

# The Political Ecology of Pollution Enforcement in China: A Case from Sichuan's Rural Industrial Sector\*

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**ABSTRACT** This article uses a case study approach to examine the processes and consequences of pollution enforcement in an industrial township in rural Sichuan. China's national pollution emissions standards are relatively strict, but enforcement is the responsibility of some 2,500 Environmental Protection Bureaus (EPBs) within municipal and county governments. EPB officials exercise considerable discretion in prioritizing and carrying out enforcement activities, but exactly what factors influence regulatory behaviour within EPBs is poorly understood. Data for the article are drawn from interviews with EPB officials, township government officials, industrial managers and local residents, as well as a review of township and district financial records and pollution enforcement records. In this case study, EPB enforcement priorities and actions were guided by State Council directives and State Environmental Protection Administration policy, but citizen complaints and media exposure regarding polluting factories also played a key role, and action culminated in the forced closure of township factories. The article uses political ecology as an analytical framework for understanding how pollution enforcement is shaped by the competing values, goals and priorities within the EPB and the administrative unit in which it operates. This is crucial in China, where the decentralized nature of environmental oversight requires an examination of both policy formulation and implementation. The implications of pollution enforcement on rural enterprises for ecological health, fiscal revenue and rural development are also discussed.

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During the past 25 years, China's reform and opening policies have resulted in dramatic increases in foreign trade and an annual GDP growth rate hovering near double figures. One of the most extraordinary parts of this success story has been the rural industrial sector. As of 2003, China boasted 21.9 million rural firms employing more than 135.7 million workers and accounting for one-third

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of the gross domestic product.<sup>1</sup> Although the long-term future of the rural industrial sector remains uncertain due to declining profitability, increased competition and a general movement towards privatization,<sup>2</sup> rural industry remains a vital revenue source for many township and village governments, and the primary engine of economic growth in the countryside.

Rapid rural industrialization has come at a heavy cost to the environment. Both Chinese and international scholars acknowledge that “at the same time that township and village enterprises have developed very rapidly, they have also brought serious pollution problems.”<sup>3</sup> These problems include both air and water pollution emissions that threaten the health and well-being of rural residents and the integrity of the agro-ecosystems in which most rural industries are located.<sup>4</sup> Rural firms currently emit roughly two-thirds of China’s air and water pollution,<sup>5</sup> and this fact is underpinned by a number of systemic problems. Coal, the most abundant energy source in China, is almost universally the fuel of choice for rural industry. Because most rural firms are small in scale, they tend to lack the capital to invest in environmental mitigation technologies. As a consequence, the byproducts of coal combustion, including sulphur dioxide, nitrogen dioxide and particulate matter, are often released untreated. In addition, some fiscal peculiarities endemic to the rural industrial sector – a high degree of interdependence between local government and industry, the strict revenue demands placed upon rural industry, and a cadre evaluation system that emphasizes industrial development – contribute to the pollution problem by creating financial incentives to ignore the problem or to enforce nationally mandated emissions standards unevenly.<sup>6</sup>

- 1 Zhongguo xiangzhen qiye nianjian bianji weiyuanhui (China Township and Village Enterprise Yearbook Editorial Committee), *Zhongguo xiangzhen qiye nianjian (China Township and Village Enterprise Yearbook)* (Beijing: Zhongguo nongye chubanshe, 2004), p. 8.
- 2 Hongbin Li and Scott Rozelle, “Privatizing rural China: insider privatization, innovative contracts and the performance of township enterprises,” *The China Quarterly*, No. 176 (2003), pp. 981–1005. See also Jean C. Oi, “Two decades of rural reform in China: an overview and assessment,” *The China Quarterly*, No. 159 (1999), pp. 616–28; and Harry Williams, “Property rights and legal reform in township and village enterprises in China,” *Asian Pacific Law and Policy Journal*, Vol. 2, No. 1 (2001), pp. 227–58.
- 3 Hongwei Ren and Gong Li, “Xiangzhen qiye huanjing wurande jingji fenxi” (“An economic analysis of pollution from township and village enterprises”), *Zhongguo xiangzhen qiye*, Vol. 1, No. 181, p. 34. See also Samuel P.S. Ho and Y.Y. Kueh, “Approaches to controlling industrial pollution,” in Samuel P.S. Ho and Y.Y. Kueh (eds.), *Sustainable Economic Development in South China* (New York: St Martin’s Press, 2000), pp. 115–29.
- 4 Ren and Li, “An economic analysis of pollution”; Samuel S. Ho, “Non-agricultural development in post-reform China: growth, development patterns and issues,” *Pacific Affairs*, Vol. 68, No. 3 (1995), pp. 360–91.
- 5 *Zhongguo gongye fazhan baogao: Zhongguo de xin shiji zhanlue, cong gongye daguo zouxiang gongye qiangguo (China Industrial Development Report: China’s Challenge for the New Century, from an Industrially Strong Country to an Industrially Weak Country)* (Beijing: Zhongguo shehui kexue yuan gongye jingji yanjiusuo, 2001), pp. 96–108. See also World Bank, *China’s Environment in the New Century: Clear Water, Blue Skies* (Washington, DC: The World Bank, 1997).
- 6 Oi, “Two decades of rural reform in China”; Susan Whiting, *Power and Wealth in Rural China: The Political Economy of Institutional Change* (New York: Cambridge University Press, 2000). Recent scholarship suggests that, despite the rising trend of privatization in the rural industrial sector, tax revenues from local firms are sufficient to encourage government officials to turn a blind eye to industrial pollution. For an example, see Ren and Li, “An economic analysis of pollution.”

