

FEATURE ARTICLE

Environmental Mass Incidents in Rural China: Examining Large-Scale Unrest in Dongyang, Zhejiang

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China is witnessing an alarmingly rapid increase in social unrest linked to pollution, especially in rural areas. Although pollution-catalyzed group petitions, protests and even violent riots are so widespread and severe, officials have dubbed them the euphemistic term “environmental mass incidents.” Examination of a specific environmental mass incident that occurred in Zhejiang Province in 2005, along with reports and studies of other pollution-related mass incidents in China, highlight some of the drivers behind this rising unrest. Notably, not all serious pollution problems lead to violent protests, but the recipe for unrest is often cases in which an “entrepreneurial” local government allows heavy pollution to occur and shuts down any effective grievance relief channels. China’s central government is increasingly viewing environmental mass incidents as a security threat, which is a mindset that closes off opportunities for dialogue, transparency, and institutional reforms, which could lessen tensions and potentially prevent major conflicts over pollution from erupting.

THE EMERGENCE OF ENVIRONMENTAL MASS INCIDENTS IN RURAL CHINA

An alarming sign of China’s quickly deteriorating environmental situation is the rapidly increasing number of disputes, unrest and even riots linked to—often long unresolved—pollution problems. Chinese government documents, news media reports, and academic studies often refer to severe environmental conflicts involving large groups of people as “environmental mass incidents” (*huanjing qunti xing shijian*). (See Box 1 on official definitions of this term). High-level environmental officials, such as deputy minister of the Ministry of Environmental Protection (MEP) Pan Yue, have on different occasions highlighted the emerging crisis of pollution protests. According to Pan, in 2005 alone there was a 29 percent increase in environmental mass incidents from the year before (Wang, 2006). The Chinese government and Communist Party are concerned about these protests, and China’s leadership considers environmental protest one of the four major sources of social unrest in the country (Economy, 2004).

Digging Behind Unclear Numbers

Determining the actual figure of environmental mass incidents through publicly available sources is challenging. In his discussion of the 29 percent increase in 2005, Pan Yue did not reveal the actual number of protests that year. Nevertheless, several indicators used by different Chinese government agencies may reflect the scale of the problem. One indicator is the number of mass incidents in general. According to Zhou Yongkang, minister of the Ministry of Public Security, between 1994 and 2004 the number of mass incidents (protests involving 100 persons or more) in China increased from about 10,000 a year to 74,000 (French, 2005). Chinese public security sources in the mid-2000s estimated that among these mass incidents about 30 percent are related to unemployment, by far the largest source of social unrest in China. Another 27 percent of these incidents stems from issues related to land grabs, a particularly serious source of social disturbance in rural China. The estimate for environmental mass incidents could then be approximately 5,000 a year (based on the 74,000 figure in 2004), given that such incidents are one of the remaining major sources of social unrest.¹

BOX 1. “Environmental Mass Incidents” in Public Discourse

Mounting concerns over social unrest induced by environmental degradation are reflected in the emergence of the term “environmental mass incident” in the public discourse, including news reports, policy documents, and scholarly writings.¹ Although the exact origin of this term is not clear, it is quite obvious that it derives from the more general term “mass incident” (*quntixing shijian*), which is a reflection of increasing social unrest in Chinese society in general. The vice president of the Central Party School (*zhongyang dangxiao*) wrote an important article in 2006, in which he defined a mass incident “the manifestation of the people’s increasingly confrontational and sharpened internal conflicts, [which are] serious social conflicts that affect, disturb and harm normal social order” (Wang, 2006). The phrase is given a more detailed definition in legal documents such as *The Implementation Rules for the Anticipation and Handling of Mass Incidents in Shenzhen* (*shenzhen shi yufang he chuzhi quntixing shijian shishi banfa*),² which delineated eight forms of mass incidents:

1. Large-scale collective petition (*shangfang*);
2. Illegal gatherings, protests and demonstrations involving large number of participants;
3. Illegal strikes;
4. Groups of people surrounding and sabotaging party, government and jurisdictional buildings and other important facilities;
5. Blockade of major transportation lines or illegal occupation of public places involving large numbers of people;
6. Collective obstruction of key national, provincial and municipal construction projects;
7. Group attack and/or abduction of civil servants; and,
8. Other activities that are induced by people’s internal conflicts that harm public orders.

In the same regulation, mass incidents are divided into four different levels according to the number of participants: Level I (5-30 people); Level II (30-300 people); Level III (300-1,000 people); and Level IV (more than 1,000 people).

Another important indicator of conflicts caused by environmental issues would be the statistics on environmental complaints (*huanjing xinfa*), which refer to complaints (by letter or in person) filed with environmental bureaus all over the country. According to the 2006 *China Environmental Statistics Yearbook*, the number of environmental letters and complaints increased almost 70 percent from 369,712 cases in 2001 to 616,122 cases in 2006 (SEPA, 2006). The relationship between environmental complaints and environmental mass incidents, however, is not straightforward. Increasing complaints about air, water, and noise pollution could be indicators of the growing number of mass incidents. Alternately, the increase may also suggest that the complaint system is working well and that people have confidence knowing their voices are being heard. Thus, the complaint system could diffuse tensions and lead to fewer cases of mass incidents. As Anna Brettell observed, Chinese authorities actually encourage environmental complaints and have standardized the complaint system as a way to prevent disputes and channel grievances, which contributes to the rise in complaints (Brettell, 2007).

Statistics on environmental disputes (*huanjing jiu fen*) represent yet another source to tap into the environmental mass incident trend. According to a MEP director, there was a significant rise in the number of environmental disputes from 51,000 in 2004 to 128,000 in 2005 (Lu, 2005 & 2006). Although MEP statistics do not clearly define the term environmental dispute,² it still serves as an indirect indicator of increasing trends in conflicts caused by pollution in China.

Although environmental unrest in urban centers such as Xiamen often get wide attention in the domestic and international press (see Box 2), China's rural areas actually have seen more outbreaks of environmental mass incidents (Dai, 2006). The general background of this discrepancy, according to one government official, is the unbalanced development between urban and rural areas, the relocation of urban pollution to the countryside, and the lack of environmental infrastructure in rural areas—all trends that make rural citizens particularly vulnerable to pollution (Dai, 2006).

Environmental Health Challenges in Rural China

The 2006 *National Rural Environmental Protection Action Plan* (*guojia nongcun xiaokang huanbao xingdong jihua*) released by the State Environmental

Protection Administration (which was upgraded to the Ministry of Environmental Protection in March 2008) outlines the major environmental health challenges faced by today's rural communities in China.³

1. *Poor Sanitation:* Human and animal wastes are often released into the rural environment without any treatment. The 8 billion tons of sewage water and 120 million tons of daily wastes produced annually in China's rural areas that are not properly treated are major sources of water contamination. The Ministry of Health reports that nearly 200 million rural Chinese drink water that is making them sick (OECD, 2007). Moreover, 60,000 Chinese citizens—nearly half of which are rural children—die each year from diarrhea caused by contaminated water (OECD, 2007).
2. *Accelerated Relocation of Pollution to Rural Areas:* With the nationwide restructuring of industries and stricter pollution enforcement in urban areas, heavily polluting industries are moving to the large number of "industrial zones" established in rural areas. Weak enforcement of pollution regulations in these zones has made these township and village enterprises major sources of unchecked pollution.
3. *Soil Contamination from Agricultural Production:* The overuse of chemical fertilizers and pesticides has led to serious environmental consequences including contaminated food, loss of biodiversity, and decreased land productivity. Twelve million tons of food crops are contaminated with heavy metals from agricultural runoff every year.
4. *Water shortages and water contamination:* Less than 40 percent of China's rural areas have access to tap water. One hundred ninety million rural citizens drink water containing pollutants well beyond government standards. News reports and anecdotal evidence collected by researchers and nongovernmental organizations indicate that cancer villages are a growing phenomenon in rural China, particularly in areas near polluted rivers (Gill & Lu, 2007).

