

# Contextual Changes and Environmental Policy Implementation: A Longitudinal Study of Street-Level Bureaucrats in Guangzhou, China

**Xueyong Zhan,\* Carlos Wing-Hung Lo,\* Shui-Yan Tang†**

*\*Department of Management and Marketing, The Hong Kong Polytechnic University; †Sol Price School of Public Policy, University of Southern California*

## ABSTRACT

This article develops a conceptual framework that connects contextual factors with work situations, enforcement strategies, and self-assessment of street-level bureaucrats. Based on two rounds of surveys of environmental enforcement officials in the City of Guangzhou in 2000 and 2006 and subsequent interviews with enforcement officials and enterprise executives, the article traces the transformation of China's policy implementation process from one that is premised primarily on vertical support coming from the central government to one that is also premised on horizontal support from local stakeholders. The changing contexts of environmental policy implementation include increased support from the central government and the public, but not the local government and regulated industries. We have also observed heightened perceptions of inadequate administrative authority and resource scarcity among enforcement officials, who had developed a more formalistic and collaborative approach to regulatory enforcement and a feeling of increasing stress. Yet, enforcement effectiveness as perceived by the enforcement officials has remained virtually unchanged. In the 2000 survey, central government support was positively associated with perceived enforcement effectiveness. In the more recent 2006 survey, central government support was no longer a significant factor; instead, local government support and collaboration with other government units were associated positively and significantly with perceived enforcement effectiveness. These empirical results help explain the continuing implementation gap in China and call for more attention to horizontal support mechanisms to ensure effective environmental policy implementation. Our research also suggests the need to contextualize the study of policy implementation in more dynamic and diversified settings.

The authors gratefully acknowledge the valuable comments and suggestions of the editor of *Journal of Public Administration Research and Theory* and three anonymous reviewers. Address correspondence to the author at [xueyong.zhan@polyu.edu.hk](mailto:xueyong.zhan@polyu.edu.hk).

doi:10.1093/jopart/mut004

Advance Access publication February 18, 2013

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China's environmental degradation has been extensively reported in recent years and it poses a significant challenge to the country's future development. As widely acknowledged by government officials themselves, an environmental enforcement gap has persisted despite increasing pressures from domestic stakeholders and the international community for more effective environmental protection. Although the Chinese central government has promulgated in recent years a wide array of laws and regulations aimed at protecting the environment, most of them have been weakly enforced by the local environmental protection bureaus (EPBs; [Ma and Ortolano 2000](#)). Such an enforcement gap has persisted even after the central government promoted the administrative rank of the former State Environmental Protection Administration from a subcabinet agency to the cabinet-level Ministry of Environmental Protection ([Li and Higgins forthcoming](#)).

Problems surrounding environmental policy implementation in China have received increasing scholarly attention ([Chan et al. 1995](#); [Economy 2004](#); [Lo et al. 2006](#); [Ma and Ortolano 2000](#); [Schwartz 2003](#); [Swanson et al. 2001](#)). Although the emerging literature has improved our understanding of the complexity of policy implementation in China, we still know little about the underlying causes of the persistent enforcement gap on the ground over time. What contextual factors have prevented China's street-level bureaucrats from translating central government policy goals into effective enforcement? Have there been systemic changes in local environmental policy implementation in China? If so, what have been the changes? To what extent and in what ways can Western theories of policy implementation explain the sustained enforcement gap in a rapidly changing society like China?

Although implementation failures are commonly found in many parts of the world, existing literature of policy implementation has paid limited attention to the impacts of contextual changes on policy implementation. Most empirical works, for example, have relied on one-time case studies; yet, in the real world, policy implementation is constrained by changing organizational environments and varied local settings. Without taking into account these contextual variations, policy scholars often provide conflicting or even contradictory recommendations for addressing implementation failures ([Hill and Hupe 2002, 2009](#); [Matland 1995](#); [O'Toole 1986](#)). More "contextually valid" research is needed to advance public administration scholarship ([Khagraml and Thomas 2010, 100](#)).

Most policies are implemented over extended periods of time; yet, most existing models of policy implementation in the literature are time invariant ([Oberfeld, forthcoming](#)). Both [Goggin \(1986\)](#) and [Sabatier \(1991\)](#) indicated that a longitudinal design should be employed for studying policy implementation successes and failures. [O'Toole \(2000\)](#) also suggested several directions for methodological improvements in implementation research, including longitudinal studies and comparative studies. Despite these calls by prominent scholars, very few implementation studies have moved beyond these methodological constraints. One exception is the study by [Mead \(2001\)](#), which found that from the mid-1980s to the late 1990s, welfare reform in Wisconsin had experienced a transition from lax "experimental implementation" to successful "administrative implementation" when local agencies were adequately equipped with necessary political support and financial resources. However, longitudinal studies exploring the relationship between changing contexts and policy

implementation have been scarce in the empirical literature, and existing implementation studies have focused mainly on Western societies, largely ignoring the remaining regions of the world. In recent years, scholarly interest in implementation studies has diminished because most governmental programs in the United States or developed countries are perceived to be working relatively well (deLeon and deLeon 2002); yet, in many developing countries, sustained implementation failures have always been a serious problem, with no exception to China.

Using a quasi-experimental research design (Gerring and McDermott 2007; Ramanathan et al. 2008), this article presents the results of a longitudinal study on environmental policy implementation in China focusing on the relationship between contextual changes and policy implementation. The data were gathered from multiple sources, including two rounds of questionnaire surveys of enforcement officials and follow-up interviews in Guangzhou, the capital city of Guangdong Province, and interviews with enterprise executives in the province. As the first province to initiate economic reform 3 decades ago, Guangdong has been the experimental site of China's many policy innovations and has remained a leader in economic, political, and administrative reforms. Also known as "Canton," the City of Guangzhou is the third largest city in China and has been its primary gateway to global markets for many centuries. Like many other metropolitan areas in the developing world, Guangzhou has experienced serious environmental degradation caused by its rapid industrialization and urbanization. Like other local jurisdictions in China, Guangzhou has been responsible for enforcing environmental regulations handed down from the national and provincial governments; and it has experienced considerable changes in terms of what drives the work of its EPB (Lo and Leung 2000).

As well documented in the literature, policy implementation in China relies on a governance system characterized by a top-down political structure and a decentralized administrative system—with policies mostly formulated at the central level and implemented by local officials (Harding 1981; Lieberthal and Oksenberg 1988; Manion 1991; Qian and Weingast 1997; Tang 2012; Zhou 2010). Due to significant social and economic variations across regions, local governments have different policy priorities, and many may lack motivations and resources to fully enforce most centrally mandated policies (O'Brien and Li 1999; Xu 2011). In addition, China's central government has limited capacity to inspect implementation activities and outcomes at the local level; local governmental leadership can easily impede law enforcement by EPBs and environmental nongovernmental organizations are still limited in their policy advocacy capacity (Economy 2005; Tang and Zhan 2008; Zhan and Tang forthcoming).

In such a governing system, local EPB officials are often subject to contradictory demands from varied sources—vertically from the central and provincial governments, and horizontally from the municipal government and various local societal groups. Although being sources of demands, different stakeholders can also be sources of political support for EPB officials. In this article, we show that as perceived by EPB officials in Guangzhou, there have been considerable changes in the past decade in the level of support from and relative influences of these different stakeholders, which have in turn reshaped EPB officials' work situations, enforcement strategies, and self-assessment. In a survey of Guangzhou EPB officials in 2000, the only statistically

significant variable related to their perceived enforcement effectiveness was central government support. In 2006, central government support was no longer a significant factor; instead, municipal government support, administrative authority, and collaboration with other government agencies became significant factors associated with enforcement effectiveness. These results offer a theoretically interesting window for understanding conditions for effective local environmental enforcement in the developing world. They show the transformation of China's policy implementation process from one that is premised primarily on vertical support coming from the central government to one that is also premised on horizontal support from local stakeholders. The case of China provides useful insights for other developing countries as they try to strengthen policy implementation by enhancing both vertical *and* horizontal support mechanisms.

The rest of the article is organized as follows. We first review the existing literature and introduce the theoretical framework and research hypotheses. After explanation of the data and research methodology, the empirical results are presented, followed by discussions and conclusions.