The rural industrial sector thus represents one of the most salient environmental and health risks currently faced by China's population. Because of its role as the primary engine of economic growth in the countryside, it also represents a focal point in the national debate about how to pursue economically, socially and environmentally sustainable development practices. Most scholars agree that China's national environmental regulatory framework, under the direction of the State Council and the State Environmental Protection Administration (SEPA), is sufficient to encourage environmentally responsible economic growth and that the key problem is enforcement of existing environmental standards.<sup>7</sup> The day-to-day responsibility of enforcing environmental compliance rests with approximately 2,500 Environmental Protection Bureaus (EPBs) within municipalities and county-level governmental units, which receive a mandate but little funding from SEPA. A number of recent studies have examined factors influencing EPB enforcement decisions, including the severity of local pollution, the ownership structure and financial solvency of firms, and public complaints lodged against polluting firms.<sup>8</sup> While environmental enforcement is beginning to be understood at the macro-level, the local-level process of enforcement and the implications for industrially dependent communities are less well known. As a result, there is a notable lack of information about the political-economic and institutional context within which EPB enforcement decisions are made.<sup>9</sup>

The aim of this article is to contribute ethnographic case-study information that will highlight the main issues in environmental enforcement of rural enterprises. The article focuses on a single locality: Futian township (福田镇), located in Panzihua municipality (攀枝花市), Sichuan. Data are drawn from 60 interviews with EBP officials, township government officials, industrial managers and local residents, as well as a review of township and district financial records and pollution enforcement records. Data were gathered over seven months of field research in the study community from 2002 to 2006. The case study is not meant to be representative of all of China; rather, it affords a close look at the processes of environmental oversight and their consequences for an industrially dependent rural community. This article is the first of its kind to analyse the local-level politics of pollution enforcement that take place within a Chinese EPB and the industrial firms under its charge.

7 Xiaoying Ma and Leonard Ortolano, *Environmental Regulation in China: Institutions, Enforcement, and Compliance* (Lahman, MD: Roman and Littlefield, 2000), pp. 117–21.

8 Susmita Dasgupta, Hua Wang and David Wheeler, "Bending the rules: discretionary pollution control in China," *The World Bank Development Research Group*, Policy Research Working Paper 1761 (1997); Hua Wang, Nlandu Mamingi, Benoit Laplante and Susmita Dasgupta, "Incomplete enforcement of pollution regulation: bargaining power of Chinese factories," *Environmental and Resource Economics*, Vol. 24 (2003), pp. 245–62.

9 Under the current bureaucratic structure, EPBs at the district and county levels represent the most peripheral reach of SEPA, which is directly under the authority of the State Council. See Abigail R. Jahiel, "The organization of environmental protection in China," *The China Quarterly*, No. 156 (1998), pp. 757–87.

The article uses political ecology as an analytical lens through which to view the processes of pollution enforcement in the rural industrial sector. Political ecology is a theoretical framework that “combines the concerns of ecology and a broadly defined political economy.”<sup>10</sup> It is less a unified theory than a patchwork of related scholarship that shares common underlying assumptions and goals. In analysing diverse environmental issues such as soil degradation, urbanization and pollution control, political ecology tends to focus on the structural, economic, social and political processes underlying environmental change.<sup>11</sup> One of the facets of political ecology that makes it a valuable analytical tool is its multi-scalar approach to research. Local decisions and actions regarding the environment are seldom strictly local; rather, they are conditioned by the values, priorities and policies of other state and non-state actors at various geographic and administrative scales.<sup>12</sup> In examining the processes of pollution enforcement in rural Sichuan, political ecology provides a framework for understanding how these processes are shaped by the competing values, goals and priorities within the EPB and the administrative unit in which it operates. This is crucial in China, where the decentralized nature of environmental oversight requires an examination both of policy formulation at the central government level and implementation at the county and municipal levels where EPBs operate.<sup>13</sup> Pollution enforcement carries important consequences for the long-term economic, social and environmental sustainability of China’s rural industrial sector.

### **Rural Industry and Pollution Enforcement: The Policy Framework**

Despite obvious and persistent environmental problems, China is currently deepening its institutional and fiscal commitment to environmental protection. During the Ninth National People’s Congress in 1998, amidst massive cuts in the national bureaucracy, SEPA not only survived but was promoted to ministerial status.<sup>14</sup> This originally small, nascent environmental protection bureaucracy, begun in the late 1970s with a few thousand employees nationwide, has grown into a powerful institution with a broad mandate to draft environmental laws, conduct environmental impact assessments, and monitor and enforce nationally set emissions standards. In its most recent Five-Year Plan for Environmental Protection, SEPA sets ambitious goals for cutting emissions of key air and water pollutants.<sup>15</sup>

- 10 Piers Blaikie and Harold Brookfield, *Land Degradation and Society* (London: Methuen, 1987), p. 17.
- 11 See Susan Pauslon, Lisa Gezon and Michael Watts, “Locating the political in political ecology: an introduction,” *Human Organization*, Vol. 62, No. 3 (2003), pp. 205–17.
- 12 Michael Watts and Richard Peet, “Liberating political ecology,” in R. Peet and M. Watts (eds.), *Liberation Ecologies: Environment, Development, and Social Movements*, 2nd ed. (London: Routledge, 2004), pp. 1–35.
- 13 Robert P. Weller, *Discovering Nature: Globalization and Environmental Culture in China and Taiwan* (Cambridge: Cambridge University Press, 2006), p. 170.
- 14 See Jahiel, “The organization of environmental protection in China.”
- 15 State Environmental Protection Administration, *The National Tenth Five-Year Plan for Environmental Protection* (Beijing: State Environmental Protection Agency, 2002).