Severe rural environmental degradation directly affects the livelihoods of farmers. The negative impact is manifested in two ways: (1) the deteriorating quality of soil and water that affects basic agricul-

BOX 2: An Urban Mass Protest Migrates to Rural Areas: Opposition to the Chemical (PX) Plant in Xiamen and Zhangzhou

Protest against the proposed construction of a chemical plant in Xiamen, a large coastal city in southern China's Fujian Province, was an environmental mass incident that caught wide international attention in 2007. The case is unusual in that it was a large-scale peaceful demonstration in a big urban center that attracted high-level involvement of mainstream news media reporting. Moreover, the relatively "benign" interactions between the public and the government led to a tentative resolution applauded by many. The Xiamen case demonstrates how improved public participation serves as a pressure valve and prevents the upgrading of environmental conflicts. However, the relocation of the chemical plant to Zhangzhou resulted in violent conflict between local residents and the government, illustrating the unresolved problem of environmentally vulnerable rural communities and the relative institutional marginalization of rural residents in comparison with their urban counterparts.

The buildup to the environmental mass protest was unique in that it was catalyzed from above. Specifically, during the March 2007 Chinese People's Political Consultative Conference (CPPCC) meeting in Beijing, a chemistry professor at Xiamen University led 105 CPPCC members in putting forth a proposal to discuss the then imminent construction of a large chemical plant near a densely populated area in Xiamen.³ The proposal, which made information public for the first time, listed the serious health concerns associated with the particular chemical product (paraxylene or "PX") and asked for the relocation of the project. After learning about the CPPCC proposal, high officials in the Xiamen municipal government reportedly held a meeting to "unify thinking" (*tongyi sixiang*) and recommended that subordinates ignore the CPPCC proposal.⁴ The municipal government also initiated a public relations campaign to communicate the economic benefits of the project through

press conferences and newspaper articles. But, these efforts failed to alleviate the public's suspicions. Xiamen residents, especially property owners living near the proposed site, expressed serious concern through numerous Internet forums. On June 1, 2007, tens of thousands of people went onto the streets in Xiamen to peacefully protest against the project. The demonstration was reportedly triggered by a widely sent text message that asking people to "take a walk."⁵ And private citizens posted live videos of the peaceful protesters on the Internet.

The official position on the project changed significantly after this large-scale environmental mass incident. The Ministry of Environmental Protection demanded a "planning environmental impact assessment" (*guihua huanping*) for the whole city of Xiamen, which was later carried out by a group of experts from the Chinese Academy of Science who were convened by the municipal government. The assessment report was released to the public in December 2007. Two weeks later, the municipal government held a high-profile public hearing on the proposed construction, for which the participants were randomly drawn from a pool of Xiamen residents who volunteered through a live TV show. At the hearing, 80 percent of participants opposed the project.⁶ Days after the public hearing, Chinese news media outlets reported that the Fujian provincial government decided to relocate the chemical project to Gulei Peninsula in Zhangzhou, a less developed rural town to the west of Xiamen. But, provincial officials immediately refuted the claim.⁷

The rumor of a possible relocation to Zhangzhou triggered unexpected turmoil in the town. On February 29, 2008, thousands of people living on Dongshan Island in Zhangzhou started protests against plans to relocate the plant in their community, which turned into a violent clash with police.⁸ Unlike the Xiamen protest that received

extensive media coverage, the Zhangzhou case was largely unreported within China. Although further details about this environmental mass incident are largely missing, the undertone of injustice is still discernible from the rare reports that did emerge.⁹ The sharp contrast between the two incidents triggered by the same project is illuminating. While the Xiamen environmental mass protest is being celebrated for the peacefulness, the “benign government/public interactions,” and the relative media openness, the Zhangzhou case that happened in a rural setting was haunted by violence, rumors, and media censorship. The incident brought into serious question the strategy of relocation as a solution to environmental mass incidents. While the relocation eased tension in Xiamen, social tension was merely transferred to a rural area. Rural communities that already face many other livelihood challenges are increasingly feeling a sense of injustice in that they are increasingly being viewed as pollution havens for companies unable to meet stricter urban environmental regulations.

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tural production, and (2) the health impacts that directly threaten the lives of rural residents (Zhang & Gu, 2003). The growing cancer rate in rural areas of China (in the so-called cancer villages) is probably one of the most tragic consequences of pollution. Official data suggests that between 1988 and 2000, cancer rates in rural populations increased 33.4 percent. (Zhang & Gu, 2003). Even China’s Ministry of Health has begun to report on the growing pollution and cancer links in urban and rural areas.

When rural citizens try to speak out on the growing environmental and health threats posed by pollution, they face many institutional obstacles that weaken their ability to combat serious pollution. Key institutional drivers of high pollution in China’s rural areas include the mismanagement of public resources at a local government level, the tight alliance between officials and local industries, and inadequate investments in environmental protection infrastructure (Wang, 2006; Zhang & Gu, 2003). Despite the promulgation of measures requiring government transparency vis-à-vis environmental information and regulations mandating citizen involvement in environmental impact assessment (EIA) hearings, rural citizens continue to face difficulties in accessing information about government investments and industrial production. Moreover, EIA hearings are rarely done well, if at all, in rural areas. [*Editor’s Note: See special issue on public participation and EIAs in CES 8*]. These institutional challenges that leave citizens disempowered create the context in which environmental mass incidents in China’s rural areas should be understood.

Environmental degradation is increasingly becoming one of the key catalysts feeding the growing tension between the Chinese government and citizenry, especially in the countryside. An examina-

tion of the Dongyang case helps highlight some of the institutional and social factors triggering major social unrest around pollution in China’s rural areas. The Dongyang case demonstrates that the main drivers of unrest are “entrepreneurial” local governments that permit pollution to occur and the lack of effective grievance relief channels for citizens—such as the environmental complaint system, the courts, and the news media. Such channels could go far to diffuse tensions and create necessary pressure on local governments to enforce existing pollution control regulations.

CATALYZING CONFLICT IN DONGYANG

In April 2005, a large-scale environmental mass incident sparked by industrial pollution in a small village in Dongyang, Zhejiang Province, shocked the Chinese authorities, news media, and the general public. The scale—involving thirty to forty thousand villagers and thousands of armed police—was previously unseen in a pollution incident in China. It was referred to by some people as a “peasant uprising” and by some media analysts as a “huge riot” (*Phoenix Weekly*, 2005). In her 2007 article in *Foreign Affairs*, Elizabeth Economy summarized the protest:

After trying for two years to get redress by petitioning local, provincial, and even central government officials for spoiled crops and poisoned air, in the spring of 2005, 30,000–40,000 villagers from Zhejiang Province swarmed 13 chemical plants, broke windows and overturned buses, attacked government officials, and torched police cars. The government sent in 10,000 members of the People’s Armed Police in response. The plants were ordered to close down, and several environmental activists who attempted to monitor the plants’ compliance with these orders were later arrested.

The Dongyang case is probably the most well documented environmental mass incident in that it received extensive news coverage, governmental attention (as reflected in numerous reflective articles written by government officials), and academic scrutiny. This coverage is indeed unusual, as similar cases often get little official or academic attention. While these official and academic accounts help reveal how the conflict unfolded, this paper was not able to access first-hand information from those

who were directly involved, which means some important pieces of the story are inevitably missing. Moreover, the conclusions in this paper are also drawn from only one case and thus merit testing by empirical evidence, if possible, in future studies.

Long-Term Opposition

Although two years of unsettled petitions seems to be sufficient time for citizen discontent to build and catalyze a violent protest, the events in Dongyang actually developed over an even longer period. The real start of the conflict should actually be traced back to the establishment of a chemical industrial zone in 1999 near two villages of Huashui Town in Dongyang. As a key part of its developmental strategy, the local government gave strong priority to the introduction of chemical companies into Dongyang, promising attractive land use and energy use terms to investors. The chemical companies directly involved in the 2005 protest incident were located in an industrial zone called Zhuxi, which shares a river with two densely populated villages of more than 12,000 people, one of them located a mere 1,000 meters from the industrial zone (“Pollution starts,” 2005). By 2004, 13 chemical companies had moved into the area, producing products from herbicides to plastic products and generating a combined annual revenue of approximately 200 million Yuan (~\$25 million) (Hu, 2005).