### CONCEPTUAL FRAMEWORK AND RESEARCH HYPOTHESES

During the past 2 decades, the Chinese central government has shown a stronger commitment to environmental protection. Like those in other authoritarian countries, Chinese leaders tend to adopt a top-down perspective to enhancing policy implementation (Tang 2012). They have done so by promulgating many centrally mandated policies and regulations and by promoting the administrative rank of environmental protection agencies at both the central and the local levels. This top-down perspective has its strengths, but it also has many limitations because it neglects a myriad of local factors that may affect the work situation, enforcement approach, and effectiveness of street-level bureaucrats.

Indeed, many scholars have identified a lack of political support from key stakeholders at the local level as a major cause of implementation failures in China (Chan et al. 1995; Economy 2004; Lo et al. 2006; Ma and Ortolano 2000; Schwartz 2003; Swanson et al. 2001). Lieberthal (1997) argues that with relatively weak political authority, local environmental agencies find it hard to enforce environmental regulations when local governmental leaders care more about other policies such as industrial development, job creation, and economic growth. Similarly, Chan et al. (1995) argue that the environmental implementation gap was largely caused by unsupportive institutions and constituencies at the local level. Oliver and Ortolano (2006) find that cleaner production programs in urban China were affected by a number of factors—weak legal and political control by higher-level governments, inadequate staff and resources, and poor interagency coordination (for a more detailed review, see Rooij and Lo 2010). A case study by Swanson et al. (2001) on environmental policy implementation in rural China also finds that street-level bureaucrats were constrained by *guanxi*—their personal relationships or unofficial ties with other government departments and the local communities. On the one hand, *guanxi* might help bureaucrats to secure cooperation from other government departments, leading to better enforcement;

on the other hand, it may also help other government departments with strong economic ties to local firms to exert informal pressure on environmental bureaucrats.

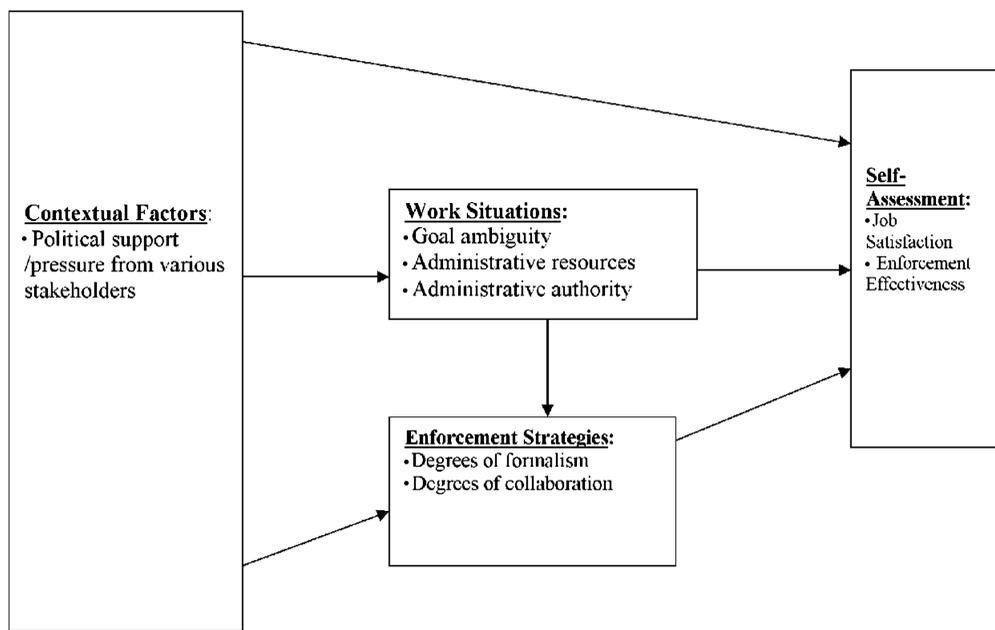
These empirical studies help link the Chinese case to Western theories of street-level bureaucracy and policy implementation. For instance, as well documented in the Western literature, when faced with limited resources and complex political and institutional contexts, street-level bureaucrats may deviate from original policy goals during implementation (Lipsky 1980; Maynard-Moody and Musheno 2000; Maynard-Moody et al. 1990; Riccucci 2005). Recent studies highlight the importance of adequate levels of political support, authority, and administrative resources for successful policy implementation (for a more detailed review, see May and Winter 2009). Further, the studies by Heather Hill (2003) and Michael Hill (2005) argue that adequate resources and cooperation from key stakeholders are important for effective policy implementation by street-level bureaucrats. Cho et al. (2005) also confirm the positive correlation between authority levels and perceived implementation effectiveness by street-level bureaucrats who implement welfare programs in North Carolina. Viewed from Western perspectives, environmental policy implementation in China is carried out mostly in contexts in which policy conflicts are significant, administrative authority and resources are limited, and bureaucrats have to face various informal pressures from local stakeholders.

Recent scholarly attention has also been focused on the changing social, political, and economic contexts of local environmental policy implementation in China. Along with the rapid development of civil society in China, environmental awareness among the general public, businesses, and governmental leaders has increased in recent years (Swanson et al. 2001; Tang and Zhan 2008). In their study of Guangdong Province, Lo and Tang (2006) document several institutional and economic changes that may potentially strengthen environmental enforcement in China. Introduced in the late 1990s, for example, the environmental quality administrative leadership system requires that provincial governors, city mayors, and township heads be politically responsible for the overall environmental quality of their jurisdictions. Under the system, key officials are evaluated annually by a higher-level government partly on their environmental protection records. In the opinion of the government officials interviewed for their study, the system has encouraged local government leaders to pay more attention to environmental protection. But they warned against a presumption about its efficacy because environmental protection is only one of many criteria used in evaluating an official's job performance. Changes in the local economy have also helped. For example, with most of the industrial enterprises, except for the largest few, converted to private ownership, it is now easier to enforce environmental regulations because private ownership has gradually decoupled these industrial enterprises from the local party–state system. Along with enterprise privatization, there has also been increasing pressure from the public for a better environment (Tang and Zhan 2008).

Although many of these local contextual changes have been documented in the current literature, much less has been written on how these changes may have reshaped the work situation of street-level enforcers and the way they enforce regulations and assess their own work. In this article, we develop a conceptual framework that explicitly examines these linkages (see figure 1). The central premise is that across the years in our study, there have been significant contextual changes in terms of societal and

**Figure 1**

Conceptual Framework: Linking Contextual Factors and Work Situations to Enforcement Strategies and Self-Assessment



government support/pressure for environmental protection and increasing numbers of enforcement procedures. These contextual changes have reshaped the work situations faced by street-level enforcers in terms of organizational goals, organizational resources, and administrative authority. Changes in work situations in turn have induced enforcement officials to adjust their enforcement strategies and self-assessment. Furthermore, local factors such as local government support and collaboration with other government agencies have increasingly become important factors accounting for enforcement effectiveness.

### Contextual Factors

The relationship between politics and administration is a fundamental issue in public administration, and politics is an inescapable factor in the study of policy implementation (Lipsky 1980; Matland 1995; Mazmanian and Sabatier 1983; Pressman and Wildavsky 1973; Pülzl and Treib 2006). Recent literature on governance also recognizes how the interactions among a wide array of stakeholders within multiple levels of institutional rules may affect policy implementation and regulatory enforcement on the ground (Ansell and Gash 2008; Cho et al. 2005; Jung et al. 2009; Lubell 2004; Lundin 2007; Lynn et al. 2000, 2001; O'Toole 2000). In our framework, context is defined as the relationships between street-level bureaucrats and key stakeholders, and we further conceptualize it as the perceived levels of political support from different governmental and societal stakeholders. In many policy arenas, support from and

collaboration with key stakeholders are crucial for effective policy implementation and service delivery (Bryson et al. 2006; Graddy and Chen 2006; Hill and Hupe 2002; Imperial 2005; Lundin 2007; O'Toole 2000; Stazyk and Goerdel 2011; Thomas 2003), and bureaucrats' perceptions of political support closely match the reality (Yang and Pandey 2009).

As mentioned earlier, the work of local street-level bureaucrats in China is heavily influenced by the political support they receive from both higher-level governments and other government agencies at the local level. Although structural reforms over the years have upgraded the administrative rank of EPBs at the local level, a higher administrative status does not necessarily help EPB officials to obtain more resources and authority given the horizontal constraints within the local government. In addition, policy implementation involves not only the local EPB but also other local authorities such as the Commission of Development and Reform, Department of Finance, Department of Water Resources, Department of Land Resources, and more. Given the increasing numbers of regulations and policies handed down from the central government, local EPB officials need to secure better cooperation from other government agencies and the regulated industries to ensure effective implementation.