Although its power within the central administration remains limited, SEPA is unarguably gaining capacity and momentum. In January 2005 the agency temporarily stalled 30 large-scale industrial projects, many of them with investment from municipal and provincial governments, for failure to conduct proper environmental impact analyses, the first serious test of the EIA law and a legitimization of SEPA's growing authority.<sup>16</sup> Total nationwide expenditure on environmental protection has risen steadily over the past 30 years, reaching 1.4 per cent of GDP in 2005.<sup>17</sup> China's fiscal commitment to it is also evident in the 11th Five-Year Plan for economic development (2006–10), which calls for continued investment in environmental protection. In regards to pollution control and treatment, government statistics show a steady increase in nationwide investment for industrial firms of all sizes, from RMB 8.2 billion in 1999 to RMB 16.3 billion in 2003.<sup>18</sup>

Because of its prominent role in the nation's air and water pollution problems, the rural industrial sector rightly receives a great deal of attention from the environmental bureaucracy. Both Chinese and international scholars acknowledge a wide array of systemic environmental problems with rural industry, including a high rate of natural resource consumption, a lack of investment in pollution control technology, and largely unquantified effects on human health and ecological systems in rural areas.<sup>19</sup> Coal, the most abundant energy source in China, is the primary fuel in the rural industrial sector, and most coal is burned unwashed. In addition, a high degree of interdependence between local government and industry often contributes to the pollution problem by creating financial incentives for government compliance officials to look the other way.<sup>20</sup>

A number of legislative and policy tools provide SEPA with a mandate to enforce pollution standards. Chapter 3, Article 16 of the Environmental Protection Law, which was implemented on a trial basis in 1979 and formalized by the NPC Standing Committee in 1989, states that "local people's governments at various levels shall be responsible for the environmental quality of areas under their jurisdiction and shall take measures to improve the quality of the environment." In practice, this means that the responsibility of overseeing environmental compliance rests with approximately 2,500 EPBs within municipalities and county-level governmental units. These EPBs often lack the proper technology and manpower to conduct thorough monitoring of rural industries and to enforce emissions standards. A number of political and institutional factors also undermine their enforcement capabilities, including

16 "30 ge weifa kaigong xiangmu mingdan gongbu 'huanping fengbao' guajin huanbao xian" ("Names of 30 illegally started projects announced, 'tempest of environmental review' tightens the string of environmental protection"), *Renminwang*, 18 January 2005.

17 Zhang Ze, "Shiyi wu guihua xiade huanjing touzi" ("Environmental investment in the 11th Five-Year Plan"), *Huanjing (Environment)*, Vol. 310 (2005), pp. 38–40.

18 *Zhongguo tongji nianjian (China Statistical Yearbook)* (Beijing: Zhongguo tongjiju, 2004).

19 See Lang Meng, *Huanjing baohu shidian (Case Studies in Environmental Protection)* (Changsha: Hunan daxue chubanshe, 1999); and Ren and Li, "An economic analysis of pollution."

20 Ren and Li, "An economic analysis of pollution."

their generally subordinate status within the county government bureaucracy, and a strong emphasis on economic development over environmental protection.<sup>21</sup>

China's pollution levy system is the primary instrument through which EPB officials exact environmental compliance. Article 18 of the Environmental Protection Law states that "in cases where the discharge of pollutants exceeds the limit set by the state, a compensation fee shall be charged according to the quantities and concentration of the pollution released." By 1996, a comprehensive levy system, overseen primarily by local EPBs, was in effect in nearly all counties and cities.<sup>22</sup> The levy system is based on self-reporting by polluting firms. All firms are required to register with their respective EPBs and to disclose information regarding their financial outlook, production process diagrams, noise pollution, and the so-called "three emissions" (*san fei* 三废): air pollution, water pollution and solid waste.<sup>23</sup>

In reality, however, EPB officials exercise considerable discretion over how to identify factories as non-compliant, how to prioritize their enforcement efforts and how to enforce compliance. This leads to substantial ambiguity in the way environmental enforcement is implemented, what Dasgupta *et al.* have called the "political economy of regulation."<sup>24</sup> What this usually means is that EPB officials must weigh the ecological and health consequences of industrial pollution against the economic and fiscal benefits of industrial production. In addition, EPB officials possess limited organizational resources and thus must prioritize their enforcement efforts.<sup>25</sup> How are enforcement decisions made? What factors do EPB officials consider when they decide which firms to inspect and monitor? What tools do they use to enforce compliance? What are the consequences of pollution enforcement for rural communities?

### Rural Industry and Pollution in Context: The Futian Case

Futian is a township of 3,500 people located at the western edge of Panzhihua municipality in Sichuan province. It is under the jurisdiction of Renhe district (仁和区), a third-level (county-level) administrative unit within the municipal government. Prior to the 1980s, economic life in Futian was centred on subsistence agriculture, supplemented in some cases by cash from the sale of agricultural products. Slightly more than half of Futian's residents are Shuitian

21 See H.S. Chan, K.C. Cheung and J.M.K. Lo, "The socio-political limits of environmental control in the People's Republic of China: a case study in Guangzhou," in S. Nagel and M. Mills (eds.), *Public Administration, Public Policy and the People's Republic of China* (New York: MacMillan, 1993), pp. 63–82.

22 Wang *et al.*, "Incomplete enforcement of pollution regulation," p. 247.

23 Hua Wang and David Wheeler, "Financial incentives and endogenous enforcement in China's pollution levy system," *Journal of Environmental Economics and Management*, No. 49 (2005), p. 180.

24 Dasgupta *et al.*, "Bending the rules," p. 7.

25 See Shui-Yan Tang, Carlos Wing-Hung Lo and Gerald E. Fryxell, "Enforcement styles, organizational commitment, and enforcement effectiveness: an empirical study of local environmental protection officials in urban China," *Environment and Planning A*, Vol. 35 (2003), p. 90.

(水田族), an ethnic group officially classified by the central government as part of the Yi minority nationality (彝族).<sup>26</sup> The remaining local population is primarily Han (汉族), although there are small numbers of Dai (傣族), Naxi (纳西族) and other minorities. Like many rural communities in the south-western region, Futian lags behind the national average on many development indicators. Its average annual household income in 2005 was RMB 3,854, and older residents recall poverty and hunger so acute that people occasionally ate grass for subsistence.