From the very beginning, the industrial zone met with resistance from the villagers. For example, in 2001, when the Dongnong Pesticide Company, the major chemical company in the zone, first signed a land use contract with the Huaxi (which later changed its name to Huashui) government and Wu village, Wang Wei, the party secretary of the village refused to sign his name. Instead, he investigated the company and wrote a provocative article called, “A Portrait of Dongnong,” in which he revealed that the company was notorious for its pollution and had been driven out by several villages where it had formerly been located. Wang printed 1,000 copies of this article and distributed them to citizens in and around Wu village. The pamphlet led to violent incidents, in which one official was wounded and villagers destroyed some of the equipment in one of the factories. Wang Wei, together with another 11 villagers, was later arrested and in 2002 he was sentenced to three years in prison (*Phoenix Weekly*, 2005).

The conflict between villagers and the industrial zone, however, was not at all subdued by the ar-

rest, for anger continued to grow over the massive amount of untreated wastewater flowing into rivers and poisoning the villagers’ crops. In July 2003, all the rice grown in Xishan village was completely destroyed because of the herbicide produced in the industrial zone (“Pollution starts,” 2005). The damages to local agriculture were so serious that farmers had to buy more expensive vegetables from urban areas to feed their families. The villagers also suffered health problems from gases leaking from the factories, which sometimes were so offensive that people could not open their eyes (*Phoenix Weekly*, 2005).

Under such conditions, the villagers continually used the official complaint (*xinfang*) channels to petition environmental protection bureaus in Dongyang, Jinhua (the municipality one level higher in the administrative hierarchy), Hangzhou (the provincial capital), and Beijing. Once the villagers received a reply from the Zhejiang Environmental Protection Bureau stating that some of the chemical companies in the industrial zone “were violating the rules,” however, the government did not shut down these factories (*Phoenix Weekly*, 2005). The villagers also sought help from the news media. In early 2005, Wang Zhongfa, a local villager, went to Beijing to find journalists who could write about the situation. *Phoenix Weekly* (2005) reported that Wang also accompanied a journalist to interview one of the companies several days before the large-scale conflict.

Expired Patience

In March 2005, the conflict started to intensify when villagers were turned away after trying to meet the mayor on “Dongyang Mayor Reception Day.” Frustrated, the villagers started to build bamboo tents to blockade the road into the industrial zone. Elderly people from the village stayed to guard these tents. On March 28, hundreds of local government officials and police raided and burnt some of the tents, but villagers kept up the blockade. Three days later, the Dongyang government released a notification announcing all 13 factories in the industrial zone would suspend production and make adjustments (*tingchan zhengdun*). Meanwhile, official warnings were also issued to deter “a small bunch of ill-willed criminals” who “instigate the rabble to harm the social order.” On April 6, an ultimatum was announced to those villagers who refused to leave the bamboo tents and Wang Zhongfa, a leader who had gone to Beijing to petition and had accompanied a journalist to the industrial zone, was arrested (*Phoenix Weekly*, 2005).

Undeterred by the police raid and arrests, the villagers continued with their blockade. Then in the early morning on April 10, the local government convened about 3,500 local police and government employees who tried to remove the tents by force—an act that unexpectedly provoked even stronger resistance by the villagers. Twenty to thirty thousand villagers were reported to have gathered and the situation finally turned violent, as described by Economy. Although no one died, dozens were injured, several quite seriously. Strikingly, the local authorities failed to clear the blockade on April 10. Many policemen and government employees were reported to have fled the scene in the face of overwhelming opposition from the villagers.

Initial Fallout

Not surprisingly, this large-scale environmental mass incident attracted high-level attention. Both the governor and party secretary of Zhejiang Province issued orders for local officials to properly deal with the issue.⁴ A team led by Ministry of Environmental Protection officials and provincial environmental authorities investigated the industrial zone, which led to the order for the major polluting companies, including Dongnong Pesticide, to shut down or move out of the zone (“Pollution starts,” 2005). Only on May 20, after seeing the machinery from the factories removed the week before, did the villagers finally take down the tents.⁵ Later that year in December, eight government officials, including the party secretary and mayor of Dongyang, were punished as being responsible for the April environmental mass incident (“Seriously punishing,” 2005). Most of them were removed from their original positions, but some only received a “warning.” In contrast, eight villagers charged with harming social order were arrested (“Eight villagers,” 2006).

The incident also triggered another unexpected development that offers insights into the level of official sensitivity vis-à-vis this incident. A group of Zhejiang activists, after witnessing the unrest in Dongyang, decided to establish an environmental nongovernmental organization (NGO) called Green Watch in Hangzhou to monitor pollution from industrial enterprises in the province. The NGO organizers were not allowed to register under the provincial bureau of civil affairs, the government agency overseeing NGOs. Moreover, Zhejiang security officials arrested Tan Kai, the founder of Green Watch, on dubious charges officially unrelated to the NGO (Buckley & Turner, 2005).

EXPLORING HOW POLLUTION DEVELOPS INTO UNREST

The Dongyang incident raises many questions, such as whether it represents an inevitable clash between industrialization and environment in China or whether the uprising is more a result of mismanagement by political institutions. The intermediate factors leading to the escalation of the conflict into major social unrest are central to understanding the protest.

Pondering the Drivers

In order to better understand the rising number of environmental mass incidents in rural China, it is necessary to put them into a larger analytical framework that reveals the political, social, and economic processes behind them. In her book, *The River Runs Black: The Environmental Challenge to China's Future*, Elizabeth Economy emphasized “the role of political institutions and politics in shaping a country's environmental and developmental pathway,” (Economy 2004, 14) asserting that environmental degradation is not simply a result of economic development, globalization, or population growth. The emphasis on “political institutions and politics” is particularly important to the analysis of environmental mass incidents in China. To be sure, the increasing environmental unrest in rural China does represent the bitter truth that rapid industrialization comes at a high price. However, it is also true that not all environmental problems lead to violent conflict in China. The growing unrest over pollution indicates disturbing political problems underlying the “black rivers,” which are more a result of local political reality than a “natural” consequence of industrialization.

Studies directly looking at environmental protests or environmental mass incidents in China have revealed several different drivers of the increasing turmoil. A widely cited study on this issue, Jing Jun's “Environmental Protest in Rural China” analyzes in detail two environmental protest cases in China—one water pollution protest spanned two decades in Dachuan Village, Gansu Province and another surrounding people in Gaoyang Township, Chongqing being relocated by the Three Gorges Dam (Jing, 2003). Jing Jun's conclusion emphasizes the changing state-society relationship and the growing consciousness of community and individual rights among ordinary citizens as the driving forces of emerging environmental protests. More recent studies, such as Zhang (2007), attribute the

rise in environmental mass incidents to specific political economic situations such as the state-corporate alliance at the local level. Zhang's study is particularly critical of the role played by the local government. He maintains that local officials—who are empowered by higher-level political patrons—form close alliances with businesses on the local level. Protecting local industry is crucial for local officials who are largely evaluated for promotions by their ability to push economic growth. These alliances, further strengthened by the necessity to find alternative sources for tax revenues due to declining revenues from the agricultural sector, has serious environmental consequences such as widespread negligence in EIAs and lax enforcement of pollution control laws at the local level (Zhang, 2007). The structural changes induced by the post-1978 reforms have resulted in the “redrawing of the leadership role in the local landscape” and local governments have changed from regulators to the advocates (e.g., entrepreneurs) of their local enterprises (Jahiel, 1997, 84-85).

Besides a growth-oriented local state that is ill-prepared to address environmental problems, scholars also direct our attention to other social and political elements such as insufficient dispute settlement mechanisms or grievance relief channels. The governance structure at the local level leads to environmental degradation in the first place and “eventually fails to check the violence by not providing civil means of dispute resolution” (Najam, 2003, 66). Minxin Pei argues that the rising environmental protests in China are just one symptom of a “failing state,” which is neither able to provide public goods such as environmental protection nor equipped or willing to settle disputes and relieve tensions within the society due to the lack of “pressure valves” (Pei, 2002, 101). Among the so-called “pressure valves,” researchers have paid close attention to the environmental complaint system, the court, and the news media.