For many years, societal stakeholder support was less essential in environmental policy implementation. That being said, with the rise of civil society organizations and increasing influence of the media and other societal forces, support from these societal stakeholders has become more important for the work of street-level bureaucrats, and under certain circumstances, implementation officials and agencies can use the support/pressure from societal stakeholders to gain leverage against other governmental agencies in environmental policy implementation (Zhan and Tang forthcoming, Zhao 2010).

Overall, there have been increased support and pressure from the central government and the public, but these do not necessarily translate into increased support from other authorities within the local government and regulated businesses. These contextual changes lead to adjustments in the street-level bureaucrats' work situations, enforcement strategies, and self-assessment. The case of Guangzhou provides a setting that approximates a quasi-experimental design, in which one can assess the consequences of a specific set of political/policy interventions (Gerring and McDermott 2007; Ramanathan et al. 2008).

### **Work Situations**

Street-level enforcers face several key administrative factors that may affect their implementation work. As argued by James Q. Wilson (1989), it is often the street-level operators' definition of their critical tasks, rather than their understanding of the organizational goals, that shapes their daily operational behaviors. And operators' definition of their critical tasks is shaped to a large extent by "situational imperatives," that is, "situations with which operators must cope on a daily basis" (Wilson 1989, 36). In China, a critical issue is how various contextual changes have reshaped the street-level enforcers' work situations, especially in terms of (a) the daily routines they have

to follow in order to avoid getting into trouble with key stakeholders, (b) amounts of organizational and technical resources at their disposal, and (c) the extent to which they can secure compliance from the regulated enterprises and cooperation from other government units during enforcement.

The first work situation factor in our framework is goal ambiguity, which influences policy implementation in many ways—for example, larger variations in how the policy is implemented and the actors that are involved in different sites. Goal ambiguity affects bureaucratic behaviors and organizational performance (Chun and Rainey 2005). As noted by Matland (1995), in the implementation literature, especially in studies that adopt a top-down perspective, goal ambiguity has been traditionally considered a major cause of implementation failures because goal ambiguity may create uncertainty and misunderstanding. But he argues that from a policy-making perspective, goal ambiguity may not always be “bad” because goal clarity may sometimes intensify conflicts between groups, leading to a lack of support for the policy. Pandey and Wright (2006) further argue that goal ambiguity in public organizations may be “inevitable” because they must respond to multiple external stakeholders, especially when the levels of policy complexity and political conflicts are high. In Guangzhou, street-level bureaucrats face a policy environment that is relatively low in goal ambiguity because the environmental regulations themselves usually have clear guidelines and objectives, and those guidelines and objectives are seldom openly challenged. However, goal ambiguity may have increased due to the misalignment of goals between the central and local governments; regardless of the increasing number of regulations and policies promulgated by the central government, the local government may continue to take economic development as its top priority and be reluctant to provide enough support to local EPBs. Goal ambiguity is likely to have increased over the years and thus the following proposition is put forth:

P1: *Goal ambiguity as perceived by street-level bureaucrats has increased.*

During the past 10–15 years, the Chinese government has invested substantially in environmental protection (Li and Chan 2009). The central government, in particular, has initiated a large number of environmental regulations and programs (Economy 2005; Lam 2006). At the local level, street-level bureaucrats have been given more resources such as better office buildings, more vehicles, better communication equipments, and so on. However, the workload has also increased tremendously. With the installation of pollution complaint hotlines in most local jurisdictions including Guangzhou and the increasing media attention to pollution incidents, street-level bureaucrats in many local jurisdictions in Guangdong Province have complained about the inadequacy of administrative resources in meeting heightened expectations (Lo and Tang 2006). This “moving target” effect may also affect street-level bureaucrats’ perception of resource availability.

P2: *Administrative resource scarcity as perceived by street-level bureaucrats has increased.*

Political tensions between the various levels of government and the conflict between society and the party-state system may affect street-level policy implementation. A lack of higher-level-government-granted authority or a lack of support from the public can eventually lead to implementation failures (Cho et al. 2005; May and Winter

2009). EPB bureaucrats in Guangzhou have faced such problems in the 1980s and -90s, yet since the beginning of the 21st century, these problems appear to have lessened partly due to the heightened concern of the central leadership and the public regarding the worsening environmental situation in China.

P3: *Administrative authority as perceived by the street-level bureaucrats has increased.*

### **Enforcement Strategies**

A sizable literature in regulatory enforcement has examined (a) the links between national cultures and differences in enforcement styles (Moe and Caldwell 1994; Vogel 1986; Wilson 1989), (b) the enforcement styles that are more effective and under what circumstances (May and Winter 1999), and (c) how influences from political leaders and constituencies affect enforcement strategies and behaviors (Matland 1995; Scholz 1991; Wood 1988). In our framework, we follow these leads in suggesting that contextual changes affect enforcement strategies of street-level enforcers, but we add an emphasis on adjustments in enforcement strategies as an adaptation to new political contexts and work situations.

The literature on regulatory enforcement distinguishes various dimensions for characterizing enforcement strategies. Among them, at least two are most relevant to China. One concerns the degrees of formalism, referring to rigid adherence to regulatory requirements, willingness to impose penalties when limits are exceeded, and reluctance to consider mitigating circumstances (Gormley 1998; Kagan 1994). In China, one common complaint has been that “the rule of law” tradition has never been firmly established (Yee 2012). Street-level enforcers are often too willing to yield to both informal pressures from other party–state actors for lax enforcement and personal relations (*guangxi*) with regulated enterprises and related stakeholders (Ma and Ortolano 2000). Although the Western literature often highlights the adverse effects of an overly rigid and legalistic approach to regulatory enforcement, a transition toward a more formalistic approach in China may potentially help correct the traditional tendency for street-level enforcers to yield to informal pressures and personal connections (*guangxi*). Given an increase in government and societal support/pressure for more effective enforcement of regulations and the privatization of previously state-owned enterprises in recent years, street-level bureaucrats are likely to adopt a more formalistic approach to regulatory enforcement.

P4: *Street-level bureaucrats have adopted a more formalistic approach to regulatory enforcement.*

Another dimension, not mentioned much in the regulatory enforcement literature but highly relevant to China, concerns the degree to which street-level enforcers need to seek cooperation from other government units as regulatory enforcement in China often requires active cooperation from government units other than the local EPB. Such strategies have become even more important in recent years as street-level enforcers are under increasing pressure to produce tangible results in their enforcement efforts in order to satisfy heightened demands from a wide variety of stakeholders.

P5: *Street-level bureaucrats have sought to cooperate more with other government units in regulatory enforcement.*

### **Self-Assessment**

Changing political contexts and work situations may shape not only enforcement strategies, but they may also affect street-level bureaucrats' job satisfaction and perception of effectiveness. In terms of job satisfaction, the increase in political pressure and workload may have created a lower level of job satisfaction among street-level bureaucrats.

P6: *The level of job satisfaction of street-level bureaucrats has decreased.*

With increased stakeholder support and administrative authority, one might expect that street-level bureaucrats can enforce environmental regulations more effectively. Yet, street-level bureaucrats also face increased workload, inadequate resources, and heightened expectations from stakeholders. These two sets of factors may well cancel each other out in their effect on the street-level bureaucrats' self-perception of enforcement effectiveness.

P7: *Enforcement effectiveness as perceived by street-level bureaucrats has remained unchanged.*

### **Explaining Enforcement Effectiveness**

Given various changes in political context, work situation, and enforcement strategies, have the determinants of enforcement effectiveness changed as well? Although it is difficult to specify a priori how the configurations of determinants have changed precisely, one may speculate that horizontal factors have become more relevant during the past decade when stronger vertical support is in place. In earlier times, support from the central government would have been a key factor contributing to perceived enforcement effectiveness by street-level bureaucrats. More recently, with central government support already in place, local factors such as local government support and collaboration with other government agencies have become more important determinants of street-level bureaucrats' perceived enforcement effectiveness.

P8: *With stronger vertical political support in place, such horizontal factors as local government support and collaboration with other government agencies have higher and more significant impacts on street-level bureaucrats' perceived enforcement effectiveness.*

### **RESEARCH METHODS AND DATA COLLECTION**

To trace these contextual changes and their impact on regulatory enforcement at the local level, we collected data from several sources: (a) two rounds (one in 2000 and the other in 2006) of questionnaire surveys, with more than 150 responses in each, of enforcement team officials of the Guangzhou EPB, (b) follow-up in-depth interviews

with enforcement team leaders in 2006 and 2007, and (c) in-depth interviews of enterprise executives in Guangdong Province in 2009 and 2010.

