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# Street-Level Bureaucrats and the Environmental Enforcement Gap in China: From Political to Administrative Implementation?[1]


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## Abstract

Environmental policy implementation in China is conditioned by many organizational and contextual factors, which have been undergoing rapid changes in recent years. Based on data derived from questionnaire surveys in the years 2000 and 2006 of environmental protection officials in the southern city of Guangzhou, the paper shows that goal ambiguity has remained low, and street-level environmental policy enforcers have seen an increase in administrative authority and support from a number of government and societal actors. Yet due to the heightened expectations from these external stakeholders, street-level enforcers have perceived a higher level of administrative resource scarcity despite the fact the absolute amounts of administrative resources available may have increased. Furthermore, enforcement effectiveness as perceived by street-level enforcers has remained virtually unchanged. Among several contextual and organizational factors, perceived support from the municipal government has remained the most significant predictor of perceived enforcement effectiveness. These empirical results help explain the continuing implementation gap and indicate a possible, but uncertain, movement from political to administrative implementation.



Key Words: Street-Level Bureaucrats, Policy Implementation, China

## Street-Level Bureaucrats and the Environmental Enforcement Gap in China: From Political to Administrative Implementation?

It is widely known, and acknowledged by government officials themselves, that an implementation gap exists in many public policy arenas in China[2] (O'Brien and Li, 1999), and the environmental enforcement gap is a major issue that has received considerable academic attention (Chan et al., 1995, Ma and Ortolano, 2000, Swanson et al., 2001, Economy, 2004, Lo et al., 2006). While existing empirical studies have improved our understanding of the complexity of public policy implementation in China, we still know little about the underlying causes of the implementation gap. At the same time, although in recent years the Chinese government has promulgated a wide array of laws and regulations aiming at protecting the environment, most of them have been weakly enforced by the local environmental protection bureaus (Ma and Ortolano, 2000). What major factors affect the effectiveness of regulatory enforcement in China? In recent years, the Chinese government has vowed to reform the environmental governance system and to improve its record in enforcing environmental laws and regulations (Lo and Tang, 2006). Have there been changes in the factors that affect environmental policy implementation in China?

In this paper, we address these issues using data gathered from two rounds of questionnaire surveys with over 150 respondents in each (one in 2000 and the other in 2006) of street-level enforcement officials of the local environmental protection bureau in Guangzhou, a southern metropolitan city in China. Based on the survey data, we found that from the perspective of street-level officials, there had not been a major improvement

[2] In existing literature and daily practices of public policy, there are different terminologies to describe the gap between intended policy goal and policy implementation output, such as implementation gap, enforcement gap, etc. In this paper, we chose to use "implementation gap" to avoid confusion.

in enforcement effectiveness during the period. Considerable changes have occurred in their perceptions on increased support from external government authorities—the central government, provincial government, and local political consultation committee—and various societal actors—the general public, the media, and social organizations. Despite these changes, street-level bureaucrats' perception on administrative authority and support from the municipal government continued to be the key determinates of their perception on enforcement effectiveness.

These recent developments provide a good opportunity to analyze policy implementation in China using key concepts and arguments derived from the literature on policy implementation. The current literature includes at least three generations, ranging from top-down, to bottom-up and hybrid models of policy implementation (Pressman and Wildavsky, 1973, Lipsky, 1980, Mazmanian and Sabatier, 1983, Matland, 1995, Pülzl and Treib, 2006). More recently a large body of literature on governance has examined the role of stakeholder involvement and inter-organizational collaboration in policy implementation and social service delivery (Bryson et al., 2006, Graddy and Chen, 2006, Hill and Hupe, 2002, O'Toole, 2000). Since most of this literature is derived from experiences in western societies, to what extent these policy implementation models can fit non-western contexts remains an intriguing question to students of public administration.

The current literature acknowledges that cultural and institutional contexts shape policy implementation (Birkland, 2005; Wilson, 1989). Further, a key premise of the recent literature is that no universal set of factors explains implementation successes and failures, and due to variations in contextual variables, such as degrees of goal ambiguities

and political conflicts, the nature of implementation problems differs (Matland, 1995). While these contextual variables vary across policy domains, they may also vary over time within the same policy domain. Embedded in an administrative system with rapid economic, political, and institutional changes, the case of environmental policy implementation in Guangzhou shows that contextual variables may change in a matter of several years.