Anna Brettell, in her study of China's environmental complaint system, pointed out that despite significant standardization and improvement since the 1990s, the system still suffers from insufficient accountability from officials charged with the responsibility to respond to the complaints at the local level and the lack of high-level oversight (Brettell, 2007). In his case studies of anti-dam protests, Andrew Mertha has noted the limited ability of the Chinese news media to cover contentious environmental issues (such as dam construc-

tion) in a way that can reframe the issue to bring broad support for policy change, which could possibly prevent environmental conflicts from developing into a political showdown (Mertha, 2008).

Notably, some Chinese NGOs have been using the news media to increase public awareness of some unsavory local governments that permit polluting industries or approve dams without required EIAs. One of the more striking examples of savvy NGO use of news media was when Chinese green groups joined with environmental journalists to carry out a national campaign against planned dams on the Nujiang—one of China's last wild rivers. Subsequent reporting created considerable public discussion on the Internet leading Premier Wen Jiabao to halt the planning of the dams. The Chinese NGO Center for Legal Assistance for Pollution Victims has notably been adept at notifying the news media about class action pollution cases, which promotes transparency—a powerful tool that sometimes helps “encourage” local governments and industries to cooperate in such cases (Ellis, 2007). Pollution victims who can fairly access courts are clearly less likely to protest in the streets.

The Alliance of Local Governments and Dirty Industry

The Dongyang case provides us with an opportunity to examine the arguments on drivers more closely. Ultimately, the Dongyang case illustrates how an “entrepreneurial” local government makes the rural community especially vulnerable to environmental damages, while insufficient grievance relief channels further exacerbate local government and citizen tensions that can then catalyze a major environmental mass incident.

One key aspect of this case is the initial establishment of the Zhuxi Industrial Zone and the nature of some of companies inside the zone. Most of the companies introduced to the Industrial Zone were chemical companies producing products such as pesticides or fluorides. Dongnong Pesticide Company, which was the center of the controversy surrounding the pamphlet circulated by Wang Wei in 2001, is not the only company with a notorious pollution record. According to a reflective article written by a government official involved in the handling of the Dongyang case, among the 13 companies, 11 had received some form of punishment by the Dongyang Environmental Protection Bureau in 2004, and seven were companies relocated from the urban part of Dongyang (Hu,

BOX 3. Other Cases of Rural Environmental Mass Incidents in Zhejiang

Besides the Dongyang case, three other environmental mass incidents occurred in Zhejiang Province in 2004 and 2005.¹⁰ These cases are unique in that they were widely covered in government, news media and academic reports, but thousands more such incidents occurring in rural China take place without outside scrutiny.

THE NINGBO HUAGUANG STAINLESS STEEL CASE

Because of serious dust emissions and noise problems, on November 21, 2004, a violent conflict broke out between villagers and the staff of Ningbo Huaguang Stainless Steel Company. More than 500 villagers were involved in a group fight with company staff, which led to the total suspension of the company's production. The Ningbo government arrested 19 people (including some villagers) after the November conflict. It also initiated a cleanup campaign, inviting experts and villagers to make suggestions on possible improvements and having government inspectors stationed in the company to supervise the progress. On April 6, 2005, not convinced by the company's improvements, more than 200 villagers staged a sit-in blockading the company from resuming production.

THE CHANGXING TIANNENG BATTERY CASE

On June 27, 2005, after high levels of lead were detected in the blood of more than 200 children, hundreds of Changxing villagers broke into Tianneng Battery Company and demanded the suspension of production. The conflict lasted for five days and was only temporarily quieted by the local government, with several people injured in the process. Two months later, the conflict reemerged, with thousands of villagers involved in a violent riot against the police. A few people were injured and many police cars were

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destroyed. After the incident, the government arrested and sentenced several villagers to jail.

THE XINCHANG JINGXIN PHARMACEUTICAL COMPANY CASE

On July 4, 2005, a conflict broke out when villagers living near Xinchang Jingxin Pharmaceutical Company asked the company for compensation because of serious odor problems and damages to rice crops. The initial conflict resulted in the temporary suspension of production. But on July 15, believing the facility was resuming production (the official explanation was that officials and company staff were checking some of the hazardous substances stored in the facility), a few hundred villagers tried to blockade the facility, which led into a violent confrontation with the police. More than 10,000 villagers from nearby villages were drawn into the confrontation. The unrest only dissolved after a heavy rain storm. A few villagers were arrested later by the police. After the incident, the local environmental protection bureau initiated daily pollution inspection, sampling, and

monitoring on Jingxin Pharmaceutical Company. It also conducted an environmental assessment for the whole Xinchang River Basin and issued reports on how the company needed to address pollution problems based on the assessment.

NOTES

1. There are different English translations for this term, including environmental group events or environmental mass affairs.

2. A Chinese text of this law is available at: <http://www.chinalawedu.com/news/2005/10/ma5071633131015002304.html>.

3. Yuan, Yue. (2007, October 15). "The Xiamen PX incident," *Life Weekly*. [Online]. Available: <http://review.jcrb.com/200803/ca684330.htm>

4. "A hundred CPPCC members cannot stop Xiamen PX project. (2007). (*baiming weiyuan nanzu xiamen PX xiangmu*)," *Liaowang Dongfang Weekly*, May.

5. Yuan, Yue. (2007, October 15).

6. Zhu, Jingruo and Shengyang Jiang. (2007, Dec 19). "Continue, suspend or relocate: The PX incident teaches everyone a lesson," *People's Daily*. [Online]. Available: http://news.xinhuanet.com/fortune/2007-12/19/content_7277221.htm.

7. Zhou, Xifeng. (2007, Dec. 19). "Rumor says PX plant will relocate to Zhangzhou, Official denies,"

Xinhua. [Online]. Available: http://news.xinhuanet.com/local/2007-12/19/content_7277860.htm.

8. Associated Press. (2008, March 5). "Thousands demonstrate against plan to build chemical factory in southern China." [Online]. Available: <http://www.iht.com/articles/ap/2008/03/05/asia/AS-GEN-China-Factory-Protests.php>.

9. Li Xin, "From Xiamen to Zhangzhou: the Fate of Three People Who Care about the PX Project (*cong Xiamen dao zhangzhou: sange PX xiangmu guanbuzhe de mingyun*)," *New Century Weekly*, March 10, 2008

10. Sources include: Dai, Beijun. "Handling environmental mass incidents in Zhejiang Province: Practice and thinking." Government Research Report, 2006, [Online]. Available: <http://hbj.zj.gov.cn/corpus/2005/3.htm>; Zhang, Yulin. (2007). "State-Corporation alliance and environmental conflicts in rural China—Using three 'environmental mass incidents' in Zhejiang Province as analytical focus." The Universities Service Centre for China Studies Paper Collection (Chinese University of Hong Kong). [Online]. Available: http://www.usc.cuhk.edu.hk/wk_wzdetails.asp?id=5920; Shaoxing Municipal Environmental Protection Bureau (2005). "Summary of work 2005." [Online]. Available: <http://www.chinacitywater.org/hyfx/hyzs/25585-1.shtml>; Gui, Aizong & Daohe Zhuang. (2005, July 27) "A toxic surrounded village fights for life." *Democratic Newsletter*. [Online]. Available: <http://asiademo.org/gb/news/2005/07/20050727.htm#art06>.

2005). More importantly, two of the companies were industrial fluoride makers.

In a MEP notification issued as early as 1997, the fluoride industry was identified as “heavily polluting,” and new development of it banned due to the fact that fluoride supply already exceeded market demands. This notification was passed to provincial level environmental bureaus, and, in the case of Zhejiang Province, had been distributed with a detailed implementation guideline attached (Hu, 2005). These requirements were all ignored by the Dongyang local government, which, instead, proactively welcomed the companies into the industrial zone through attractive terms of land and energy use.