First, we conducted two rounds of questionnaire surveys of environmental policy implementation officials in Guangzhou in 2000 and 2006. In 2000, we sent out 250 questionnaires and received 202 responses. In 2006, we sent out 220 and received 154 responses. The questionnaire included questions on the respondents' perception of their implementation contexts, work situations, enforcement strategies, and self-assessments; a five-point Likert scale was used for the survey.<sup>1</sup> We made special efforts to limit institutional influence on the respondents and to ensure the accuracy of self-reported information. For each survey, questionnaires were distributed to representatives from local enforcement teams after a briefing session. These representatives then distributed the questionnaires to street-level enforcement officials and returned them to the researchers. Every respondent was informed by the representative that (1) the survey was an academic exercise aimed solely at improving environmental management practices, (2) the survey was anonymous and individual participation was voluntary, and (3) individually completed questionnaires would not be disclosed to the leaders of the local EPB and therefore they were free to provide their opinions and evaluations. Due to these procedural arrangements, we were able to attain high response rates in both rounds of surveys; to the best of our knowledge, these respondents were neither forced to answer the questions nor expected to provide socially acceptable information. As far as we know, there was a roughly 5% annual turnover rate in the Guangzhou EPB due to retirement and staff movement. The group means of a few key characteristics of the two samples are similar. For example, *age* was 37.36 in 2000 and 37.56 in 2006; *gender* was 0.39 in 2000 and 0.33 in 2006 (score 0 represented men and 1 represented women); the *number of years* working at the EPB was 10.06 in 2000 and 10.39 in 2006. These numbers suggest that the two samples are quite consistent and comparable.

A limitation of the data set is that because the surveys were anonymous, we were unable to track responses from the same individual for the two rounds of surveys. Ideally, if we could trace changes in responses from each identifiable respondent, we can run regressions to examine how changes in perceptions on different contextual variables (with each observation being the value in 2006 minus the value in 2000) are correlated with changes in work situations, enforcement strategies, and perceived effectiveness (with each observation being the value in 2006 minus the value in 2000). Nonetheless, because the surveys were anonymous, we were unable to run the regressions. Instead, we chose to compare the means of each variable and assess whether there were statistically significant differences between them in the two surveys. We also ran two separate regressions for the determinants of perceived enforcement effectiveness for the two surveys, as an indirect method for gauging how factors interact differently to affect perceived effectiveness in the two time periods. Again, this is less ideal than running a regression correlating changes in various independent variables (at the individual level) with changes in perceived effectiveness (at the individual level). The

<sup>1</sup> In the questionnaire, the answer to each Likert-scale question ranges from "strongly disagree" (1) to "strongly agree" (5).

comparisons of means across the two periods and the regression models for the two periods provide indirect support for our theoretical arguments.

Second, following the questionnaire survey in 2006, we conducted in-depth interviews with frontline implementation officials between August 2006 and July 2007. We interviewed 11 of the 12 environmental law enforcement teams (*huan jing zhi fa da dui*) of the Guangzhou EPB, and each interview lasted 60–75 min. Most of these interviews involved at least one leading official (team leader or deputy team leader) and two to three enforcement officials. These semi-structured interviews were arranged by the Guangzhou Research Institute of Environmental Science, which is the research arm of the Guangzhou EPB. Interviewees were asked to describe their implementation experiences and to identify factors that facilitated and impeded their enforcement work. Interview questions focused on seven aspects of regulatory enforcement, namely, the major tasks of enforcement, regulatory strategies, enforcement difficulties, experiences in enforcement, sources of enforcement pressure, possible directions for improvement, and government and public expectation.<sup>2</sup>

Third, to obtain a comprehensive picture of the enforcement regime, we conducted semi-structured interviews with executives of 18 enterprises in Guangdong Province between November 2009 and May 2010, part of which focused on the interactions between various enterprises and EPB enforcement officials. All the interviewed enterprises were members of the Federation of Hong Kong Industries and had operated in the Pearl River Delta Region of Guangdong Province in the past 10–20 years, and they had witnessed many changes in the environmental regulatory regime during the period. Interviewees were either enterprise owners or executives in charge of environmental management. The interviews focused on questions related to pollution control and regulatory compliance; each interview lasted about 60–75 min.

These interviews and surveys show that from the enforcement officials' perspective, support from city leadership and other city departments has remained limited and unchanged, but there have been increased levels of support for their enforcement work from societal actors and higher-level governments. Yet, this support has also come with heightened pressures/expectations from society as well as more numerous, complex, and sometimes inconsistent rules and regulations handed down from higher-level governments. These contextual changes have gradually reshaped the work situations of street-level enforcement officials by requiring them to handle more complaints from citizens and to enforce more complex rules with limited authority, manpower, and equipment. As a result of these changes in work circumstances, enforcement officials have gradually adjusted their enforcement strategies by (a) becoming more formalistic in their interactions with regulated enterprises and (b) seeking collaboration from other government agencies. An adjustment to their enforcement strategies has helped them cope with the increased stress inherent in their work situations, but

2 Our surveys with governmental officials were conducted with the permission and endorsement of the Guangzhou EPB. It is difficult to estimate how this institutional support may have influenced responses from the enforcement officials. But we believe that this data set merits careful consideration because, for most scholars from Western societies, directly surveying China's government officials has remained a difficult task due to many official restrictions. Our two rounds of surveys and follow-up interviews offer a rare opportunity to examine policy implementation in China.

many have become more dissatisfied with the overall condition of their work situations, raising interesting issues about directions for environmental governance reform in China. In addition, we found that although perceptions on effectiveness have remained unchanged between 2000 and 2006, several factors—municipal government support, administrative authority, and collaboration with other government agencies—have become significant factors associated with perceived enforcement effectiveness. The details of these findings are reported in the following sections.

## **EMPIRICAL RESULTS**

### **Political Contexts**

In both surveys, respondents were asked to assess (a) the extent to which different stakeholder groups have provided adequate support for environmental law enforcement and (b) the extent to which supports from stakeholder groups are important for environmental law enforcement. Three major changes can be identified by the comparison. First, support from higher-level governments has increased from the perspective of enforcement officials. As shown in [table 1](#), among the eight government stakeholder groups we surveyed, three groups—central government, provincial government, and political consultation committee—have shown increases in support that are statistically significant. Second, there have been heightened societal concerns for pollution control: most societal stakeholders—the public, the media, environmental organizations, and other social organizations—have increased their support. Yet, none of the local government entities—the municipal government, the mayor, municipal departments, people’s congress, and the court—have shown statistically significant increases in support.

Third, as shown in [table 1](#), the relative ranking of the importance of government versus societal support has not changed from the year 2000 to 2006—that is, in both years, street-level bureaucrats assigned governmental support higher scores than they assigned societal actors. Although the scores for both items are higher in 2006 than those in 2000, the scores for the importance of societal actor support have experienced more dramatic increases. For example, the score for the importance of governmental support increased from 3.96 in 2000 to 4.17 in 2006, whereas the score for the importance of societal actors increased from 2.69 to 3.49. What is especially noteworthy is that a score of 2.69 is between “disagree” and “neutral” in the scale used in the questionnaire, meaning that the average respondent in 2000 did not consider societal actor support as important at all, whereas the average respondent in 2006 considered societal actor support as mildly important, with a score of 3.49 (somewhere between “neutral” and “agree”).