Township and village enterprises began operating in Futian in the 1980s. Local factories were primarily geared towards providing industrial inputs to Panzhihua Iron and Steel, China's third-largest state-owned steel smelting plant. However, over the past decade, as Panzhihua Iron and Steel has increasingly exploited hydroelectric and thermal energy sources, Futian's factories have broadened their markets to include large and medium-sized firms in Sichuan and Yunnan. Factories in Futian include a zinc smelter, which produces refined zinc that is alloyed with other metals in the production of consumer goods and construction materials; a coking plant, which produces coke, a hard, porous carbon material used for high-heat industrial operations; and a coal-washing plant, which uses a water slurry to reduce the sulphur content of raw coal prior to its use in industrial boilers. Approximately 100 labourers, most of them young men, work in the factories.

As a "minority township" (*minzu xiang* 民族乡) Futian attracted financial assistance and loans from the Panzhihua Bureau of Finance during the 1990s and used industrial revenues to pave roads, build new schools, fund community development projects and construct a new six-storey government office building on the edge of the newly created "open district" (*kaifa qu* 开发区) which houses local factories. The township relied on industry for 85 per cent of its operating revenues. This so-called "Futian model" (*Futian moshi* 福田模式) was held up as a regional example of harnessing industrial development to provide employment and raise living standards in peripheral areas with heavy concentrations of ethnic minorities.<sup>27</sup>

Privatization of industrial firms began in Futian in 1999, somewhat behind the national trend, as profitability declined and as local coal reserves became depleted.<sup>28</sup> Privatization in China's economically advantaged areas has tended to follow a pattern of "insider privatization," with local political elites and

26 See Stevan Harrell, *Ways of Being Ethnic in Southwest China* (Seattle: University of Washington Press, 2001), pp. 283–91.

27 Xing Xing Li, *Panxi lieshangde shengchangdian: Panzhihua jingji fushen yu minzu guanxi (Development in the Panzhihua–Xichang Valley: Panzhihua Economic Development and Ethnic Relations)* (Chengdu: Sichuan minzu chubanshe, 1995), pp. 237–66.

28 When competitive pressures reduce the profitability of rural firms, thereby reducing fiscal revenues for local governments, the result is often pressure to privatize. See Oi, "Two decades of rural reform in China"; James Kung, "The evolution of property rights in village enterprises," in Jean Oi and Andrew Walder (eds.), *Property Rights and Economic Reform in China* (Stanford: Stanford University Press, 1999), pp. 95–122; and Hongbin Li and Scott Rozelle, "Saving or stripping rural industry: an analysis of privatization and efficiency in China," *Agricultural Economics*, No. 1460 (2000), pp. 1–12.

managers of collective firms emerging as owners or shareholders.<sup>29</sup> In Futian, by contrast, where most community members lack significant capital, local factories were bought by investors from as far away as Chengdu and Guizhou. Privatization was complete by 2002, eliminating industrial profits as a direct revenue source for the township government, but the majority of township operating revenues were still derived from industrial sources in the form of taxes.<sup>30</sup> Futian's zinc smelter, for example, was subject on a monthly basis to a management fee (*guanli fei* 管理费) of RMB 400 per furnace, and a tax of RMB 50 on each of its six interconnected furnaces. In addition, the township government collected a land-use fee (*tudi fei* 土地费) of RMB 2,000 per furnace calculated on an annual basis.

Two decades of industrial pollution have dramatically altered Futian's environment. Plumes of black smoke rise daily from the open district, and the water in the local stream, a tributary to the Jinsha river (金沙江), often runs black with untreated effluent from the coal-washing plant. Farmers and other non-industrial residents of the township complain of contaminated water, poor ambient air quality, decreased visibility, declining crop yields and suspected deleterious effects on human health.<sup>31</sup> Futian is thus emblematic of many industrially dependent rural communities that seek to promote economic development and simultaneously have to cope with the environmental degradation and threats to human health posed by local industry.

### The Political Ecology of Pollution Enforcement

In 1996 the State Council issued the "Decisions concerning certain environmental protection issues."<sup>32</sup> One section of this legislation singled out for closure 15 categories of township and village enterprises that were considered particularly deleterious to the environment, the so-called "15 smalls" (*shiwu xiao* 十五小). These included notorious polluters such as pulp and paper mills, tanneries, and zinc smelters. In 1997 the National Environmental Protection Agency (the predecessor of SEPA), in conjunction with the Ministry of Agriculture and several other national agencies, issued "Regulations concerning environmental protection at township and village enterprises." These regulations succeeded in closing some of the worst polluters nationwide,<sup>33</sup> including more than 4,000 small-scale factories in Sichuan province,<sup>34</sup> but their effect in Futian

29 Hongbin Li and Scott Rozelle, "Privatizing rural China: insider privatization, innovative contracts and the performance of township enterprises," *The China Quarterly*, No. 176 (2003), pp. 981–1005.

30 The imperative of self-financing at the township and village levels often leads to vigorous promotion of industrial development on the part of local cadres. See Li and Rozelle, "Privatizing rural China"; and Susan Whiting, *Power and Wealth in Rural China* (Cambridge: Cambridge University Press, 2000).

31 Bryan Tilt, "Perceptions of risk from industrial pollution in China: a comparison of occupational groups," *Human Organization*, Vol. 65, No. 2 (2006), pp. 115–27.

32 State Council, *Guowuyuan guanyu huanjing baohu rogan wentide jue ding* (*State Council Decisions Concerning Certain Environmental Protection Issues*) (Beijing, 3 August 1996).

33 Ma and Ortolano, *Environmental Regulation in China*, p. 30.

34 *Zhongguo huanjing nianjian* (*China Environment Yearbook*) (Beijing: Zhongguo huanjing nianjian chubanshe, 2001), p. 357.

was negligible; township cadres sold the collectively owned zinc smelter to a group of private investors from Guizhou, and smelter operations continued unabated.