By welcoming heavily polluting industry into a densely populated agricultural region, the local government was behaving like a classic “entrepreneurial government” prioritizing revenue generation (the role of an enterprise) over environmental protection (the role of a regulator/public good provider). There are two major incentives for the local government to behave in this manner. First, the pressure from the central government to “develop the economy” is still strong, given the current incentive system—local governments use the achievements of economic goals (e.g., GDP growth) as an exchange for political power and resources—as opposed to the previous system, which mainly used the leader’s charisma and “revolutionary visions” as the criteria for career mobilization. Second, the taxation reforms that on one hand gave local governments the claim over the increased local tax revenue while on the other hand have substantially reduced their revenues from agriculture surpluses. Less revenue for agriculture has led local governments to turn their attention to the manufacturing sector for new sources of revenue (Jahiel 1997; Zhang, 2007). This transformation from regulator to “semi-enterprise” is then translated into a series of administrative behaviors deteriorating the rural environment, including negligence in making EIAs, inactions when corporations break environmental regulations, and insufficiently addressing farmers’ complaints (Zhang, 2007).

Soliciting Pollution

To some extent, the behavior of the Dongyang local government reflects a disturbing trend in China that is driving dirty industries to rural areas or less-developed peri-urban areas. There are three major routes

of pollution relocation within China (Wang, 2008):

- (1) from upstream to downstream (especially across political jurisdictions);
- (2) from urban centers to their periphery areas (mainly for the dumping of urban wastes); and,
- (3) from the developed east to the less-developed west (especially common for heavy-polluting industries such as pulp and paper plants).

Even within the same province, highly polluting industries often migrate from more developed urban areas to less-developed rural communities. One extreme example is Jiangsu Province, where 6,770 industrial enterprises with an annual revenue over 5 million Yuan (~\$700,000) have relocated from the highly industrialized southern part of the province to its less-developed northern part since 1994, with a large portion of the enterprises being highly polluting chemical plants or galvanizing facilities (Wang, 2008). Economy also notes that big cities in China often “pursue environmental cleanup by exporting their polluting industries to points just outside the city limits” (Economy, 2004, 120).

Although the Chinese authorities tend to see the pollution-relocation problem as the result of multiple factors including “a lack of attention to the rural environment, the absence of a coordinated environmental strategy for the whole country and an imbalanced development between urban and rural areas” (Dai, 2005), the role of a revenue-driven local state is unquestionably a key element. The relationship between the local state and pollution relocation is best demonstrated by the fact that a few less-developed provinces (including Jiangxi, Anhui, and Henan) have “Investment Soliciting Delegations” specifically targeting high-polluting companies being driven out of the developed provinces such as Zhejiang. Some of the delegations even include the directors of local environmental protection bureaus (Wu, 2008). This kind of “pollution-soliciting” literally creates a “race to bottom” within China, where local governments downplay environmental regulations to attract polluting businesses.

Vulnerable Communities

The Dongyang case also illustrates how growth is pursued by an entrepreneurial local state at the expense

of the livelihood of local people. As the industrial zone shared the main river with villagers, the polluted wastewater poisoned rice, wheat and rapeseed grown by the villagers. Besides agricultural production, the direct health impact was also serious. Among the health problems, the pollution-induced miscarriages were especially disturbing to the villagers (*Phoenix Weekly*, 2005). The trend of relocating pollution to rural areas is even more alarming as these citizens are often more vulnerable to environmental degradation than urban communities, for rural areas often do not have adequate environmental protection infrastructure (Dai, 2005). Pollution also undermines the food supply and livelihoods of rural farmers. Moreover, high costs limit the ability of rural citizens to access to healthcare, which means they are less able to deal with pollution-induced illnesses.

The situation is further exacerbated by the fact that the villagers often have few institutional channels to have problems redressed. The final outbreak of large and violent pollution protests shows deep frustrations that are often more about their political situation than the environment. In studies of environmental disputes throughout Asia Najam (2003) has observed that weak institutional governance is often the intermediate element between environmental degradation and conflicts. In the Dongyang case, villagers rejected the establishment of the industrial zone at the very beginning. Yet their wariness and strong expressions of resistance were never represented or even considered in any of the official decision-making processes. Wang Wei, the village leader, tried to boycott the industrial zone by refusing to sign on the land use contract but failed. Those leading the opposition then resorted to an unorthodox method of resistance by disseminating information about the pollution history of the chemical company, trying to mobilize resistance from the villagers. These efforts did not lead to any positive feedback from local authorities but instead were met with repression. Those sending out alarms were arrested and silenced.

The deadlock situation in the villager's efforts to petition different levels of government showed some of the key shortcomings of the complaint system—the lack of accountability and high-level oversight (Brettell, 2007). China's complaint system has undergone some systematic improvement since the 1990s. Since then, all government departments at the provincial, municipal, autonomous region, city, and prefecture levels are required to set up offices responsible for complaints that are specifically related

to their work. Within the environmental complaint system, there are institutional arrangements for bureau staff to receive complaints and visits, often in an around-the-clock manner. There are also procedural requirements stipulating initial investigations should be completed within two days, and that complainants should be notified of the result (Brettell, 2007). However, the current complaint system gives very wide discretion to the officials involved in handling of such complaints without very strong accountability for these decisions. There is no clear definition as to what counts as a “resolution” to a complaint. In some cases, an environmental bureau official can simply pass on some factual information to those who submitted the complaint without fixing the problem, and the official can still report the complaint as being resolved.⁶ When dissatisfied citizens turn to an upper level complaint office (*shangfang*), the officials there are vested with even wider discretion, since no rule exists as to how they should respond to such complaints. Often they choose to turn the cases back to the subsidiary office or dismiss them completely.⁷

The Dongyang case is a textbook example of this kind of wide discretion. The provincial Environmental Protection Bureau in Zhejiang chose not to intervene even after acknowledging that some companies in the industrial zone in Dongyang were breaking the rules. Officials at the “Dongyang Mayor Reception Day” could simply turn the villagers away without even listening to their complaint.

Not In The News

The Chinese news media also played a limited, yet noteworthy, role in this case. From the very beginning, the villagers tried to bring their situation to the attention of the news media. Before the violent conflict broke out, at least two news media organizations—the provincial television station of Zhejiang and the local newspaper of Jinhua—had reported the issue (in June 2004 and January 2005, respectively).⁸ The absence of issue framing by the media or the domination of an official frame such as “social stability,” can close down the political space for dialogue and compromise (Mertha, 2008). In an interview about the Dongyang case, Mertha placed specific emphasis on the importance of early publicity and the use of a frame that can attract a larger audience, which can help diffuse the tension.⁹

In the case of Dongyang, the media reports before the major conflicts were largely limited to

Zhejiang Province, for efforts to attract the attention of national media were thwarted by the local officials who had Wang Zhongfa arrested after he took a Beijing journalist to the industrial zone. Thus, no story was told to attract a broader audience to the plight of the Dongyang villagers.

Quiet Courts

One other important element missing from all these efforts is the legal channel. Based on numerous reports on this unusual case, there is no indication that the local court ever got involved in the process. The absence of a lawsuit in such an intense dispute is remarkable. However, just as Jing has noted in his research, lawsuits are often useless in these cases. Sometimes local courts do not have jurisdiction over high-level state-owned factories. In more cases the polluting projects are seen as of “political importance,” therefore “not subject to the possible scrutiny of the country’s environmental laws” (Jing 2003, 219). Other restrictions on the full involvement of courts include the often vaguely drafted environmental laws that make it difficult to allocate liability, the interventions by local officials and the lack of legal training of many local judges (OECD, 2005). The lack of an independent legal system is another key reason for China’s poor environmental record (Economy, 2007). It is therefore understandable that in Dongyang, either the villagers did not turn to the often costly and prolonged legal process, or that the local court chose not to be involved in the case.