These findings are compatible with what we learned from the interviews with enforcement officials, which provide deeper insights on the nature of both the “support” and “pressure” these officials received from different stakeholder groups. First, increased support from higher-level governments has come with more complex regulations. Interviewees complained that there were increases in the number and complexity of environmental regulations, most of which were passed down from the central and provincial governments, and that many regulations were not well formulated—with

**Table 1**  
Changing Political Contexts

Items	Variables	Statistics	Year		<i>t</i> -Statistic
			2000	2006	
Governmental support	Central government support	Mean	3.43	3.59	1.673*
		(SD)	(.855)	(.807)	(.095)
		Case no.	158	153	
	Provincial government support	Mean	3.35	3.51	1.702*
		(SD)	(.891)	(.814)	(.090)
		Case no.	171	152	
	City government support	Mean	3.44	3.52	.856
		(SD)	(.861)	(.838)	(.393)
		Case no.	171	152	
	City mayor support	Mean	3.39	3.46	.709
		(SD)	(.865)	(.831)	(.479)
		Case no.	162	151	
	Support from other departments in municipal government	Mean	3.02	3.14	1.186
		(SD)	(.908)	(.846)	(.237)
Case no.		155	152		
Support from National People's Congress	Mean	3.48	3.51	.270	
	(SD)	(.854)	(.797)	(.787)	
	Case no.	160	152		
Support from political consultative committee	Mean	3.16	3.50	3.609***	
	(SD)	(.897)	(.738)	(.000)	
	Case no.	153	151		
Support from court	Mean	3.47	3.45	-.166	
	(SD)	(.839)	(.821)	(.868)	
	Case no.	164	152		
Societal support	Public support	Mean	3.16	3.35	1.979**
		(SD)	(.956)	(.782)	(.049)
		Case no.	168	153	
	Support from the mass media	Mean	3.19	3.42	2.411**
		(SD)	(.938)	(.775)	(.016)
		Case no.	166	153	
	Support from environmental organizations	Mean	3.04	3.45	4.603***
		(SD)	(.854)	(.698)	(.000)
		Case no.	157	152	
	Support from other social organizations	Mean	2.86	3.24	4.651***
(SD)		(.804)	(.641)	(.000)	
Case no.		154	152		
Business support	Mean	2.92	2.97	.616	
	(SD)	(.888)	(.786)	(.538)	
	Case no.	167	153		
Perceived importance of external stakeholders	Importance of governmental support	Mean	3.96	4.17	3.046***
		(SD)	(.674)	(.592)	(.002)
		Case no.	185	154	
	Importance of social organization support	Mean	2.69	3.49	8.917***
		(SD)	(.814)	(.794)	(.000)
		Case no.	171	154	

Note: The scores are based on Likert-scale questions, and the answers include “strongly disagree” (1), “disagree” (2), “neutral” (3), “agree” (4), and “strongly agree” (5).

\**p* < .1; \*\**p* < .05; \*\*\**p* < .01. Significance based on two-tailed tests.

some that were vague, some that were contradictory to each other, and some that were not suited to local circumstances. Some interviewees also complained that there have been more procedural constraints on how they enforce regulations. According to one interviewee, in the past, the environmental protection agency was the sole drafter of environmental regulations, but in recent years, other government agencies including those that were oriented toward economic and enterprise interests had been directly involved in drafting regulations. As a result, more restrictions had been imposed on the local EPBs' enforcement work (interview with team 4). Several interviewees also complained about more complicated procedures for pollution fee collection (interview with team 9) and for closing down factories that violated water emission standards (interviews with teams 2 and 5). More complex regulations and more procedural constraints have undoubtedly created more burdens on street-level enforcers. Yet, from their perspective, the central and provincial governments' increased attention to environmental protection can be seen as "support," in the sense of giving them more legitimacy when enforcing regulations and seeking cooperation from other government units.

Second, heightened societal concerns for pollution also provided enforcement officials with both "support" and "pressure." There had been many-fold increases in citizen complaints against pollution incidents through the official complaint hotline since its first establishment in the mid-1990s (interview with team 9). Besides an increase in individual complaints, the number of media (both printed and television) reports on pollution complaints and incidents had also increased substantially. On the one hand, complaints and news reports create "pressure" on enforcement officials as they are obliged to respond to most of them. On the other hand, these complaints and reports can be sources of "support" for enforcement, as other local government actors may also feel the same societal pressures, potentially inducing them to cooperate more with enforcement officials in their enforcement work.

Third, except for the Political Consultative Committee, which is supposed to represent more societal interests than those of the core local government, no other local government units were perceived by the enforcement officials to have increased their support for enforcement during the period. This result probably reflects the reality that economic development has remained the local government's top priority. When asked directly whether the local government has given enough support for their work, ambivalent views were expressed by our interviewees—some mentioned that local government leaders have paid more attention to environmental protection, but some also mentioned that economic development would be given priority if it conflicts with environmental protection (interviews with teams 2 and 4).

### **Work Situations**

- P1: *Goal ambiguity as perceived by street-level bureaucrats has increased* (not supported).
- P2: *Administrative resource scarcity as perceived by street-level bureaucrats has increased* (supported).
- P3: *Administrative authority as perceived by the street-level bureaucrats has increased* (not supported).

The two surveys included questions regarding enforcement officials' work situations. As shown in table 2, there have been statistically significant increases between the years in perceived levels of "inadequate administrative authority" and "administrative resource scarcity"; yet the perceived level of "goal ambiguity" has slightly increased from 2.37 to 2.47, but not at a statistically significant level. Although there have been increased support from higher-level governments and heightened concerns from societal stakeholders, street-level bureaucrats' perception of "inadequate administrative authority" has been strengthened. Stated differently, the perceived level of "administrative authority" has experienced significant decrease over the years despite the increasing support from the central government and the general public.

Our interviews show that heightened support and pressure from various stakeholders may have also increased workload for the enforcement officials, leading them to a perception of administrative resource scarcity. Among our interviewees, almost everyone mentioned that there had not been a substantial increase in manpower, budget, and other resources to help them cope with the drastic increase in their responsibilities to handle complaints and to enforce regulations. One interviewee, for example, mentioned that there were seven people in the team, and they had to share a low-priced car that was already 8 years old. Their team also had no digital equipments and other long-distance monitoring devices (interview with team 1). Another interviewee mentioned that his team only had several people but was responsible for (a) a total area of 968 km<sup>2</sup> and (b) more than 1,000 enterprises that required regular monitoring (interview with team 2). Yet another mentioned that the per capita budgetary allocation for his office was the same as that for other units even though they had to be out monitoring the enterprises using up gasoline and paying highway tolls, sometimes during nighttime. His team had to restrict lighting in the office to save expenses (interview with team 9). These results are consistent with an observation by Tong (2007) that many local elites in China, including governmental officials and business leaders, have continued to be reluctant to provide strong support for regulatory enforcement even though they have become more aware of the ill effects of environmental degradation.

**Table 2**  
Changing Work Situations

Items	Variables	Statistics	Year		<i>t</i> -Statistic
			2000	2006	
Task situations	Goal ambiguity	Mean	2.37	2.47	1.134
		(SD)	(.785)	(.802)	(.258)
		Case no.	179	154	
	Inadequate administrative authority	Mean	3.46	3.83	3.812***
		(SD)	(.894)	(.892)	(.000)
		Case no.	183	154	
Administrative resource scarcity	Mean	3.39	3.84	4.621***	
	(SD)	(.945)	(.820)	(.000)	
	Case no.	185	154		

Note: The scores are based on Likert-scale questions, and the answer ranges from "strongly disagree" (1) to "strongly agree" (5). \* $p < .1$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ . Significance based on two-tailed tests.

## Enforcement Strategies

P4: *Street-level bureaucrats have adopted a more formalistic approach to regulatory enforcement* (supported).

P5: *Street-level bureaucrats have sought to cooperate more with other government units in regulatory enforcement* (supported).

In the two surveys, we asked respondents about their bureau's enforcement strategies. Specifically, we used (a) a set of five questions to assess the degree of formalism and (b) one question about whether the bureau regularly consults with other agencies during enforcement. A composite score of formalism was constructed by averaging the scores for related questions. The Cronbach alpha for "formalism" is .731 in 2000 and .65 in 2006. As shown in table 3, there was a statistically significant increase in formalism and consultation with other agencies between the 2 years studied.

These survey responses from enforcement officials are largely compatible with what we learned from our interviews—that is, the emergence of a more formalistic approach to regulatory enforcement as a response to increased societal pressures and

**Table 3**  
Changing Enforcement Strategies

Variables	Statistics	Year		<i>t</i> -Statistic
		2000	2006	
Formalism	Mean	2.83	3.04	3.040***
	(SD)	(.644)	(.535)	(.003)
	Case no.	165	154	
1. I emphasize paperwork rather than direct conversation in enforcement	Mean	2.35	2.41	.757
	(SD)	(.748)	(.772)	(.449)
	Case no.	182	154	
2. I emphasize strict law enforcement rather than consultation in enforcement	Mean	2.76	3.13	3.760***
	(SD)	(.932)	(.886)	(.000)
	Case no.	180	154	
3. I emphasize law rather than personal attitude in enforcement	Mean	3.05	2.71	-3.345***
	(SD)	(.987)	(.863)	(.001)
	Case no.	165	154	
4. I emphasize law rather than outcome in enforcement	Mean	2.71	3.42	3.345***
	(SD)	(.955)	(.838)	(.001)
	Case no.	174	154	
5. I emphasize consistency rather than flexibility in enforcement	Mean	3.34	3.51	1.719*
	(SD)	(.961)	(.778)	(.087)
	Case no.	173	154	
My organization emphasizes consulting other government units in enforcement	Mean	3.03	3.20	1.741*
	(SD)	(.951)	(.858)	(.083)
	Case no.	181	154	

*Note:* The scores are based on Likert-scale questions, and the answer ranges from "strongly disagree" (1) to "strongly agree" (5). Formalism is the average score of the five scores below it ( $\alpha = .69$  for combined two years,  $\alpha = .731$  for 2000, and  $\alpha = .65$  for 2006). \* $p < .1$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ . Significance based on two-tailed tests.

the need to work more closely with other city agencies in regulatory enforcement as necessitated by the more complex procedural requirements for enforcement.