The Renhe district EPB, which has jurisdiction over 14 townships and more than 120 industrial firms, conducts regular inspections of the factories under its charge, although limited funding and manpower prevent it from doing so more than every other year. In 1999 routine inspections and monitoring revealed that sulphur dioxide emissions at Futian's zinc smelter were in violation of SEPA standards.<sup>35</sup> The EPB issued a fine and ordered the smelter's owners to purchase a smokestack that would vent emissions higher into the air, thereby mitigating some of the health effects for workers and residents in the immediate vicinity. The smelter complied by spending RMB 40,000, a portion of which came from the pollution levy itself, on the smokestack.<sup>36</sup>

However, the problems for Futian's industrial firms were far from over. In early 2000, a coalition of local farmers began to lodge complaints with the township government and the district EPB over water emissions from the coal-washing plant. Agricultural lands in Wuzitian (务子田), one of three villages in the township, abut a small tributary to the Jinsha river. Farmers in this part of the township had observed for years that untreated effluent released during periods of heavy operation at the coal-washing plant would literally turn the stream black. Health concerns were only secondary, since most agricultural households rely on well water for drinking. The farmers' primary complaint was that the pollution threatened their livelihoods, since contaminated water could not be used for irrigation or for watering stock animals. One farmer noted: "Our crops have been directly damaged by emissions from the coal washing plant. We have four *mu* (亩) of land directly downstream from the plant, and the untreated water washes down to us."<sup>37</sup> The EPB responded after several months of petition by collecting a pollution levy from Futian's coal-washing plant and using part of the fee to provide compensation for the approximately 100 agricultural households affected. The average household received only RMB 50, a tiny sum even by local standards, and the complaints from farmers continued.

Meanwhile, the national legislative framework for enforcing air quality standards in rural areas continued to tighten. In September 2002 the State Council issued a new directive to "strictly implement acid rain control in the two control areas," one of which includes Sichuan, where coal reserves are known to be particularly high in sulphur content. Futian's zinc smelter, which should have discontinued operations six years previously under the "fifteen smalls" directive, was now the last in operation within Renhe district, probably because Futian is

35 Routine air quality monitoring usually focuses on sulphur dioxide and fly ash emissions. See Wang and Wheeler, "Financial incentives and endogenous enforcement."

36 Under the current pollution levy system, up to 80% of pollution discharge fees may be remitted back to the firm to subsidize investment in environmental mitigation technology. See Wang *et al.*, "Incomplete enforcement of pollution regulation," p. 247.

37 Interview, 22 December 2002.

the westernmost township in the district and any monitoring by EPB officials requires a 40-kilometre Jeep ride over precarious roads.

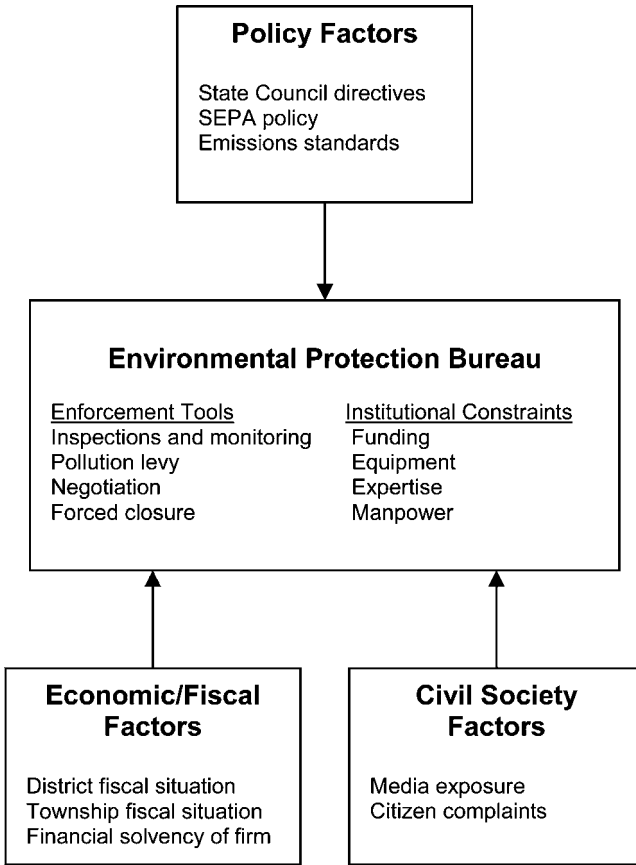
The watershed event in the enforcement process occurred in December 2002 when a news crew from Sichuan Television Station, alerted by the coalition of local farmers, arrived in Futian to film an exposé programme on pollution enforcement for a soft-news television segment called *Ten Minutes Tonight* (*Jinwan shifen* 今晚十分). At the beginning of the programme, which was broadcast in late December, a reporter with a hidden camera interviewed the main investor in Futian's zinc smelter, a Guizhou native who had relocated to Futian with his family. The investor explained on camera how his enterprise, despite its obvious pollution problems, was immune to regulation because it constituted a vital source of tax revenue for the local government. The reporter wielding the hidden camera also interviewed several workers from the zinc smelter, and the broadcast interspersed their comments with wide-angle shots of the factory belching black smoke into the sky. Futian's mayor and Communist Party secretary also appeared on the programme, discussing the state of the township's industrial development and its impact on the local environment and the health of the township's citizens.

