Article

Increasing Environmental Performance in a Context of Low Governmental Enforcement: Evidence From China

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Abstract

How can activists and policy makers encourage better environmental behavior in a context of poor governmental enforcement? This article examines the case of the Institute of Public & Environmental Affairs, a Chinese nonprofit organization, to show how a transparency-based platform can encourage brand-sensitive multinational corporations, their suppliers, their investors, local governments, and consumers to behave in more environmentally responsible ways, even in a context of low governmental enforcement. Using Institute of Public & Environmental Affairs as its model, this article argues that a transparency-based platform can serve an important coordinating function across multiple sectors, creating a mechanism through which market forces are channeled in pro-environmental ways. Transparency-based platforms can help develop new norms about public disclosure, corporate governance, and consumer responsibility, but they only function in places with sufficient state monitoring capacity, adequate legal protections, and in markets where local firms are vulnerable to external financial pressure.

Keywords

environment, China, pollution, corporate social responsibility, supply chains, environmental governance, transparency

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Three decades ago, Deng Xiaoping introduced market reforms into post-Mao China, and the results have led to the greatest reduction in poverty in human history (S. Chen & Ravallion, 2010). The rapid expanse of industry also resulted in an environmental crises that threatens the ecology and livability of the entire planet (Woodrow Wilson Center China Environment Series 10 and 11). Turning the tide on an increasingly rapid race to the bottom is not easy, but the Beijing-based Institute of Public & Environmental Affairs (IPE) has made a start. They have created a transparency-based platform that makes governmental data about the environment more accessible to the public, and the data are integrated into a change management tool, making it easy for multinational corporations (MNC) (or banks, or investors, or nonprofit organizations) to check whether a supplier is in compliance. Additionally, through the Green Choice Alliance (GCA), a group of more than 50 nongovernmental organizations (NGOs), local companies can receive third-party audits and obtain concrete advice on how to clean up their facilities as well as publicize their pro-environmental efforts. Between IPE's founding in 2006 and October 2014, nearly 1,000 companies have communicated with the organization in an effort to provide explanations about their violations, to disclose corrective action plans, and to provide follow-up documentation.[1]

This article asks, "How can activists and policy makers encourage better environmental behavior in a context of poor governmental enforcement?" This question lies at the center of many of environmental policy challenges around the world, especially in developing countries. Drawing on IPE as an illustrative example, this article argues that a transparency-based platform can serve an important coordinating function, creating a mechanism that channels market forces in pro-environmental ways. The argument here is not that a transparency-based platform can serve as a replacement for government regulation and enforcement, but rather that it can offer an important low-cost supplement to those efforts, one that can improve environmental governance and outcomes even in the absence of legal changes or additional public spending. Because the transparency-based platform requires a predictable legal environment, the cooperation of many different actors, and is vulnerable to deception, it is necessarily imperfect even when operating well, although it can offer a significant improvement over the status quo in contexts with low governmental enforcement of environmental regulations.

The article begins with a brief overview of the literature and then discusses how a transparency-based platform can help channel market incentives in ways that encourage companies to comply with environmental regulations even in the absence of adequate government enforcement. It will then provide a short history of environmental policy in China and a short description of IPE's history and organizational structure to illustrate how a transparency-based platform works in practice. The article concludes with a discussion of the limitations of a transparency-based platform for promoting better environmental outcomes.

Cross-Sector Collaboration on the Environment

It has become widely acknowledged that governing the environment cannot be accomplished solely through governmental regulation and instead requires cooperation among numerous stakeholders across multiple sectors (Gunningham, Kagan, & Thornton, 2003; Vig & Kraft, 2013). Usually, this collaboration takes place in a context of public–private partnerships that combine government regulation with voluntary private sector initiatives (Cashore, Auld & Newsom, 2004; Eisner, 2006). Many scholars studying cross-sector collaborations focus on particular dyads—nonprofit-business, business-government, or nonprofit-government. These scholars examine how the interests and capacities of each actor/sector can be improved through cooperation with one other actor/sector. Much of this research focuses on the structure of the relationship between the two parties or the process of building successful alliances across two different sectors (Bryson, Crosby, & Stone, 2006; Jamali & Keshihian, 2009; Jiang, 2009). While they can explain the dyadic interactions well, the models have difficulty when the interactions occur across multiple sectors and involve more complex and multifaceted relationships.