Furthermore, civil society groups are often totally absent as a mediating factor in such disputes. As the Green Watch episode after the Dongyang incident has shown, civil society involvement in such confrontational cases is still subject to strict government control.¹⁰ Under such circumstances, villagers are often left to struggle for themselves with very little outside support in terms of technical and legal expertise.

It was a mixture of threatened livelihood and a deep frustration over injustice and lack of voice that finally pushed the villagers to the streets. Their shouted slogans and posters not only demanded protection of their family’s health and livelihoods, they also expressed anger over the injustice imposed on them: “Corrupt officials have their pockets full of money, people have their lives full of pain,” “Rich people can buy houses outside the villages, poor people can only wait here for death!”¹¹

In this sense, the environmental mass incident is more of a response than an initiative, more of a

resistance than an offensive action. A very specific pollution issue rather than a broader political agenda drove this protest. When the issue is sufficiently addressed by the local authorities, the tension may quickly disappear. In the case of Dongyang, after the equipment was removed from the factories in May 2005, the villagers even helped the government to remove the blockade they had built. As researchers have pointed out, this kind of isolated and unorganized environmental unrest lacks the potential of becoming a “rural environmental movement” (Zhang, 2007). Moreover, while these and other similar rural protests generally do not extend beyond a single locality, expand to cover other issues, or turn into an “ideological or organizational challenge” to the state (Perry & Selden, 2003, 17), the central government has begun to view environmental mass incidents as sources of political instability.

IMPLICATIONS OF THE GOVERNMENT’S STABILITY MINDSET

Environmental protests like the Dongyang case are largely an expression of citizen opposition to corrupt local officials protecting polluting corporations and frustration over an inability to hold officials accountable. Despite the overwhelming focus of these protests on local wrongdoings, Chinese central officials view these environmental mass protests as a potential threat to political stability, although they describe these threats with considerable restraint—for example, they are still defined as “people’s internal conflicts” (*renmin neibu maodun*).

MEP Minister Zhou Shengxian candidly noted that, “with the increase of environmental mass incidents, pollution has become the ‘primer’ for social instability” (Zhang, 2007). The chief director of the provincial EPA of Zhejiang Province, when writing about his findings about four big environmental mass incidents in his province during 2005, also started by warning that “environmental disputes have become the new cause of social instability” and that “if being used by a small bunch of ill-willed individuals, [such disputes] could seriously damage the Party-Mass relationship and the Party’s image” (Dai, 2005).

Linking environmental degradation to political stability, which is arguably the core concern of the Chinese authorities, would definitely elicit more support for the environmental cause inside the government. Actually, Zhejiang Province, which suffered four consecutive large-scale environmental mass incidents in 2005 (including the Dongyang

case), was among the first provinces to initiate a high-profile greening campaign. Zhejiang officials initiated an “ecological province” project, which includes a “recycling economy 911 project” and a “pollution reduction 811 project.” Xi Jinping, the governor of Zhejiang in 2005, emphasized openly that environmental mass incidents could “destroy the fruits of reform and opening.”¹²

At the local level, all those counties in Zhejiang that suffered from severe environmental protests established a series of new environmental policies. In Dongyang, besides shutting down nearly half of the Zhuxi Industrial Zone (five companies were completely closed, three were ordered to suspend production);¹³ banks were instructed not to give loans to polluting companies; management of polluting companies would be making public apologies; and factories were ordered to commit openly to good environmental practices. In Changxing, another county where large environmental protests broke out, 75 percent of the lead-acid battery industry was shut down, and systems were established to hold local officials personally responsible for pollution accidents (“Economic protection,” 2007).

These initiatives do demonstrate the provincial government’s response, albeit belated, to rural environmental concerns. But researchers such as Yulin Zhang (2007) also warn about the limited effect of bringing environmental issues into discussions of instability:

Although [linking environment with stability] could attract some high-level attention, signed orders from high-level officials do not seem very effective in breaking the state-corporate alliance at the local level, nor is [this linkage] useful in redirecting local policy more towards addressing the needs of the people.

Many of the new policies adopted by Zhejiang Province following the Dongyang incident do have a heavy public-relations flavor and on the surface very strong self-policing elements. With the exception of the “green loans” policy, few of the new policies target breaking the strong state-corporate ties that fuel such pollution problems. Actually, two of the most polluting companies in the Dongyang case simply opted to move to another area,¹⁴ which further shows that the ad hoc “campaign style” environmental policies restricted to specific regions could simply displace the problems instead of solving them.

Moreover, by including environmental degradation into the stability mindset, the government potentially turns pollution incidents into highly sensitive situations that could limit the role of local community activists, courts, news media and/or NGOs to step in and play a mediating role.

Although the government is still very restrained in its reaction to environmental protests, it still sees them largely as being “manipulated by a small group of ill-willed individuals” who want to harm social order and produce chaos (Dai, 2005; Hu 2005). The deep-rooted suspicion that environmental protests are somewhat an organized challenge to the rule of the Party is identifiable in many of the official writings. For instance, in a reflective article written by an official from the Provincial Party Academy of Zhejiang, environmental mass incidents such as the Dongyang case are seen as particularly “well-organized.” The village-level elder’s association is even described as a “special interest group” behind the event (Tao, 2006). This mentality creates a political environment hostile to leading individuals such as Wang Wei and Wang Zhongfa, who could have played the role of what Mertha terms as “policy entrepreneurs” that engage other stakeholders (e.g., the news media, NGOs, and sympathetic officials). In engaging other stakeholders these “policy entrepreneurs” can potentially ease the confrontational situation by facilitating compromises. In other words, putting pollution issues into the stability mindset could further limit the political space for such individuals to monitor and expose pollution activities.

Another important detrimental element when environmental protests are viewed as security threats is the subsequent strict control of information. In Dongyang, for example, news media reports of the incident were heavily censored (*Phoenix Weekly*, 2005). Moreover in government policy papers, the control of information to “stop rumors” is often placed on high priority (Dai, 2005). This censorship can restrict important media reporting of local environmental problems that could help reframe the issue, open up space for policy changes, and avoid a political deadlock or even mass protests.

The Dongyang case has demonstrated that environmental mass incidents are an extreme response to the quickly deteriorating natural and political environment for rural communities. These mass incidents are citizens’ response to severely threatened livelihoods and a fundamental deprivation of power. To address these issues of environmental

justice requires solutions that are founded on a concern for the security of people and serious government restructuring that would prevent local officials from abusing the environment in the first place. Ultimately, it should be a solution about empowerment rather than control, about participation rather than exclusion, about democratic decision-making rather than ad hoc cleanup campaigns.

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NOTES

1. Interview with Anonymous U.S. China Analyst, August 21, 2008
2. Several respondents interviewed for this paper noted that the term "environmental dispute" has never been clearly defined.
3. [Online] Available: <http://www.sepa.gov.cn/natu/stbh/js/200610/P020061026334063325958.doc> (Text in Chinese)
4. Ibid.
5. Dongyang government announcement, [Online]. Available: www.dongyang.gov.cn/dongyang/zhenwudongtai/zhengwuneirong.jsp?InfolD=7867.
6. Interview with Anna Brettell, September 25, 2008
7. Ibid.
8. Samples of earlier reports can be found at: <http://www.clapv.org/bbs/viewthread.php?action=printable&tid=99>. (In Chinese).
9. Interview with Andrew Mertha, August 7, 2008.
10. Notably, very few Chinese NGO activists have been imprisoned, but the few who have been arrested or harassed by security officials do tend to be involved in anti-pollution activities.
11. Slogans and posters used by the villagers were quoted in Zhang (2007) and the *Phoenix Weekly* (2005, May 18).
12. Speech by Governor Xi Jinping, available at http://www.ywepb.gov.cn/Article_Show.asp?ArticleID=72.
13. Dongyang government announcement, May 23, 2005. [Online]. Available: www.dongyang.gov.cn/dongyang/zhenwudongtai/zhengwuneirong.jsp?InfolD=7867
14. According to the *Economic Reference News* report and Hu (2005), two of the most polluting companies, including Dongnong, voluntarily moved to other provinces to continue production

FEATURE BOX

Green Dragon Media Project

By Max Perelman

DEAR MR. MOU ZHANG,

Gongxi! Gongxi! China is on the minds of many around the world—not only because of the 2008 Summer Olympics and the 2010 World Expo in Shanghai, but businessmen also are excited to hear your country is now one of the world's largest economic markets.¹ Developers know that between now and 2015 roughly half of the world's new building construction will take place in China.² But environmentalists are worried to learn China has become the world's largest greenhouse gas emitter.³ My experience represents all three of these groups. I have worked as an e-commerce consultant based in Asia but am now devoted to promoting sustainable construction in China and the United States.