The other premise in the literature is the need to move beyond the traditional debate on the relative merits of a top-down versus a bottom-up perspective, and adopt a governance perspective that recognizes how a wide array of stakeholders and their interactions with each other within multiple levels of institutional rules may affect policy implementation on the ground (O'Toole 2000; Lynn et al., 2000&2001). The case of Guangzhou shows how stakeholder support and interactions may affect environmental regulation enforcement. The growing role of external stakeholders in policy implementation in China echoes what has been extensively discussed in the recent literature on collaborative governance (Ansell and Gash, 2008, Lubell, 2005, Jung et al., 2009).

Building on these premises, we first develop a conceptual framework and several hypotheses for understanding recent changes in the contexts of policy implementation in China. After an explanation of the dataset and research methodology, empirical results are presented, followed by discussions and conclusions.

## Conceptual Framework and Hypotheses

Policy implementation in China relies on an administrative system characterized by an authoritarian, top-down structure and a decentralized administrative system (Lieberthal & Oksenberg, 1988). Public policies are mostly formulated at the central level and implemented by local officials. Due to significant social and economic variations across regions, street-level bureaucrats in different regions may face divergent contexts and amounts of administrative resources. In their daily work, street-level bureaucrats exercise considerable discretion in how they enforce rules and regulations. Economy (2005, p. 103) argues that environmental enforcement in China relies on "three legs"—the central government that sets policy goals and inspect implementation outcomes; local EPBs that conduct environmental impact assessment, monitor businesses, and collect pollution fees; and a broad array of external watchers including the media, domestic NGOs, and the international community. Yet in reality China's central government is limited by its capacity to inspect most implementation activities and outcomes at the local level; local governmental leadership may impede law enforcement by EPBs; and environmental NGOs are still relatively weak in terms of policy advocacy capacity (Economy, 2005, Tang and Zhan, 2008).

When studying policy implementation in China, political scientists and economists have used mostly a top-down perspective (Harding, 1981, Qian and Weingast, 1996 &1997, Cai and Treisman, 2006). Specifically, the political tension between the central government and local bureaucrats has been extensively discussed in recent years. One notable example is the implementation of China's market-oriented economic reform. Qian and Weingast (1996 &1997) argue that political decentralization has resulted in better market-oriented policy implementation by local governments. On the other hand,

Cai and Treisman (2006) argue that not political decentralization but the winners in centralized political games ensured the successful implementation of market-oriented reform. In other words, political support from the central level is the key for successful policy implementation at the local level. Lieberthal (1997) argues that the relatively weak political authority allocated to local environmental agencies prevented them from effective implementation when local governmental leaders place higher policy priority on other policies, such as industrial development, job opportunities, and economic growth. And Chan et al. (1995) argue that the environmental implementation gap was largely caused by unsupportive institutions and constituencies at the local level. By combining the "top-down emphasis on central control with the bottom-up emphasis on street-level discretion", O'Brien and Li (1999) further propose that "selective implementation" is a typical style of policy implementation in China, especially in rural areas.

As well documented in the 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, Riccucci, 2005). Recent studies highlight the importance of political support, organizational arrangements, and adequate administrative capacity for successful implementation (for a more detailed review, see May and Winter, 2009). Hill (2003 & 2005) argues that adequate resources and cooperation from key stakeholders are important for effective policy implementation by street-level bureaucrats. Environmental policy implementation in China is carried out mostly in contexts in which political support is insufficient, administrative capacity is limited, and bureaucrats have to use their discretionary power to deal with many different situations. Oliver and Orlando

(2006), for example, find that Cleaner Production Programs in urban China are affected by a number of factors—weak legal and political control by higher-level governments, inadequate staff and resources, and poor inter-agency coordination (for a more detailed review, see Rooij and Lo, forthcoming).

In their recent study of Guangdong Province, Lo and Tang (2006) documented a number of 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 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 opinions of the government officials interviewed for their study, the system has encouraged leaders at different government levels and entities to pay more attention to environmental protection than before. Changes in industrial structures in the local economy have also helped. For example, with most of the industrial enterprises, except for the largest few, turned into private ownership, it is now easier to enforce environmental regulations because the privatized ownership structure has gradually decoupled these industrial enterprises from the party-state system.

Along with enterprise privatization, there have also been increasing complaints and pressures from the public for a better environment. The Chinese government, especially since the inauguration of the Hu Jintao administration, has shown a stronger commitment to environmental protection (Economy, 2005, Lam, 2006). Thus, since the beginning of the twenty-first century, many contextual factors that affect regulatory

enforcement have undergone significant changes. To understand environmental regulation enforcement in China, one must pay more attention to street-level bureaucrats and their changing implementation contexts, including goal ambiguity, administrative authority, government and societal stakeholders, and administrative resources.

