly entirely of economic costs without generating revenues and profits. In the economic hardship that emerged after the financial crisis, those firms that are fighting for survival may especially give pollution mitigation a lower priority. Fierce market competition could also dilute their profit margin. Firms that can successfully evade compliance could get favorable standings which are largely dependent on pricing. In addition, compliance costs are also evolving, but generally in a decreasing trend due to learning and innovation.

As the Chinese central government is increasingly keen and vocal about reducing industrial pollution, and Chinese society is more aware of the health impacts of pollution, policy and institutional design for effective environmental law enforcement are the common pursuit and goal for all stakeholders. However, establishing such effective enforcement institutions and procedures will take time due to the diverse nature of firms, the uneven development of local EPB capacity, and the still-nascent stage of environmental NGOs and public participation in environmental governance in China.

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