I focus on buildings and cities because these will be humanity's environmental experiment determining the type of planet on which our children and grandchildren will live. The majority of the world is now living in cities⁴ and within the next decade the majority of Chinese will too.⁵ People are becoming an urban species; our cities are consuming 2 percent of the world's landmass but 74 percent of its resources.⁶ More than 50 percent of China's greenhouse gas emissions are due to the construction and operation of buildings.⁷ If cities are our environmental battleground, then Chinese cities are the front-line since China will be urbanizing 400 million rural people over the next 12 to 20 years.⁸

I believe climate change is our global generation's challenge and it is my responsibility to collaborate with you so that our generation does not follow the path of my American parents' generation. That "American" path, perpetrated by consumerist propaganda, will lead to four-hour daily commutes to work, worse than anything now experienced in Beijing, promoting even further dependence on foreign energy, food, and water.

In terms of purchasing power parity, China's GDP has well surpassed the United States and even has a smaller portion of people below the poverty line.⁹ I know that the Chinese people are enjoying new luxuries and building new careers: You have a right to and you deserve it. But perhaps there is a way for you to fulfill Deng Xiaoping's challenge of becoming "gloriously rich" while simultaneously addressing the urban and rural environmental challenges we all face. The International Monetary Fund estimates the total cost of China's air and water pollution is 5.8 percent of your country's GDP, almost \$200 billion.¹⁰ What if I told you there was a way to minimize these costs while actually reducing many of the other infrastructural "growing pains" of development?

THE ECOBLOCK—MASS-REPLICABLE SUSTAINABILITY

Half of the world's construction is occurring in China and every year the country adds 12 million new urban housing units (as well as all the associated expensive infrastructure and services). The predominant model of development is the "gated" 10- to 30,000-unit SuperBlock. While these one-square kilometer blocks are highly efficient at providing a large number of housing units, SuperBlocks have extraordinarily negative consequences—including congested arterial roads, limited access to public transit, and a high dependency on a costly centralized infrastructure of power plants, sewage treatment facilities and water supply. To keep pace with urban and industrial growth, China is currently building the equivalent of two coal-fired power plants every week.¹¹ Gloom and doom reports in the international news media on China's air pollution and other environmental problems have notably overlooked what I believe is an exciting plan to



Eighty percent of the construction workers in Beijing, such as the man pictured above, are rural migrants.
Photo Credit: Green Dragon Media Project

build a new model for sustainable urban neighborhoods that transforms China's current residential SuperBlock paradigm.

On my way to China in 2007 as part of the Green Dragon Media Project team, I met with Harrison Fraker at the University of California, Berkeley, College of Environmental Design. Professor Fraker wanted to tackle this development challenge while working within the Chinese cultural framework and one-square kilometer SuperBlock development scale. He has partnered with the international engineering firm, Arup, transforming the business-as-usual SuperBlock into a sustainable neighborhood model for China—the EcoBlock. The EcoBlock is a mass-replicable and economically viable alternative that provides 100 percent on-site renewable energy generation; recycles 100 percent wastewater on site; reduces 90-plus percent potable water demand; encourages journeys by foot, bicycle and public transit; and provides 40 to 60 percent of the site area as productive green space—urban agriculture and urban orchards.

According to Professor Fraker, each EcoBlock development represents 415 tons less solid waste, 23.8 million gallons less untreated sewage, and 1,404 tons less carbon dioxide emissions annually. Arup designers estimate that if the EcoBlock replaces just 25 percent of the SuperBlocks being built, China could save \$9 billion in infrastructure costs by avoiding the construction of 13 drinking water plants, 11 wastewater treatment plants, 9 coal-fired power stations, and 8 landfills.

In the summer of 2008, the mayor of Qingdao gave official approval to move forward with the first

EcoBlock and a developer and site have been selected. Detailed design began in September 2008 and the developer hopes to break ground within 18 months. Construction is anticipated to complete within three to five years. Led by Jean Rogers in the San Francisco office, Arup's primary role has been to provide a portion of the project's seed funding and develop the detailed analysis demonstrating the viability of the project to the Chinese government. The results of the feasibility study are very positive and establish the proof of concept for the EcoBlock, confirming the possibility of achieving self-sufficiency in energy and water systems, and demonstrate the technical, social and cultural feasibility of a sustainable neighborhood model.

THE BEAUTY OF STRAW—WHAT THE OTHER TWO PIGS DIDN'T KNOW

Last summer, I set out to learn more about projects like the Qingdao EcoBlock as well as the barriers and opportunities to expanding China's green building industry. One of the outcomes was a Green Dragon Media Project documentary film and multimedia information source focused on green buildings in China's urban centers. However, urban buildings are only part of the story, though perhaps the largest part since the majority of Chinese will live in cities within the next decade. Nevertheless, the plight of ordinary rural Chinese is a bit closer to my heart, and I have found that oftentimes a dollar spent in the countryside not only has a greater impact, but also is more emotionally satisfying.

As my green building pilgrimage took me outside the cities, I learned that a third of all homes in rural northeast China are drafty and cold, made from mud and straw. Including the more modern buildings, only slightly more than 1 percent of homes in this region are equipped with energy efficiency measures. Understandably, families are often locked in a vicious cycle of poverty and sickness as they struggle to heat their small 700-square-foot homes with four tons of ever-pricier coal each winter.¹² Despite the fact that roughly 30 percent of average rural income goes to coal purchases, families will often manage to find the \$4,000 needed to build a "modern" red-fired brick home. This new home will have solid brick walls almost three feet thick that will not only represent an enormous amount of embodied energy, but surprisingly, will require the same four tons of coal to heat annually and be just as dangerous in an earthquake.

BOX 1. STOP PRESS: The Green Dragon Sequel is Coming!

RED HOT GREEN CHINA

WARNING: Content Could be Local and Spicy

Red Hot Green China is a new TV series for international broadcast that follows a young, savvy production team as they explore one of the most critical societal transformations in human history. Because of its sheer scale, China's environmental impacts are already affecting everyone on Earth. As they continue to build, their choices could either make or break humanity's pathway to sustainability. That is why the Red Hot Green Team are going to be on the ground, finding the real stories and the real character that reveal China's potential for a bright green revolution. This is a travel show on a mission.

The TV series will be backed up by RedHotGreenChina.com, an online visual media platform that will share feature stories of people and projects geographically-placed around China, a blog, an e-learning cinema and a video-based business who's who directory for China's emerging green leaders.

The production team is split across China and the United States and is currently producing the promotional video. Want to be a part of this? Early-bird corporate sponsorship benefits and investment opportunities are available. Please email carolinegreendragon@gmail.com for details and access to the full online concept description.



In the above photos are a few of the many faces of people in the Green Dragon Media Project's upcoming documentary. The film trailer can be viewed at: www.redhotgreenchina.com.

Just as with urban SuperBlocks, however, I learned of a group tackling this rural challenge from within the cultural and socioeconomic constraints of the region. The Adventist Development Relief Agency (ADRA) is leading a grassroots initiative to build environmentally friendly, energy efficient housing in Heilongjiang Province in China's rural northeast. This is the largest straw bale building initiative in the world. Since introducing straw bale construction to northern China in 1998, the program has worked with local communities, giving training to local construction teams and building over 600 (registered) energy efficient, earthquake-resistant, and culturally appropriate homes and schools using straw and other local building materials. In this extremely cold environment, villagers can take advantage of straw's amazing insulative qualities. Homeowners of straw houses will burn an average of three tons (75 percent) less coal per year to heat versus the mainstream red brick alternative.