### *Goal Ambiguity*

Goal ambiguity affects bureaucratic behaviors and organizational performance (Chun and Rainey, 2005). As noted by Matland (1995), goal ambiguity was traditionally considered in the implementation literature, especially in studies that adopt a top down perspective, as 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. Pandy and Wright (2006) further argue that goal ambiguity in public organizations may be "inevitable" since they must respond to multiple external stakeholders, especially when the levels of policy complexity and political conflicts are high. Thus in many arenas, a policy may be intentionally formulated in an ambiguous way. Goal ambiguity affects implementation in many ways—e.g., larger variations in how the policy is implemented and what actors get involved in different sites. In the case of Guangzhou, street-level bureaucrats face a policy environment that is relatively low in goal ambiguity as the environmental regulations themselves usually have clear guidelines and objectives, and those guidelines and objectives are seldom openly challenged. The enforcement of these regulations, such as fee collection and site monitoring, has become routine tasks.

*H1: From the perspective of street-level bureaucrats, goal ambiguity has remained at a low level.*

***Administrative Authority***

Political tensions between various levels of government and the conflict between society and the party-state system may impact street-level policy implementation. A lack of authority granted by higher-level governments or a lack of support from the general public can eventually lead to implementation failures. EPB bureaucrats in Guangzhou faced such problems in the 1980s and 1990s, yet since the beginning of the twenty-first century, these problems appear to have lessened partly due to the heightened concern of the central leadership and the general public on the worsening environmental situation in China.

*H2: From the perspective of street-level bureaucrats, administrative authority has increased.*

***Government and Societal Stakeholders***

In many policy arenas, support from and collaboration with key stakeholders is critical for effective policy implementation and social service delivery (Imperial, 2005). Environmental policy implementation especially requires cooperation from multiple stakeholders, such as policy makers, street-level bureaucrats, regulated businesses, environmental NGOs, community groups, and many other concerned parties (Imperial, 2005; Thomas, 2003). In China, policy implementation has traditionally been the task of government. Collaboration between different government agencies was necessary for effective implementation, and societal stakeholder support was less essential. That 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.

*H3: From the perspective of street-level bureaucrats, support from government remains more important than support from societal actors, but the relative importance of support from societal actors has increased.*

*H4: From the perspective of street-level bureaucrats, support from both government and societal actors have increased.*

***Administrative Resources***

Although street-level bureaucrats have considerable discretionary power, they need resources to carry out policies. In studying the implementation of retirement policy for Chinese cadre with lifelong tenure during the 1980s, Manion (1991) found that frontline implementers of the policy had to negotiate with the retiring cadre on specific terms of their retirement using a variety of monetary and non-monetary incentives despite the fact that the policy was handed down with a strong mandate from the country's top leadership. Stated differently, frontline implementers needed necessary resources to ensure the compliance of the targeted population, who were cadre members with substantial influence within the party-state system.

In the local environmental management arena, there have been increases in the past decade in the absolute amounts of resources available to street-level bureaucrats in the form of better office buildings, more and better communication equipments, more vehicles, etc. But the absolute amounts of workload have also increased tremendously.

With the installation of pollution complaint hotlines in most local jurisdictions including Guangzhou and the increasing attention of the media to pollution incidents, for example, 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 impact street-level bureaucrats' perception of resource availability.

*H5: From the perspective of street-level bureaucrats, administrative resource scarcity has increased.*

***Enforcement Effectiveness***

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

*H6: From the perspective of street-level bureaucrats, enforcement effectiveness has remained unchanged.*

***Predictors of Enforcement Effectiveness***

Matland (1995) identifies four scenarios of policy implementation based on the underlying degrees of ambiguity and conflict—symbolic implementation (characterized by high ambiguity and high conflict), experimental implementation (high ambiguity and low conflict), political implementation (low ambiguity and high conflict), and administrative implementation (low ambiguity and low conflict). Given that goal

ambiguity in the Guangzhou case has remained low, the scenarios that are most relevant to the case are "political implementation" and "administrative implementation", with the former denoting a scenario involving high conflict and the latter involving low conflict. As argued by Matland (1995), in the scenario of "political implementation", the key for successful implementation is that the implementing agency has sufficient administrative authority to force its will on those who disagree with the policy goals, or sufficient resources to bargain with policy dissidents. In addition, following Mazmanian and Sabatier's model (1983), support from the general public, higher-level political leaders, and various political groups may also help in a political implementation scenario. In the scenario of "administrative implementation", internal administrative resources such as technology and adequate personnel become the key determinants of effective implementation.