This media scrutiny had immediate consequences. Renhe district EPB officials conducted an unannounced inspection in January 2003 and ordered the closure of all factories in the township for non-compliance with emissions standards pending further notice. In response, the zinc smelter's primary investor travelled to the EPB headquarters to present a series of requests to the EPB director, stating that "I want him to look me in the face when he tells us to shut down."<sup>38</sup> First, he requested that his factory be allowed to remain open on a provisional basis for three months in order to repay as much of the outstanding loan as possible and to use up the remaining raw coal that had already been purchased to fuel the smelter furnaces. Second, he asked that the Renhe district government recognize in writing that the group of investors had put their own personal money, along with substantial loans, into the enterprise and that the smelter was thus private property. Finally, he requested that the district government take steps to mitigate the financial damage suffered by him and the other investors. The head of the environmental monitoring station at the district EPB granted him permission to operate on a provisional basis for a few months in order to use up any remaining raw materials. In April 2003 the smelter, along with the other factories in Futian, was permanently closed. Investors recouped only a portion of their losses by selling off factory equipment and the remaining stock of raw coal.

Figure 1 shows the range of factors affecting environmental enforcement in this case study. SEPA policy serves as an ultimate driver of regulatory behaviour since it provides the policy structure within which EPBs must operate. However, interviews with EPB officials revealed an array of factors that must be weighed

38 Interview, 2 March 2003.

Figure 1: The Range of Factors that Affect EPB Pollution Enforcement



in the decision about how to prioritize and carry out enforcement activities. Economic and fiscal concerns are of particular importance. Officials must judge the financial solvency of a firm based on the firm's own reports; firms facing an adverse financial situation are less likely to incur strict enforcement.<sup>39</sup> If the firm constitutes a vital revenue source for either the township or district government, it is likewise less likely to be the target of strict enforcement. Although industrial firms in Futian constituted a vital revenue source for the township government, their impact on the economy at the district level was minimal.

In this case, citizens' complaints and media exposure – what might broadly be called “civil society factors” – provided the immediate impetus for EPB officials to take decisive and strict regulatory action. It had been known for years that industrial firms in Futian, particularly the zinc smelter, were in violation of national emissions standards while receiving only minimal sanctions, mostly in

39 Wang *et al.*, “Incomplete enforcement of pollution regulation.”

the form of pollution discharge fees. The media played a key role in this case in that the province-wide television programme constituted a loss of “face” (*mianzi* 面子) for local EPB officials, who appeared at best incompetent and at worst corrupt. In rural China, “face” is possessed by people in positions of authority; it is an essential component in accomplishing official tasks.<sup>40</sup> EPB officials do not operate in a social vacuum; rather, their regulatory decisions and behaviour are guided by a range of policy and fiscal factors, as well as by concerns about citizen and media mobilization. Enforcement activities may also be hindered by the institutional constraints of the EPB itself, including limited funding, equipment, expertise and manpower.

EPB officials have a number of enforcement tools at their disposal, including a regular regime of inspections and emissions monitoring, collecting pollution levies, negotiating with firm managers, and – when these measures fail – the forced closure of factories under their jurisdiction. Both regulatory officials and township government officials acknowledged that Futian’s remote location probably discouraged regular inspections and monitoring. Officials in this case used increasingly coercive enforcement measures as public scrutiny intensified. One EPB official commented after viewing the embarrassing television broadcast, “This is a war, and I am on the front line” (*zhe shi zhanzheng, wo zai qianxian* 这是战争, 我在前线).<sup>41</sup>

### **Coping with a Paradox: Industrial Dependence and Pollution Enforcement**

Under China’s current pollution control system, EPBs have a clear mandate to enact SEPA policy with regard to pollution enforcement in order to protect human health, prevent natural resource degradation and avoid economic losses caused by pollution. But they are also embedded within county-level and municipal-level governments, which have an over-arching mission to promote economic development and industrialization. In 2002 the district government published the “Renhe district investment guide,” designed to attract outside investors to the area. The document cites the rich natural resources in the region, including coal, zinc, titanium, vanadium and iron ores, and outlines plans for developing local industry by offering one-year tax holidays and three-year periods of reduced taxes for new investors. Since the 1990s the district government has also overseen the creation of “open districts,” areas specially designated for private investment, within many of its townships, including Futian.

Local cadres at the township level, who recognized the township’s dependence on industrial revenue, considered it an unfortunate irony that the district

40 Yunxiang Yan, *The Flow of Gifts: Reciprocity and Social Networks in a Chinese Village* (Stanford: Stanford University Press, 1996), pp. 133–38.

41 Interview, 2 January 2003.

government was simultaneously promoting economic development and stepping up its regime of environmental enforcement, which had disastrous economic consequences in Futian. Table 1 shows the worsening fiscal situation of the township. In the late 1990s, industrial firms in Futian generated more than RMB 2 million in tax revenue annually. The township's fiscal situation had begun to sour several years before the 2003 factory closures, primarily due to the slowdown in the rural industrial sector throughout China, but also as a result of the depletion of local coal supplies, which meant that coal had to be purchased from adjacent Huaping county (华平县) in Yunnan. Following the factory closures in 2003, industrial tax revenue completely disappeared.

The township government operating budget, which includes funds for development projects, road building, school maintenance and other essential tasks, was severely affected, first by the industrial slowdown and then by the EPB-mandated factory closures. The operating budget is showing signs of a gradual recovery, as the township government receives a yearly subsidy (*buzhu* 补助) from Renhe district, and as cadres pursue the alternative development strategies described below. Most crucially, the township government staggers beneath a cumulative debt of RMB 17 million, more than nine times the Renhe district average. Much of this debt, owed to financial institutions and to the Panzhihua city and Renhe district bureaus of finance, is attributable to poor returns on investments made in township factories during the period of collective ownership. Although factory privatization brought in some revenue in the form of taxes and fees, it did not change the overall fiscal outlook for the township, since investors had balked at assuming the township's long-term industrial debt.