As we learned from our interviews, one key change has been the need for enforcement officials to spend considerable time responding to citizen complaints, some coming through the official telephone hotline and some through written complaint letters forwarded from governmental agencies responsible for administrative remediation. These complaints could easily drive the enforcement team's monitoring priorities. As mentioned by a team leader, when there were complaints about a certain enterprise, they needed to send a team to determine whether emissions had exceeded limits, and in cases involving no violation of emission limits, the team had to spend time explaining to the complainants (interview with team 7). Increased citizen complaints and media exposure have also led enforcement team officials to adopt a more formalistic approach to enforcement in order to avoid criticisms. One team leader, for example, said:

No matter whether the residents or enterprises moved in the area first, we make sure that no standards are exceeded. We enforce the regulations once limits are exceeded (interview with team 2).

When commenting on the cumbersome procedures for regulatory enforcement, such as those involving procedures for gathering emission data, issuing notices for fines, and collecting fines, most enforcement leaders resented them but indicated no attempt to ignore them. This characterization appears to be compatible with the experiences of corporate executives in Guangdong Province (Yee et al. forthcoming). Several of our corporate interviewees reported an increasingly impersonal and formalistic approach to enforcement by local EPBs in Guangdong. In the words of an enterprise executive:

They require us to increase productivity without increasing pollution. They just issue executive order and they won't teach you how to do it. Otherwise, they won't issue you the permit [for pollution emission]. This has eliminated a lot of small and medium factories. . . . In the past, [we] just needed to give *lishi* (red pockets) [to the government officials] . . . (Anonymous firm 1)

Apparently, it was possible in the past for enterprises to evade compliance by paying bribes to officials. More recently, enforcement in Guangdong Province has become more rigid and standardized. Two of our corporate interviewees mentioned that compared with the EPBs in other jurisdictions in which they have manufacturing plants, those in Guangdong have been stricter and more businesslike. EPB officials usually would not visit his factory unless specific regulatory issues arise. But that is not necessarily the case in other jurisdictions. Another corporate interviewee mentioned that environmental regulations and rules in Guangdong Province are more stringent than those in eastern China, where his company has manufacturing plants (Anonymous firm 2).

In addition to adopting a more formalistic approach to regulatory enforcement, some team leaders reported greater need to seek support from other government units to help with enforcement. This is because the procedural requirements for enforcement had become more restrictive, and closing down a serious polluting operation, for example, often required the joint efforts of many city units.

## Self-Assessment

P6: *The level of job satisfaction of street-level bureaucrats has decreased* (supported).

P7: *Enforcement effectiveness as perceived by street-level bureaucrats has remained unchanged* (supported).

The two surveys included questions on the respondents' level of satisfaction with their work and their assessment of enforcement effectiveness. As shown in [table 4](#), there were no statistically significant changes in the enforcement officials' perceived enforcement effectiveness. But there has been a statistically significant decrease in the level of satisfaction with their wages and benefits. Apparently, the more stressful work environment had not lowered the enforcement officials' commitment to the EPB, but they had become more dissatisfied with their wages and benefits. It is difficult to say whether the latter was caused by a more stressful work situation or by changes in the broader economy in which ever-increasing opportunities in the private sector may have made government jobs less competitive in terms of wages and benefits.

An interesting issue relates to the almost identical scores on perceived effectiveness in the two surveys. Despite all the changes in contexts, work environments, and regulatory strategies, enforcement officials evaluate their own effectiveness at roughly the same level in the 2 years surveyed. It would be difficult to provide a precise reason, but one may speculate that there have been both gains and losses with reference to the support, pressures, resources, and workload faced by the officials, leading them to feel no specific increase or decrease in their overall enforcement effectiveness.

A strong impression we developed from the interviews is the feeling among virtually all the enforcement team leaders of being overwhelmed by the tremendous workload. In the words of one team leader:

**Table 4**  
Self-Assessment

Items	Variables	Statistics	Year		<i>t</i> -Statistic
			2000	2006	
Individual satisfaction	I am satisfied with my wage and other benefits	Mean	3.11	2.67	-3.972*** (.000)
		(SD)	(.895)	(1.067)	
		Case no.	171	154	
Effectiveness of enforcement	My pay and benefits are fair with my contribution	Mean	3.22	2.82	-3.905*** (.000)
		(SD)	(.918)	(.956)	
		Case no.	169	153	
Effectiveness of enforcement	Overall, my unit is effective in enforcement	Mean	3.99	3.95	-0.718 (.473)
		(SD)	(.465)	(.552)	
		Case no.	181	154	
Effectiveness of enforcement	Overall, the environmental agency is effective in enforcement	Mean	3.96	3.95	-0.147 (.883)
		(SD)	(.499)	(.558)	
		Case no.	184	154	

*Note:* The scores are based on Likert-scale questions, and the answer ranges from "strongly disagree" (1) to "strongly agree" (5). \* $p < .1$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ . Significance based on two-tailed tests.

. . . . in 1995, we received 225 cases of environmental complaints; the next year, we had 480 cases; and the next year, we had 850 cases. In 1999, the total number of environmental complaint cases exceeded 1000, and then it reached 2261 in the year of 2004 and 2188 in the year of 2005. In the year of 1995, the emission fees we collected were RMB 3.5 million; in 2005, it reached 12.4 million; and in 2006, it reached 12.8 million. The total workload now is almost 8 to 10 times of the workload before . . . Usually we won't have lunch before 3 pm or 4 pm in each work day, and overtime is quite common now. For example, this year we have more than 100 days with overtime . . . (interview with team 9).

Some team leaders also mentioned cases in which environmental complaints were overused or misused. One, for example, mentioned that in some cases, even after the firms had met the regulatory requirements, local residents still filed complaints against these firms. Two team leaders even suggested that some people used environmental complaints as a tool to influence local politics, such as village election outcomes. Another team leader complained that many small businesses had become smarter and only discharged pollutants during nonregular hours, and thus those sites had to be monitored at midnight or during public holidays. All these factors had significantly increased the workload and level of stress of street-level enforcement officials. In fact, one team leader specifically mentioned that within the EPB, it would definitely be better to work for project approval than for regulatory enforcement (interview with team 9).

Most interviewees mentioned that enforcement work had become increasingly difficult—partly due to the complex and self-contradicting regulations, partly due to the additional procedural restrictions, and partly due to a lack of manpower and modern equipments. Some mentioned that even after they had tried very hard, many people were still unhappy, and the most difficult part was to deal with the public, who might not understand that some pollution problems were beyond the EPB's authority to address. However, it would be incorrect to say that enforcement officials are totally unhappy. At least three team leaders mentioned that the government leadership and the public in general were pleased with their work (interviews with teams 7, 8, and 10). None of the interviewees mentioned members in their units wanting to leave their positions.

### Explaining Enforcement Effectiveness

P8: *With stronger vertical political support in place, such horizontal factors as local government support and collaboration with other government agencies have higher and more significant impacts on street-level bureaucrats' perceived enforcement effectiveness* (supported).

To test this proposition, three sets of independent variables were selected. The first set focuses on contextual factors, including political support from four major political stakeholders: the central government, municipal government, businesses, and the public. Only four stakeholders were picked in order to avoid possible multicollinearity by including too many closely related stakeholder variables. Moreover, "central government support" is selected due to the dominant role of the Chinese central government in environmental policy making and enforcement inspection. "Municipal government

support” is selected for two reasons: (a) the municipal government has been identified in other studies as a key stakeholder affecting the transformation of national policy goals into frontline implementation outcomes (May and Winter 2009); and (b) the municipal government controls the financial and personnel resources of local EPBs and oversees their performance (Xue et al. 2007). The second set focuses on work situations, including goal ambiguity, administrative resource scarcity, and inadequate administrative authority. The third set focuses on enforcement strategies, including formalism and collaboration. Gender and years of enforcement experience are added as control variables. The Pearson correlations among various independent variables and control variables are reported in table 5. Significant correlations exist between some independent variables, but all the correlation coefficients are below .6 (except for the ones between “central government support” and “municipal government support,” with values of .657 in the 2000 survey and .762 in the 2006 survey).