Arguably, the case of Guangzhou, along with many other urban areas in China, resembles the "political implementation" scenario as there are powerful government and business entities that are strongly opposed to strict regulatory enforcement by street-level bureaucrats and may attempt to subvert their enforcement work. Yet there have been signs that such opposition to regulatory enforcement has somehow diminished given the emerging consensus on the importance of environmental protection (Lo and Tang 2006). If our earlier hypotheses on increased administrative authority and increased stakeholder support are correct, the Guangzhou case involves a gradual movement from the "political implementation" to the "administrative implementation" scenario. This implies that administrative resources have become a more important determinant of implementation effectiveness.

*H7: Street-level bureaucrats with higher levels of perceived administrative resource, administrative authority, and stakeholder support had higher levels of perceived implementation effectiveness.*

*H8: Perceived adequacy of administrative resources has become a more important determinant of perceived effectiveness.*

## Methods, Data, and Empirical Results

Two rounds of surveys with environmental policy implementation officials in Guangzhou were conducted in 2000 and 2006. We were able to obtain institutional support from the local environmental protection agencies in the City of Guangzhou for reaching out to officials working in the environmental law enforcement unit (*huan jing zhi fa da dui*) and securing their cooperation in responding to the survey questionnaires. In other words, all surveyed officials are street-level bureaucrats. For each round of survey, we assigned representatives to administer the survey with environmental enforcement officials. In 2000, we sent out 250 questionnaires and received 202 responses. In 2006, we sent out 220 and received 154 responses.

The questionnaire included around forty questions about the respondents' perception on their implementation work. A five-point Likert-scale was used[3]. For a detailed description of variable measurements, please see Appendix 1.

***H1. From the perspective of street-level bureaucrats, goal ambiguity has remained at a low level.***

[3] In the questionnaire, the answer to each Likert-scale question ranges from "strongly disagree" (1) to "strongly agree" (5).

H1 is supported. In both years, goal ambiguity remained at a relatively low level. For the year 2000, perceived goal ambiguity was 2.37 (on a five-point scale, with 3 being neutral), and for 2006, perceived goal ambiguity was 2.53. The difference between the two years is statistically insignificant (Table 1).

***H2. From the perspective of street-level bureaucrats, administrative authority has increased.***

H2 is supported. As shown in Table 1, the perceived level of inadequate administrative authority changed from 3.59 in 2000 to 3.08 in 2006 (Table 1). More street-level bureaucrats in 2000 than in 2006 thought that they had inadequate administrative authority. The difference between the two years is statistically significant (Table 1). However, the score in 2006 was 3.08, which was close to "neutral" on the 5-point scale. In other words, street-level bureaucrats did not think that they had high administrative authority, but they did not think they had inadequate administrative authority either.

***H3. From the perspective of street-level bureaucrats, support from government remains more important than support from societal actors, but the relative importance of support from societal actors has increased.***

H3 is supported. As shown in Table 2, the relative ranking of the importance of government versus societal support has not changed from the year 2000 to 2006—i.e., in both years, street-level bureaucrats assigned government 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, while 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, while the average respondent in 2006 considered societal actor support as mildly important, with an a score of 3.49 (somewhere between "neutral" and "agree").

When comparing the importance of external stakeholders relative to internal organizational issues, the score for governmental support increased from 3.65 in the year 2000 to 3.98 in 2006, while the score for societal actor support increased from 2.70 (somewhere between "disagree" and neutral" in the scale) to 3.34 (somewhere between "neutral" and "agree").

***H4. From the perspective of street-level bureaucrats, support from both government and societal actors have increased.***

H4 is partially supported. As shown in Table 3, among the 13 different stakeholders, seven of them—the Central Government, Provincial Government, the Political Consultation Committee, the public, the media, environmental organizations, and other social organizations were seen to have increased their support. The other six—the city government, city mayor, other city departments, the National People's Congress, the court, and businesses—showed no statistically significant increase in support.

***H5. From the perspective of street-level bureaucrats, administrative resource scarcity has increased.***

H5 is supported. As shown in Table 1, in comparison with year 2000, street-level bureaucrats agreed more in 2006 that there were a "lack of resources in my organization."