Not surprisingly, industrial development remains the main priority of township government officials, whose reactions to the factory closures were somewhat fatalistic. One official in the township Office of Industrial Development, for example, said that nothing could be done about the factory closures: "The upper level of government has spoken" (*shangji zhengfu yijing shuohaole* 上级政府已经说好了).<sup>42</sup> The response from the township Party secretary was similar: "One thing's for sure: we're going to be a lot poorer" (*women jiu hui geng qiongle* 我们就会更穷了).<sup>43</sup> The township's vice-mayor noted with a hint of sarcasm that in matters of environmental protection, just as in other areas of policy implementation, the central government creates policy with little regard for its effects on local communities: "The upper level of government invites you to dinner, but the local government pays the bill" (*shangji zhengfu qingke, dangdi zhengfu maida* 上级政府请客, 当地政府买单).<sup>44</sup>

The township mayor insisted that the most vexing thing about the factory closures was the insensitivity of the district government to matters of local economic well-being. He argued that the district could aid Futian by providing tax incentives for investment in environmental mitigation technologies for local

42 Interview, 14 January 2003.

43 Interview, 23 December 2002.

44 Interview, 6 July 2006.

Table 1: **Selected Fiscal Indicators for Futian Township, 1998–2005**

<b>(Unit=yuan)</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
Tax generated by rural industry	2,710,000	2,160,000	N/A	1,590,000	1,020,000	680,000	0	0
Total township operating budget	1,580,000	2,400,000	600,000	900,000	200,000	200,000	450,000	540,000
Total township debt	15,780,000	15,680,000	14,930,000	17,240,000	9,490,000	10,140,000	14,000,000	17,000,000

Source:

Figures for 1998 to 2003 are from Panzhuhua shi tongjiju (Panzhuhua City Statistical Bureau), *Panzhuhua xiangzhen nianjian* (*Panzhuhua Township Yearbook*) (Panzhuhua: Panzhuhua shi xiangzhen pingjia kaohe, 1999–2004). Figures for 2004 and 2005 are based on an interview with the township Communist Party secretary, 3 July 2006. “Tax generated by rural industry” represents total taxes paid by industrial firms in Futian to the township and district governments.

factories – such as coal-scrubbing smokestacks – which would bring emissions down to acceptable levels and allow the factories to remain open. “That’s the most fundamental part of the Three Represents,” he said, “to represent the common people. But they’re not going to do it.”<sup>45</sup> In fact, under China’s pollution levy system, up to 80 per cent of pollution discharge fees may be remitted back to the firm to subsidize investment in environmental mitigation technology.<sup>46</sup> For firms facing special financial difficulties, pollution discharge fees may be “reduced, exempted or postponed.”<sup>47</sup> Both the township government and the zinc smelter investors petitioned the EPB on this point, arguing that increased pollution levy fees instead of forced closure should be used as the primary enforcement tool, since this would allow the smelter to improve its environmental infrastructure while continuing to provide jobs, income and revenue to the township. EPB officials, whose resolve had been solidified by the embarrassing media coverage, were unmoved.

Increased environmental enforcement has forced township cadres to consider alternative strategies for economic development. At least for the short term, the township has returned to a reliance on agricultural production as its primary economic activity. Since industrial tax revenues have disappeared, township officials are trying to develop an agricultural economy of scale – focused on increased production of cash crops such as mangoes and watermelons – by coordinating between the township’s 21 small villagers’ groups (*xiao zu* 小组) and distributing the township’s agricultural products to markets in Panzhihua. Of the more than 100 industrial workers employed in local factories, most were migrant labourers; many have chosen to migrate elsewhere in Sichuan in search of similar work, while some have been given local *hukou* (户口) status and small land plots by the township government. Half of the township’s small retail shops have closed since 2003, since industrial workers and their families constituted a large portion of the customer base.

Agricultural households in the township were previously taxed based on the amount of land under cultivation each season. As of 2003, however, farmers report that they are now being taxed on their total land holdings, including fields left fallow.<sup>48</sup> Beginning in the early 1990s, the heyday of collectively owned township and village enterprises, many residents invested their savings in economic development bonds issued by the township government to fund capital investments in local factories. One local resident complained that officials

45 Interview, 23 December 2002. The “Three Represents” (*sange daibiao*), put forward by former President Jiang Zemin in 2000, is considered a body of “important thought” (*zhongyao sixiang*) by the Central Committee. Jiang suggests that the Chinese Communist Party’s role in negotiating a positive future for the country lies in promoting the advanced forces of production (i.e. capitalist development); encouraging the advancement of culture; and representing the basic rights of the “overwhelming majority of the Chinese people.”

46 Wang *et al.*, “Incomplete enforcement of pollution regulation,” p. 247.

47 The State Council, “Administrative regulations on the collection and use of pollutant discharge fees,” in *China Law and Policy*, 24 January 2003. [www.omm.com/webdata/content/publications/clp030124.pdf](http://www.omm.com/webdata/content/publications/clp030124.pdf).

48 Interview, 13 April 2003.

refused to cash out her development bond, which was worth more than RMB 17,000, a tactic she viewed as an attempt by the government to shore up the township budget in the face of declining industrial revenue.<sup>49</sup> Finally, the township recently completed a small (2,000-kilowatt capacity) hydroelectric facility below an existing dam on a tributary to the Jinsha river. The power generated by this facility is added to the regional electrical grid, and officials estimate potential revenue to the township at RMB 1 million per year, although returns have thus far fallen far short of that figure. There are also ongoing efforts at coal exploration in Futian, involving capital investment from the Panzhihua and Renhe governments.

## Conclusion

Through the use of a case study of pollution enforcement in rural Sichuan, this article has underscored the importance of a political ecology perspective for understanding the processes and consequences of environmental enforcement on rural industries. The Chinese environmental bureaucracy is gaining authority within the central government, resulting in an impressive policy framework for controlling industrial pollution by rural firms. However, successful analysis of pollution control must look as much at implementation as at policy formulation.<sup>50</sup> Environmental Protection Bureaus are the most integral pieces of the enforcement puzzle. Their enforcement priorities and actions are guided by State Council directives and SEPA policy, but citizen complaints and media exposure – what I have called “civil society factors” – played a key role in determining the regulatory course of action for district EPB officials in this case.