Various contextual factors, work situations, and enforcement strategies are related to perceived enforcement effectiveness in complex ways; their specific patterns of interactions remain to be specified. Thus, we undertook an exploratory analysis by developing four ordinary least-squares regression models, involving different combinations of contextual factors, work situations, enforcement strategies, and control variables. Because contextual factors are the main explanatory variables in our framework, they are used in all four models, together with the two control variables of gender and years of experience. As shown in table 6, the results across all the models for the 2000 survey are quite consistent. The only exception is the result in Model 3, in which formalism is negatively associated with perceived effectiveness. Other than that, one independent variable, “central government support,” is consistently significant in all the four models in which it appears. Specifically, in Model 4, which includes all three sets of possible independent variables, central government support is the only significant variable. These results are consistent with the argument that in this earlier period, central government support is the key to street-level bureaucrats’ perceived enforcement effectiveness.

For the 2006 survey, three independent variables are consistently significant across all the models in which they appear; these include “municipal government support,” “inadequate administrative authority,” and “collaboration.” The only exception is “public support,” which is significant only in Model 3. Interestingly, the control variables gender and years of law enforcement are significant in some models for the 2006 survey, showing that female officials tend to have higher perceived effectiveness and those who have more years of law enforcement experience tend to have lower perceived effectiveness.

Overall, these results show that in the year 2000, when both vertical and horizontal political supports were relatively weak, those who perceived stronger support from the central government tended to believe they were more effective in enforcement. It is quite interesting that other contextual, situational, and strategic factors were less relevant determinants of enforcement effectiveness. This result reflects the fact that in earlier periods of the reform era, municipal EPBs were created and resourced as a result of central government mandates, and they were not strongly supported by local political and societal constituencies. As a result, from the perspective of EPB officials, support from the central government was the most important factor for their

**Table 5**  
Pearson Correlations of Independent Variables

	Central Government Support	Municipal Government Support	Business Support	Public Support	Goal Ambiguity	Administrative Resource Scarcity	Inadequate Administrative Authority	Formalism	Collaboration	Gender	Years of Law Enforcement
Central government support	—	.762**	.324**	.367**	-.156	-.177*	-.161*	.044	-.082	-.124	.034
Municipal government support	.657**	—	.429**	.470**	-.161*	-.246**	-.228**	.069	.009	-.150	.130
Business support	.203*	.280**	—	.590**	-.147	-.332**	-.186*	.036	.027	-.107	-.054
Public support	.113	.325**	.518**	—	-.214**	-.163*	-.205*	.133	.053	-.127	.058
Goal ambiguity	-.077	-.147	.098	-.060	—	.086	.084	.050	.062	.032	.001
Administrative resource scarcity	-.014	.031	.045	.099	-.062	—	.418**	-.003	-.007	-.050	-.118
Inadequate administrative authority	-.020	-.181*	-.302**	-.094	.102	.338**	—	-.153	-.083	-.173*	-.033
Formalism	-.003	.125	.146	.183*	.082	.084	.041	—	.149	-.032	-.027
Collaboration	.215**	.096	.211**	.081	.014	.108	.024	-.226**	—	.032	-.116
Gender	-.209*	-.078	-.084	-.042	-.014	-.090	.050	-.053	-.064	—	.011
Years of law enforcement	-.025	.054	.033	.019	.054	.026	.071	.089	-.083	.001	—

Note: Correlations for the 2006 sample are listed as italic in the upper right cells above the diagonal; those for the 2000 sample are in the lower left. \*  $p < .05$ ; \*\*  $p < .01$ . Significance levels are based on two-tailed  $t$ -tests.

**Table 6**  
Explaining Perceived Implementation Effectiveness

Dependent Variables— Unit Effectiveness	Model 1		Model 2		Model 3		Model 4	
	2000	2006	2000	2006	2000	2006	2000	2006
Contextual factors								
Central government support	.386** (3.175)	-.188 (-1.347)	.278* (1.958)	-.173 (-1.287)	.331** (2.640)	-.172 (-1.246)	.252* (1.733)	-.161 (-1.211)
Municipal government support	-.063 (-.501)	.560*** (3.498)	.021 (.144)	.586*** (3.803)	.028 (.211)	.555*** (3.529)	.089 (.596)	.583*** (3.837)
Business support	-.144 (-1.370)	-.044 (-.387)	-.124 (-1.048)	-.023 (-.201)	-.115 (-1.061)	-.032 (-.287)	-.089 (-.717)	-.005 (-.041)
Public support	.133 (1.204)	-.164 (-1.362)	.091 (.789)	-.108 (-.911)	.092 (-.815)	-.200* (-1.668)	.058 (.485)	-.148 (-1.249)
Work situations								
Goal ambiguity	—	—	-.128 (-1.264)	.108 (1.228)	—	—	-.106 (-.972)	.087 (1.003)
Administrative resource scarcity	—	—	-.029 (-.268)	-.040 (-.414)	—	—	-.043 (-.383)	-.009 (-.091)
Inadequate administrative authority	—	—	.058 (.528)	.299*** (3.238)	—	—	.079 (.685)	.276*** (3.001)
Formalism	—	—	—	—	-.234** (-2.107)	.043 (.476)	-.192 (-1.612)	.051 (.566)
Collaboration	—	—	—	—	-.041 (.394)	.205** (2.278)	-.010 (-.087)	.171* (1.941)
Control variables								
Gender	-.033 (-.350)	.158* (1.766)	-.011 (-.102)	.169* (1.919)	-.008 (-.079)	.148* (1.638)	-.035 (-.321)	.167* (1.907)
Years of law enforcement	.026 (.280)	-.187** (-2.074)	-.016 (-.164)	-.159* (-1.829)	.102 (1.021)	-.159* (-1.782)	.048 (.442)	-.136 (-1.547)
Sample size	202	154	202	154	202	154	202	154
R <sup>2</sup>	.131	.151	.128	.238	.191	.197	.162	.271
F ratio (significance)	2.545 (.025)	3.250 (.006)	1.472 (.170)	3.712 (.000)	2.661 (.011)	3.316 (.002)	1.444 (.169)	3.553 (.000)

Note: Standardized coefficients with *t*-scores in parentheses. The sample sizes reported here are the numbers of questionnaires returned; yet, in each regression, the sample size may be slightly reduced due to the omission of cases involving missing data.  
\**p* < .1; \*\**p* < .05; \*\*\**p* < .01.

effectiveness. In other words, when there is a lack of central government support, local factors such as administrative situations and enforcement strategies have less impact on enforcement effectiveness.

In more recent years, vertical political support and horizontal societal demands for environmental protection have been increasing at a rapid pace, and the workload for the EPB has increased dramatically; street-level bureaucrats have become more conscious of the need to seek support from the municipal government and to collaborate with other government units as essential conditions for effectiveness. One interesting result is the positive and significant correlation between “inadequate administrative authority” and implementation effectiveness. Apparently, this is opposite to what we may predict based on existing theories of policy implementation derived from experiences in Western societies, which emphasize adequate administrative authority as essential for effective enforcement (Cho et al. 2005; Matland 1995; May and Winter 2009). One possible explanation is that when asked whether they had inadequate administrative authority, street-level bureaucrats might have compared their authority level with those in other governmental agencies, such as the police and the treasury departments that have higher authority levels. This difference might have become more apparent among those who actively sought collaboration from other government units to help with regulatory enforcement; and as indicated in the regression results, those who sought collaboration from other government units tended to perceive a higher level of effectiveness. On the other hand, for an administrative agency with lower rank and authority within the party–state system, its street-level bureaucrats might have chosen to rely less on direct coercive measures and more on informal persuasion and consultation to ensure compliance. Such an approach makes sense as several interviewees noted that legal procedures for imposing fines and punishments tend to be lengthy and cumbersome. Furthermore, it might be unwise for street-level bureaucrats to frequently use coercive tools to confront those local businesses that may still have strong ties with the local party–state system and local communities (*guanxi*). Thus, in their daily work, street-level bureaucrats who rely more on education, negotiation, or other informal means, rather than coercive measures, are more likely to ensure compliance on the ground (see table 7 for summary of the major empirical findings).