***H6. From the perspective of street-level bureaucrats, enforcement effectiveness has remained unchanged.***

H6 is supported. As shown in Table 1, there was no statistically significant change in perceived implementation effectiveness between the years 2000 and 2006 at the unit level. Here "unit" refers to the environmental law enforcement unit (*huan jing zhi fa da dui*) of the local EPB, including a number of districts responsible for emission monitoring, fee collection, and other law enforcement work.

***H7: Street-level bureaucrats with higher levels of perceived administrative resource, administrative authority, and stakeholder support had higher levels of perceived implementation effectiveness.***
***H8: Administrative resources have become a more important determinant of implementation effectiveness.***

A regression model was developed using as predicting variables "insufficient resources", "inadequate administrative authority", and support from three external stakeholders—municipal government, businesses, and environmental NGOs. Only three external stakeholders were picked in order to avoid possible multicollinearity by including too many closely related stakeholder variables. The dependent variable is perceived implementation effectiveness at the unit level. Three control variables were used in the model—gender, age, and years of law enforcement. The Pearson correlations among various independent variables and control variables are reported in Table 4. The regression results are shown in Table 5.

H7 is partially supported. The coefficients for "insufficient resources" are not significant for both years, yet the signs are negative and consistent across the two years. Although there has been a significant increase in street-level bureaucrats' perception of resource scarcity, administrative resources are not a factor significantly correlated with perceived effectiveness. The coefficients for "inadequate administrative authority" are all positive and significant in both years. This means that in both years higher levels of perceived inadequate administrative authority are correlated with higher levels of perceived effectiveness. Among the coefficients for the three stakeholders, only the ones for the governmental sector are statistically significant. The values of the standardized coefficients also increased quite a bit from 0.257 in the year 2000 to 0.418 in 2006, indicating the continuing and increasing importance of governmental support for regulatory enforcement. Neither business support nor environmental NGO support are significantly related to perceived effectiveness in both years. In other words, government has remained the dominant player in environmental policy implementation in China. From the perspective of street-level bureaucrats, although the importance of businesses and NGOs has increased, it is still not correlated with perceived effectiveness.

H8 is not supported, as perceived "insufficient resources" is not a significant predictor of perceived effectiveness in either 2000 or 2006.

## Discussion and Conclusion

Environmental policy implementation is conditioned by many organizational and contextual factors. Understanding environmental policy implementation needs the

integration of top-down, bottom-up, as well as horizontal perspectives to take into account a wide array of stakeholders. One major finding in this paper is that in the southern Chinese city of Guangzhou, goal ambiguity has remained low, and street-level environmental policy enforcers have seen an increase in administrative authority and support from a number of government and societal actors. Yet due to the heightened expectations from these external stakeholders, street-level enforcers have perceived a higher level of administrative resource scarcity despite the fact the absolute amounts of administrative resources available may have increased. Furthermore, enforcement effectiveness as perceived by street-level enforcers has remained virtually unchanged.

This finding sheds light on the continuing environmental policy implementation gap in China. In recent years, the central government of China has shown a stronger commitment to environmental protection, yet China's environmental policy pronouncements have been frequently criticized as mere "symbolic gestures". Although Chinese citizens and civil society organizations have been demanding better environmental protection for years, there is no evidence that such pressure has been effectively translated into better environmental policy outcomes. The inconvenient truth is that major gaps still exist in China's environmental policy implementation.

Another finding concerns the predictors of perceived effectiveness. It turns out that not all the usual factors identified in the western literature matter in the context of Guangzhou. For example, in the context of low goal ambiguity and high political conflict (the scenario of political implementation), several factors—administrative authority, administrative resources, support from various external stakeholders—are hypothesized to have an impact on implementation effectiveness (Matland, 1995). Yet our survey data

show that only two of these factors—municipal government support and administrative authority—are statistically significant.

Most noteworthy is that the most important factor in both 2000 and 2006 has remained to be municipal government support, showing that in the context of China, ultimately what matters the most is whether the local government supports the local EPB's enforcement work. In recent years, we have witnessed the Chinese central government's increasing commitment to environmental protection; yet whether these policy promises can be fulfilled will depend on the willingness of local governments to put resources together to empower local EPBs. Although business and NGO support may be important in the long run, the key in the immediate future is to make sure that local EPBs can secure enough support from the local government for regulatory enforcement regardless of potential opposition from the government's business patrons. This observation is supported by information we gathered from interviewing leaders of environmental law enforcement groups in Guangzhou after our survey in 2006. When asked about what the major factors for effective implementation were, eight among 12 district leaders chose "support from local government" as the most important, with "good coordination with other local governmental agencies" as the second (five among 12 mentioned that factor).