Recent scholarship has noted that environmentally oriented citizens’ groups face an array of problems in China, where they lack “both the opportunity and the immediate urgency to openly confront the central government.”<sup>51</sup> While we should exercise caution in assigning an undue degree of autonomy and power to non-state actors in Chinese environmental politics, the role of civil society cannot be ignored. Official environmental NGOs in China are subject to a dizzying set of controls and regulations from the State Council and Central Committee.<sup>52</sup> But as this case suggests, environmental action at the local level can be quite organic and effective. The ad hoc organization of local farmers concerned about the effects of pollution on their livelihoods did not need to

49 Interview, 23 April 2003.

50 Weller, *Discovering Nature*, p. 170.

51 Peter Ho, “Greening without conflict? Environmentalism, NGOs, and civil society in China,” *Development and Change*, Vol. 32, No. 5 (2001), p. 897. See also Carlos Wing-Hung Lo and Sai Wing Leung, “Environmental agency and public opinion in Guangzhou: the limits of a popular approach to environmental governance,” *The China Quarterly*, No. 163 (2000), pp. 677–704; and Phillip Stalley and Dongning Yang, “An emerging environmental movement in China?” *The China Quarterly*, No. 186 (2006), pp. 333–56.

52 Kin-man Chan, “Development of NGOs under a post-totalitarian regime: the case of China,” in Robert P. Weller (ed.), *Civil Life, Globalization, and Political Change in Asia: Organizing Between Family and State* (London: Routledge, 2005).

“openly confront the central government,” because environmental enforcement in China is neither centralized nor uniform. Rather, they focused their efforts on influencing EPB decision-making through petitions and the use of the media. EPB officials, who play a central role in environmental enforcement, carry out their duties in consideration of environmental, economic and social factors. As rural industry continues to exact a heavy cost from the Chinese environment, grassroots civic action is proving to be an effective means of addressing environmental problems in locales as diverse as rural Gansu and the Huai river (淮河) basin.<sup>53</sup>

This article has also highlighted the economic and social implications of environmental enforcement in the rural industrial sector. As the often-observed “environmental Kuznets curve” suggests, decreased pollution may be a natural part of economic development, as a result of technological innovation, increased regulation or the externalization of pollution sources.<sup>54</sup> As China’s environmental protection bureaucracy gains authority and resources, industrially dependent communities such as Futian face difficult decisions as they cope with the economic and social consequences of pollution enforcement. In this case study, factory closures resulted in lost jobs, decreased tax revenue and a significant decline in the township’s operating budget. In response, officials were forced to pursue alternative revenue sources, effectively “downshifting” the tax burden on to the township’s agrarian households.

A few limitations of this study warrant comment. First, the case study narrowed its focus to one locality. This provides a depth of information thus far lacking in the literature on pollution enforcement in China, but it also limits the generalizability of the findings. The Futian case is unusual in that the community is located in the underdeveloped south-west region, where the scale of industrialization and pollution is arguably smaller than in eastern China. One obvious question for consideration is how the processes and consequences of pollution enforcement might look in a more highly developed region. Another question relates to the enforcement of emissions standards in firms of varying sizes and with different ownership structures. One of the ironies of environmental oversight in China is that EPBs often lack the regulatory jurisdiction to monitor and sanction large state-owned enterprises, which remain significant sources of pollution. In this case, for example, Panzhihua Iron and Steel Company, the nation’s third largest steel producer, is located just 50 kilometres east of Futian and generates ambient air pollution levels that surpass Futian’s factories by an order of magnitude. Such state-owned behemoths remain to pollute another day because they are vital sources of employment and revenue,

53 Jun Jing, “Environmental protests in rural China,” in Elizabeth J. Perry and Mark Selden (eds.), *Chinese Society: Change, Conflict, and Resistance* (London: Routledge, 2003), pp. 204–22. See also Elizabeth C. Economy, *The River Runs Black: The Environmental Challenge to China’s Future* (Ithaca: Cornell University Press, 2004), p. 19.

54 Gene M. Grossman and Alan B. Krueger, “Economic growth and the environment,” *Quarterly Journal of Economics*, Vol. 110 (1995), pp. 353–77.

because they have symbolic and political value for the state, and because they are effectively beyond the regulatory reach of the municipal and district EPBs.

Because the enforcement of emissions standards occurs at the intersection of ecology and the economy, it is an inherently political issue with consequences for ecological integrity and human health, but also for economic growth, employment, community development and sustainability. One township official contextualized the debate over pollution enforcement by discussing the increasingly salient concept of sustainable development: “Sustainability means trying to solve the *wenbao* problem without exacerbating the *huanbao* problem.”<sup>55</sup> *Wenbao* (温饱), literally “warm and full,” is how many rural Chinese describe the standard of living just above poverty, when basic needs such as food and shelter are satisfied. *Huanbao* (环保), or “environmental protection,” is a relatively new concern for the residents of Futian and has taken on salience only in the last decade as rural factories have seriously degraded the local environment.

The problem of *wenbao* versus *huanbao* ultimately involves a question of values regarding exactly what should be “sustained.” The political ecology perspective used in this case study highlights the multiple and often conflicting motivations and values of different actors with regards to rural industry. Political ecology espouses the “recognition of a plurality of positions, perceptions, interests and rationalities in relation to the environment.”<sup>56</sup> This is a crucial point in China, where environmental oversight is complicated and diffuse, and where enforcement decisions are shaped not only by central policy but also by economic and social concerns at the regional and local levels. As China’s pollution control policies and enforcement capabilities continue to develop, industrially dependent communities will face difficult choices about how best to balance economic development and environmental protection.

55 Interview, 10 January 2003.

56 Paulson *et al.*, “Locating the political in political ecology,” p. 206.