## DISCUSSION AND CONCLUSION

Our study sheds light on a number of key theoretical and policy issues. First, the study can serve as a bridge between the policy implementation and the regulatory enforcement literatures. Although our conceptual framework uses the policy implementation literature as the starting point, the empirical analysis demonstrates how contextual changes and the accompanying changes in work situations may trigger street-level bureaucrats to adjust their enforcement strategies, an issue generally neglected by the policy implementation literature. Specifically, in China, as local enforcement officials began to face a more fishbowl-like environment, triggered by increasing numbers of citizen complaints and greater media coverage, they became more motivated to adopt a more formalistic and collaborative approach to regulatory enforcement.

Second, the Guangzhou case illustrates a common occurrence in developing countries, wherein regulations are adopted without due consideration on how they

**Table 7**  
A Summary of Major Findings from the Longitudinal Study (2000 and 2006)

Items	Changes from 2000 to 2006
Contextual factors	
Central government support	The central government has significantly increased its support for environmental policy implementation at the local level.
Local government support	Supports from the municipal government, city mayor, and other local government agencies have not experienced significant increases.
Business support	Business support for environmental policy implementation has remained limited and unchanged.
Public support	The general public has significantly increased its support for environmental policy implementation.
Work situations	
Goal ambiguity	Goal ambiguity as perceived by street-level bureaucrats has remained low, without significant change.
Administrative resource	Despite an increase in tangible resources, administrative resource scarcity as perceived by street-level bureaucrats has significantly increased.
Administrative authority	Administrative authority as perceived by street-level bureaucrats has significantly decreased.
Enforcement strategies	
Formalism	Street-level bureaucrats have adopted a more formalistic approach to regulatory enforcement.
Collaboration	Street-level bureaucrats have sought to cooperate more with other government units in regulatory enforcement.
Self-assessment	
Job satisfaction	The level of job satisfaction of street-level bureaucrats has significantly decreased.
Enforcement effectiveness	Enforcement effectiveness as perceived by street-level bureaucrats has remained unchanged.
Determinants of perceived enforcement effectiveness	With stronger vertical political support in place, horizontal factors such as local government support and collaboration with other government agencies have become more significant determinants of street-level bureaucrats' perceived enforcement effectiveness.

are going to be implemented at the local level. A well-known argument in the literature of rulemaking is that a lack of stakeholder participation in rulemaking creates implementation difficulties (West 2005). The environmental policy implementation gap in China is not quite surprising as mechanisms for democratic participation in rulemaking have not been well established. For many years, China's environmental policy pronouncements have been frequently criticized as mere "symbolic gestures." Recently, the Chinese central government, under pressure from both local citizens and the international community (Li and Chan 2009), has been active in promulgating environmental laws and regulations, but their implementation has mainly been the responsibilities of local EPBs. Because the central agencies responsible for drafting environmental laws and regulations are not involved in implementation, they tend

to pay insufficient attention to whether the laws and regulations make sense on the ground, thus setting the stage for a persistent implementation gap at the local level. The Chinese case also illustrates an inherent problem with a governance framework that combines centralized political authority with decentralized administration, in which central officials may have unchallenged authority but lack the institutional and organizational means to ensure that their decisions are fully implemented.

Third, our study also highlights the inherent limitation of China's top-down approach in enhancing policy implementation on the ground. In the past 2 decades, China has upgraded the administrative status of local EPBs. It is, however, clear that these upgrades in administrative status neither necessarily set up a clear regulatory framework nor ensure adequate resources for effective environmental policy implementation. As identified in our study, conflicting regulations and a lack of adequate resources have become more serious issues for effective implementation in recent years. Thus, even though the Chinese central government has increased its commitment to environmental protection, whether these policy promises can be fulfilled will depend on two factors: (a) a reduction in inconsistency among complex rules and procedures; and (b) the willingness of local governments to fully support local EPBs' enforcement work. Indeed a panel of internationally renowned scholars, the Task Force on Environmental Governance, has recently recommended that the Chinese government provide stronger incentives to local governmental leaders for better environmental policy implementation (Xue et al. 2007).

Fourth and finally, by introducing a time dimension, our longitudinal study has identified that implementation contexts do change, and the necessary conditions for effective implementation may change over time. As a contingency model, Matland's ambiguity-conflict matrix identified various contexts of policy implementation (Matland 1995); however, the study did not explicitly indicate that implementation contexts may change over time or across regions and it lacks a consideration of democracy in policy implementation (deLeon and deLeon 2002). Moreover, how implementation context may change from one that is characterized by high degrees of political conflict and policy ambiguity to one that is characterized by low degrees of both (Chun and Rainey 2005; Matland 1995) and how the determinants of implementation effectiveness may change across different contexts remain intriguing issues. As an extension of this line of research, our conceptual framework links configurations of contextual transformations to changes in work situations and enforcement strategies of street-level bureaucrats, and the politics of implementation can be embodied in both vertical and horizontal dimensions.

This research demonstrates both the usefulness and limitations of Western theories of policy implementation for understanding what is happening in a non-Western and authoritarian setting. Although China's environmental enforcement work is embedded in a setting that is quite different from that in Western societies, street-level bureaucrats in China may have similar needs for more effective policy implementation as their Western counterparts. For example, support from higher-level governments and an adequate supply of resources are important factors for policy implementation in any society. Nevertheless, due to the differences in political and administrative institutions, some factors, such as specific stakeholder support and administrative authority, may not have the same sign or level of significance everywhere. In this regard, our

research provides clues on how to adapt existing models of policy implementation to non-Western settings. For example, in many developing countries like China, initial pushes for stricter environmental regulation and enforcement often have to come from the central government as it is difficult to expect local governments to possess the motivation to do it on their own. Although such initial pushes are essential, they are insufficient to build and sustain an effective local enforcement regime. Ultimately, it is important to mobilize local political and societal forces to support and sustain effective enforcement efforts. Without these local forces working in synchronization with each other, large implementation gaps may persist for long periods of time, despite declared intentions by the central government.

This research has several limitations. First, this research is only the first step toward contextualizing the study of policy implementation, and it has limitations in methodology. Because the two surveys were anonymous, we could not examine at the individual level how changes in contextual variables affect changes in individual work situation, enforcement strategies, and self-assessment of enforcement effectiveness. Instead, we compared the mean values in the 2 years and ran two separate regressions as an alternative method for exploring temporal variations about the determinants of perceived effectiveness across the two time periods. Overall, this article can be understood as an in-depth longitudinal case analysis, resembling a quasi-experimental study. The value of the study lies not only in the quantitative analysis but also in the information we obtained from interviewing local officials and enterprise executives, by which we developed narratives on the specific mechanisms by which contextual changes affect work situations, enforcement strategies, and perceived effectiveness. It is on this basis that we contribute to the literature by bringing a time dimension into the study of policy implementation and arguing that context matters in public management.

Second, our empirical results should be interpreted with caution because regional variations in China are huge. A study on policy implementation in a metropolitan city like Guangzhou may not necessarily be representative of the entire urban China. Third, we rely primarily on self-reported information on implementation experiences and other organizational and contextual variables. More objective data, such as pollution data or individual performance information, should be employed for further assessments of contextual changes and policy implementation. Fourth, 6 years may not be long enough to observe significant changes in implementation contexts, and future studies may employ a longer time framework. Nevertheless, our study moves the existing literature beyond its traditional limits, such as a geographical focus on Western societies and a lack of longitudinal design. Our study also lays the foundation for future studies to capture the rapid institutional developments in China and how they have affected public policy implementation.

Finally, our research calls for more contextualized studies of policy implementation in an increasingly globalized world. Because the mainstream theories and models of policy implementation are derived from experiences in Western societies, to what extent these implementation theories and models fit non-Western contexts remains an intriguing question to students of public policy and administration. Although our longitudinal study has moved the literature one step forward by approximating a quasi-experimental design, it still faces the challenge of how to determine causality

more precisely (Ramanathan et al. 2008). Because this fundamental limitation applies to most implementation studies, future research should seek to understand better the relationships between contextual factors and policy implementation in more diversified and dynamic settings as a way to generate contextually valid knowledge.

## FUNDING

The research for this article was partially funded by the project “Changes in the Enforcement of Environmental Regulations in China: A Longitudinal Study of Environmental Enforcement Officials in Three Cities” of the Research Grants Council of the Hong Kong Special Administrative Region (RGC No.: PolyU5469/10H).

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