It is puzzling that "inadequate administrative authority" is positively correlated with perceived effectiveness. This result means that a lower level of perceived authority is correlated with a higher level of perceived effectiveness. As mentioned earlier, local EPBs in China have been given limited administrative authority for years. On the one hand, for street-level bureaucrats, implementation tasks such as fee collection and

emission monitoring may have become routine work that is less political in nature. On the other hand, it might be unwise for them to frequently use coercive tools to confront those local businesses that have strong ties with the local party-state system. Thus, in their daily routine implementation, street-level bureaucrats may have relied more on education, negotiation, or other informal means, rather than the excise of authority, to ensure compliance.

Finally, it is also puzzling why administrative resources turn out to be not a significant factor affecting perceived effectiveness. This result does not support our initial speculation that a transition from "political implementation" to "administrative implementation" has been underway. Certainly Chinese environmental policy implementation does not perfectly match the "administrative implementation" scenario, and six years might not be long enough to achieve a paradigm shift. That said, we cannot rule out the possibility that environmental policy implementation in China is slowly moving to the scenario of "administrative implementation" due to the fact that (1) there appears to be an emergent consensus on the importance of environmental protection nationwide, (2) street-level bureaucrats have gained increasing support from a larger array of stakeholders, and (3) street-level bureaucrats have begun to feel constrained by resource scarcity.

A weakness of our research is that we relied primarily on self-reported information to measure many important variables, including organizational resources, external stakeholder supports, and implementation effectiveness. Future studies should include more objective measures. However, due to the well-known difficulty in collecting

data from Chinese governmental agencies, our longitudinal dataset helps us to move a step towards a more dynamic understanding of public policy implementation in China.

Although China's environmental enforcement work is embedded in a context that is quite different from western societies, this research has demonstrated both the usefulness and limitations of western theories of policy implementation for understanding what is happening in China. That said, our empirical result should be interpreted with caution since regional variations in China are huge. A case study of policy implementation in a major city like Guangzhou may not necessarily be representative of the entire urban China. Yet our study provides a useful window for capturing the rapid institutional developments in China.

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Table 1. Comparing Means of Implementation Context and Effectiveness (2000 V.S. 2006)

| Items | Variables | Statistics | Year | | ANOVA |
|---|---|---|---|---|---|
| | | | 2000 | 2006 | *F*-Ratio (Probability) |
| Policy Goal Ambiguity | Goal Ambiguity | Mean (S.D.) | 2.37 (.785) | 2.53 (.830) | 2.635 (.106) |
| | | Case No. | 179 | 106 | |
| Administrative Authority | Inadequate Administrative Authority | Mean (S.D.) | 3.59 (1.207) | 3.08 (.943) | 14.265*** (.000) |
| | | Case No. | 179 | 106 | |
| Administrative Resource Scarcity | Perceived lack of resources | Mean (S.D.) | 3.39 (.945) | 3.84 (.820) | 20.813*** (.000) |
| | | Case No. | 185 | 154 | |
| Policy Implementation Effectiveness | Perceived Unit-level Effectiveness | Mean (S.D.) | 3.9945 (.46544) | 3.9906 (.56053) | .004 (.949) |
| | | Case No. | 181 | 106 | |

Table 2. Comparing Means of Perceived Stakeholder Importance (2000 V.S. 2006)

| Items | Variables | Statistics | Year | | ANOVA |
|---|---|---|---|---|---|
| | | | 2000 | 2006 | *F*-Ratio (Probability) |
| Perceived importance of external stakeholders | If no governmental support, it is difficult to enforce | Mean (S.D.) | 3.96 (.674) | 4.17 (.592) | 9.280*** (.002) |
| | | Case No. | 185 | 154 | |
| | If no social org support, it is difficult to enforce | Mean (S.D.) | 2.69 (.814) | 3.49 (.794) | 79.517*** (.000) |
| | | Case No. | 171 | 154 | |
| | support from other governmental organizations more important than internal problems for enforcement | Mean (S.D.) | 3.65 (.766) | 3.98 (.652) | 17.529*** (.000) |
| | | Case No. | 174 | 154 | |
| | social org support more important than internal problems for enforcement | Mean (S.D.) | 2.70 (.788) | 3.34 (.836) | 49.564*** (.000) |
| | | Case No. | 167 | 153 | |