Rice turns out to be an incredibly elegant and useful natural material. First, the rice grain can be eaten. Second, the rice husk can be burned as bio-fuel to produce heat and/or electricity. Next, the husk ash can be used to offset cement and reduce the total embodied energy of concrete, of which China is the world's largest producer.¹³ After replacing a large portion of cement with the ash from its burnt husk—reducing the need for the energy-intensive product—the remaining shafts of straw, typically an agricultural waste product, can be baled into blocks of dense insulation for ADRA's homes!

ADRA has been careful to design homes that look like modern red brick structures. Villagers were hesitant at first but word has spread and people now prefer buildings made from straw over brick! This turns out to make good environmental sense as over its lifetime, the straw bale version of a typical rural Chinese home will produce over 300 tons less greenhouse gas. Unfortunately, with the high price of steel, straw-baling equipment is in short supply. ADRA and the provincial government have partnered to launch a new program providing training and straw balers to local construction companies. The project investment yields an impressive one ton of greenhouse gas mitigation per \$1 spent. Ensuring 25 percent of the annual 150,000 homes that need to be replaced each year in Heilongjiang Province are made with straw bale could reduce greenhouse gas emissions by 11,250,000 tons, roughly the same amount attributed annually to 511,000 Americans.

BOUND AT THE HIP

Mr. Zhang, you are in Beijing and I am in California—although I share your excitement for China's growth, I also share your pollution. As your SuperBlock's central furnace burns coal to heat an apartment or a villager up north adds a coal briquette to her stove, portions of that coal smoke's fine particulates, sulfur dioxide, nitrogen oxides, and airborne mercury travel the long journey along air currents over the Pacific Ocean to end up in California and other parts of the United States. China is responsible for a quarter of U.S. airborne mercury, a quarter of the particulate matter above Los Angeles,¹⁴ up to a quarter of California's nitrogen oxide,¹⁵ and nearly a third of the state's smog-forming air pollution.¹⁶ Even more troubling, China's coal combustion is predicted to quadruple California's current levels of nitrogen oxides and volatile organic compounds in the next fifteen years.¹⁷

Geography and winds funnel pollution from the California coast into inland air basins. Comprising two-thirds of the Central Valley landmass, the bowl-shape topography of the San Joaquin Valley Air Basin provides a particularly ideal conduit for trans-Pacific air pollution. This does not bode well for my country's food supply, for California's agriculture industry is the world's fifth largest source of food and agricultural produce and California's Central Valley supplies a quarter of food to the United States. While China's atmospheric pollution has doubled in the past ten years, Chinese desertification and coal combustion is forecast to quadruple atmospheric pollution by 2020 in China as well as in the Central Valley.¹⁸

Your environmental fate is tied to mine, Mr. Zhang. Coal is the source of 70 percent of China's energy¹⁹ and will be so for the foreseeable future. You use it to produce steel and cement, to generate electricity and to heat buildings—all of these are aspects of the urban environment. The World Bank estimates that between now and 2015, roughly half of the world's new building construction will take place in China—so let's work together promoting green buildings in China.

Sincerely,
Max Perelman

Max Perelman is the research director and co-producer of the Green Dragon Media Project, a documentary film and website identifying barriers and opportunities to expanding the Chinese green building movement.

He can be reached at maxgreendragon@gmail.com. For more information, see the following links:

- *The Film*: http://www.greendragonfilm.com/more_about.html
- *The Qingdao EcoBlock*: http://www.greendragonfilm.com/qingdao_ecoblock_project.html
- *Rural Chinese Straw Building*: <http://www.greendragonfilm.com/strawbale/index.php>

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SPOTLIGHT

Ensuring Clean Water for Communities in the Earthquake's Epicenter: A Child's Right Post-Disaster Relief Work in Sichuan

By Eric Stowe

China's devastating earthquake on 12 May 2008 claimed more than 80,000 lives and left more than 5 million people homeless and more than 4,000 children orphaned. Within days of the earthquake, the potential for outbreaks of widespread communicable diseases were of major concern to the Chinese Ministry of Health, the World Health Organization, and to countless NGOs en route to assist. Fortunately, the possibilities for outbreaks were mitigated, in large part by the efforts of multiple NGOs undertaking the task of focusing on provisions of food, clean water, and sanitation. However, the Chinese government was a focal contributor and primary catalyst in this push as well.

In the wake of the disaster, and remaining largely underreported, the Chinese government performed an outstanding job of transplanting the displaced communities from the countless tent cities which sprung up after the earthquake to safer and more manageable displacement "villages"—each one housing between 500 to as many as 10,000 people, and each with multiple kitchens, toilets, electricity, and running water. The larger sites house security staff, as well as maintenance crews to keep the "villages" functioning and cleaning crews to keep the sites relatively hygienic. The swift action by the Chinese government in reconnecting nearly 5,000,000 people with basic services in less than three months time was impressive by every measure; it is somewhat disheartening that our own natural disaster in Louisiana has still not seen the level of attentiveness comparable to the Chinese government's in the three years post-Hurricane Katrina.

Several corporations and organizations saw provisions of clean water for the displaced communities as imperative for the long-term health of those populations. Although most displacement camps had running water, the biological contaminants from breaches in the municipal grid were quite high. General Electric, Siemens, and

Everpure were but a few of the companies that donated clean water systems to the local government in Sichuan.

Our organization—A Child's Right (ACR)—has been working in China for several years with the goal of providing every orphanage in the country with purified water, through means of purification equipment, which we install, monitor, and maintain. After the earthquake, a sub-branch of the Ministry of Civil Affairs asked if we could help regarding water systems in the displacement villages. With tremendous speed we saw significant donations of equipment, money to fund the project, U.S. State Department assistance to get our equipment into the country, as well as Chinese governmental approvals for us to work directly in the epicenter.

ACR worked with the Chinese government both nationally and provincially in the most damaged areas to provide clean and safe drinking water to families and children impacted by the earthquake. Through our project, ACR installed 30 clean water systems in 10 schools for children displaced by the earthquake, 9 displacement camps, and 1 hospital. All sites were equipped with replacement parts and supplies to keep the systems fully operational for several years; this is important given rebuilding efforts will take quite some time, leaving many in the displacement camps for years before being relocated.

The majority of our work focused within miles of the earthquake's epicenter, and each installation provided water to more than 1,500 people on average. With this undertaking, we were able to provide clean and safe drinking water to more than 50,000 people who severely impacted by the earthquake—30,000 of which were children. We were informed this was the single largest water purification donation of its kind from any organization after the earthquake!

With direction from local government, hiring of local engineers and plumbers, assistance from our own China staff, and additional help from A.J. Antunes Filtration Technologies staff, ACR was



Children tasting the water after treatment for a site with more than 3,000 people. Photo Credit: Eric Stowe

able to install systems in sites with the greatest need for high-impact and sustainable water purification methods. As each site will be in operation for at least three to five years, our national staff and regional contracted employees will provide consistent maintenance and support for each system to ensure success and sustainability at every site.

In our years working in China we have experienced delays, as is common dealing with any government in navigating the bureaucratic chains. On this project, however, the national government, by way of the Ministry of Civil Affairs and the China Association of Social Work, the local government in Sichuan, as well as Civil Affairs Bureau, Water Resources Department, Construction Bureau, Office of Disaster Relief Management, and several local magistrates, assisted extensively and quickly with site designation and proper approvals to install our systems. These agencies also quickly coordinated our work amongst the displaced commu-

nities and schools, and continue working with us in monitoring the efficacy of the purification units post-installation.

It has been six months since our work was completed. In that time, the filled-to-capacity displacement camps and schools are being rebuilt, though lives are still far from normal in the region. Local water officials tested several of our systems and found each still provides high-quality water. It is a small offering at best for the communities affected by the earthquake. However, the charitable, philanthropic, and cross-agency partnerships that arose from this event will hopefully be fostered within China and continue to offer substantive and sustainable conduits for change and assistance in the future.

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