Table 3. Comparing Means of Perceived External Stakeholder Supports (2000 V.S. 2006)

| Items | Variables | Statistics | Year | | ANOVA |
|---|---|---|---|---|---|
| | | | 2000 | 2006 | *F*-Ratio (Probability) |
| Political Support from Government | Support from central government | Mean (S.D.) | 3.43 (.855) | 3.59 (.807) | 2.799* (.095) |
| | | Case No. | 158 | 153 | |
| | Support from provincial government | Mean (S.D.) | 3.35 (.891) | 3.51 (.814) | 2.896* (.090) |
| | | Case No. | 171 | 152 | |
| | Support from city government | Mean (S.D.) | 3.44 (.861) | 3.52 (.838) | .733 (.393) |
| | | Case No. | 171 | 152 | |
| | Support from city mayor | Mean (S.D.) | 3.39 (.865) | 3.46 (.831) | .503 (.479) |
| | | Case No. | 162 | 151 | |
| | Support from other departments in city government | Mean (S.D.) | 3.02 (.908) | 3.14 (.846) | 1.406 (.237) |
| | | Case No. | 155 | 152 | |
| | Support from national people's congress | Mean (S.D.) | 3.48 (.854) | 3.51 (.797) | .073 (.787) |
| | | Case No. | 160 | 152 | |
| | Support from political consultation committee | Mean (S.D.) | 3.16 (.897) | 3.50 (.738) | 12.993*** (.000) |
| | | Case No. | 153 | 151 | |
| | Support from court | Mean (S.D.) | 3.47 (.839) | 3.45 (.821) | .028 (.868) |
| | | Case No. | 164 | 152 | |
| Political Support from Other Sectors | Support from the public | Mean (S.D.) | 3.16 (.956) | 3.35 (.782) | 3.843* (.051) |
| | | Case No. | 168 | 153 | |
| | Support from the mass media | Mean (S.D.) | 3.19 (.938) | 3.42 (.775) | 5.723** (.017) |
| | | Case No. | 166 | 153 | |
| | Support from environmental organizations | Mean (S.D.) | 3.04 (.854) | 3.45 (.698) | 21.186*** (.000) |
| | | Case No. | 157 | 152 | |
| | Support from other social organizations | Mean (S.D.) | 2.86 (.804) | 3.24 (.641) | 21.572*** (.000) |
| | | Case No. | 154 | 152 | |
| | Support from the business | Mean (S.D.) | 2.92 (.888) | 2.97 (.786) | .376 (.540) |
| | | Case No. | 167 | 153 | |

Table 4. Pearson Correlations of Various Resources and Control Variables

| | Insufficient resources | Inadequate administrative authority | Municipal Government support | Business support | Environmental organizations support | Gender | Age | Years of law enforcement |
|---|---|---|---|---|---|---|---|---|
| Insufficient resources | | *.376*** | *-.032* | *-.019* | *-.004* | *-.067* | *-.066* | *.009* |
| Inadequate administrative authority | .418** | | *-.181** | *-.302*** | *-.128* | *.050* | *.065* | *.071* |
| Municipal Government support | -.246** | -.228** | | *.280*** | *.273*** | *-.078* | *.091* | *.054* |
| Business support | -.332** | -.186* | .429** | | *.498*** | *-.084* | *.078* | *.033* |
| Environmental organizations support | -.051 | -.056 | .528** | .439** | | *-.072* | *-.136* | *-.187** |
| Gender | -.173* | -.050 | -.150 | -.107 | -.158 | | *-.051* | *.001* |
| Age | .001 | .041 | .150 | -.070 | -.048 | -.017 | | *.677*** |
| Years of law enforcement | -.033 | -.118 | .130 | -.054 | -.018 | .011 | .640** | |

Correlations for the 2000 sample are listed as italic in the upper right cells; those for the 2006 sample are in the lower right. ** indicates the correlation is significant at the 0.01 level (2-tailed); * indicates the correlation is significant at the 0.05 level (2-tailed).

Table 5. Resource Availability and Perceived Effectiveness

| | | Year 2000 | Year 2006 | Δ (2006-2000) |
|---|---|---|---|---|
| Dependent Variables | | Unit Effectiveness | Unit Effectiveness | |
| Predicting Variables | Insufficient resources | -.116 (-1.040) | -.048 (-.493) | + .068 |
| | Inadequate administrative authority | .257** (2.217) | .338*** (3.543) | + .081 |
| | Municipal Government Support | .257** (2.420) | .418*** (3.586) | + .161 |
| | Business Support | -.109 (-.889) | -.098 (-.927) | + .011 |
| | Environmental NGO Support | -.002 (-.014) | .035 (.318) | + .037 |
| Control Variables | Gender | -.046 (-.445) | .176* (1.970) | + .222 |
| | Age | .181 (1.349) | -.190* (-1.658) | - .371 |
| | Years of law enforcement | -.052 (-.389) | -.022 (-.192) | + .030 |
| Sample Size | | 202 | 154 | |
| $R^2$ | | 0.145 | 0.233 | |
| *F* *(sig.)* | | 1.774 (.094) | 3.994 (.000) | |

Notes: * p <0.1; ** p <0.05; *** p <0.01; standardized coefficients with *t* scores in parentheses.

## Appendix 1: Questionnaire Items

H1: We surveyed the street-level bureaucrats' perception on goal ambiguity. The answer to this Likert-scale question ranges from "strongly disagree" (1) to "strongly agree" (5).

*Q1. Do you agree that you encounter ambiguous goals in your own work?*

H2: We surveyed the street-level bureaucrats' perception on administrative authority. The answer to this Likert-scale question ranges from "strongly disagree" (1) to "strongly agree" (5).

*Q2. Do you agree that your organization has inadequate administrative authority?*

H3: The questions below were used to measure street-level bureaucrats' perceived importance of different stakeholders. Specifically, we examined the perceived importance of governmental organizations and social organizations. We also asked them to compare the importance of external support relative to internal problems. For each item, we asked whether they agree with the statement. The answer to each Likert-scale question ranges from "strongly disagree" (1) to "strongly agree" (5).

*Q3. It is difficult to do my work without the support of the above social groups and organizations.*

*Q4. It is difficult to do my work without the support of the above government units and departments.*

*Q5. The lack of support of social groups and organizations create more difficulties for my work than the internal problems in my organization.*

*Q6. The lack of support of government units and departments create more difficulties in my work than the internal problems in my organization.*

H4: The questions below were used to measure perceived support from governmental stakeholders and societal stakeholders.

Perceived Governmental Support: This variable is sub-divided into eight variables: support from central government for environmental policy implementation; support from provincial government for environmental policy implementation; support from city government for environmental policy implementation; and support from city mayor for environmental policy implementation; support from other departments in city government for environmental policy implementation; support from people's congress for environmental policy implementation; support from political consultation committee for environmental policy implementation; and support from court for environmental policy implementation.

Perceived Societal Support: This variable is sub-divided into five variables: support from the public for policy implementation; support from the mass media for policy implementation; support from the business for policy implementation; support from the social environmental organizations for policy implementation; and support from other social organizations for policy implementation.

For each item, we asked "Do you agree that the following government units / departments have provided you with adequate support for your implementation of environmental laws?" The answer to each Likert-scale question ranges from "strongly disagree" (1) to "strongly agree" (5).

*Q7. Support from central government for environmental enforcement*

*Q8. Support from provincial government for environmental enforcement*

*Q9. Support from city government for environmental enforcement*

*Q10. Support from city mayor for environmental enforcement*

*Q11. Support from other departments in city government for environmental enforcement*

*Q12. Support from people's congress for environmental enforcement*

*Q13. Support from political consultation committee for environmental enforcement*
*Q14. Support from court for environmental enforcement*
*Q15. Support from the public on enforcement*
*Q16. Support from the mass media on enforcement*
*Q17. Support from the business on enforcement*
*Q18. Support from the social environmental organizations on enforcement*
*Q19. Support from other social organizations on enforcement*

H5: We designed one variable and collected street-level bureaucrats' perceived level of resources within his/her organization. We asked "Do you agree that your organization has the following major problems?" The answer to each Likert-scale question ranges from "strongly disagree" (1) to "strongly agree" (5).

*Q20. Insufficient resources*

H6: For this hypothesis, we designed one variable "perceived unit effectiveness", which refers to the perceived implementation effectiveness of the respondent's unit or group. The answer to each Likert-scale question ranges from "strongly disagree" (1) to "strongly agree" (5).

*Q21. Overall speaking, my unit is effectively implementing the environmental regulations.*

H7: For this hypothesis, we used "perceived unit effectiveness" as the dependent variable, and several administrative resource and external support factors surveyed in previous questions were selected as independent variables. Three individual characteristics—age, gender, and years of implementation experiences were used as control variables:

*Q22. Gender*
*Q23. Age*
*Q24. Years of law enforcement*