Another group of scholars focuses less on particular sectors and more on environmental governance networks that incorporate multiple actors and sectors (Busch, Jörgens, & Tews, 2005; Kirk, Nabatchi, & Balogh, 2011; Tiberghien, 2006). David Detomasi (2007) writes that effective governance has four important characteristics: (a) legitimacy, (b) accountability, (c) capacity, and (d) enforcement. These foundational elements require an institutional structure that can largely be found only in highly developed democratic capitalist economies or in issue areas with very limited scope (e.g., management of one local watershed). Unfortunately, in many places, the lack of legitimacy, accountability, capacity, and enforcement is often at the root of the environmental problem itself (Adeola, 2000; Hager & Haddad, in press; Litzinger, 2007; Van Rooij, 2006).

More recent literature discusses environmental governance in broader terms, acknowledging that forms of governance, particularly governance of environmental behavior related to global supply chains, can take more informal forms through networks that connect state, market, and civil society actors together (Boström & Karlsson 2013; Young, 2009). One mechanism for facilitating the interaction of multiple stakeholders involved in environmental concerns is public disclosure, where private information (e.g., financial information, emissions data, and product or facility safety records) is made available to the public. Public disclosure has increasingly become mandated by public policy. In their comprehensive book on the subject, *Full Disclosure* (2007), Archon Fung, Mary Graham, and David Weil report on the research of Harvard University's Transparency Policy Project (www.transparencypolicy.net). The book traces the history of disclosure policy from the early stages of "right to know"

policy, through the current "targeted transparency" policies that target certain kinds of information from certain actors, into third-generation "collaborative transparency," where most data are customizable, interactive, and user generated. They also develop what have become the definitive criteria for evaluating transparency policy (Mitchell, 2011; Tan, 2014). As will be discussed at greater length in the following, China's current policies meet the first four criteria that Fung et al. argue are necessary for good transparency policy: a specific policy purpose, specific discloser targets, a defined scope of information, and defined information structure and vehicle. However, China is lacking a key fifth characteristic: an effective enforcement mechanism (Economy, 2004; Ferris & Zhang, 2005; McElwee, 2011; Ran, 2013; Van Rooij, 2006; World Bank, 2007).

One way that environmental stakeholders get around the lack of an enforcement mechanism is through international certifications that offer third-party verification of compliance with environmental objectives; examples include ISO 14001, Forest Stewardship Council, Marine Stewardship Council, and other organizations that create "green clubs" offering marketing and brand-name benefits for participating organizations (Potoski & Prakash, 2005). Indeed, there is evidence that participating in these kinds of certification programs can increase a country's foreign aid (Prakash & Potoski, 2007) and a firm's attractiveness as a supplier to a multinational corporation (Jiang, 2009). Not surprisingly, Chinese firms have among the highest 14001 certification rates in the world (ISO 2013 Survey, www.iso.org/iso/iso-survey_2013.zip).

Green certification programs offer positive benefits to those who participate, but they do not create sanctions against those who do not. Thus, while many Chinese firms are taking advantage of these programs and improving their environmental performance, many, many more are not participating, and it is these firms who are damaging the air, water, and soil beyond repair. The emissions of these firms are monitored and made public by the Chinese government, but without sanctions firms continue to pollute. This problem is not limited to China. In their study of the Toxics Release Inventory in the United States, in which facilities have been publically reporting their release of certain toxins since the mid-1980s, Kraft, Stephan, and Abel (2011) found that while many firms participating in the Toxics Release Inventory improved their overall environmental performance, a subset of companies made no improvement or even regressed.

A Transparency-Based Platform to Encourage Environmental Compliance

Because "naming and shaming" alone is not sufficient to induce many polluters to become environmentally responsible, the challenge for environmental stakeholders is to find ways to provide companies both positive incentives for improvement and negative consequences for laggards (Agrawal & Lemos,

2007; Eisner, 2006; Fasterling, 2012; Gunningham et al., 2003; Pawson, 2002; Vurro, Russo, & Perrini, 2009). I argue here that a transparency-based platform, like the one built by IPE in China, can create a mechanism that channels market forces in environmentally positive ways by integrating environmental performance into global supply chain systems.

At the base of the system are local manufacturing facilities that are producing products and components that are purchased by MNCs to be sold to a global market. These firms have social incentives to be better environmental stewards because their workers and local management all live close to the facility that is producing the pollution. Unfortunately, these social incentives are often overpowered by market incentives that prioritize economic profit. Market pressure is particularly intense in developing countries where workers and firms are struggling to stay above subsistence (Dasgupta, Laplante, Wang, & Wheeler, 2002; Rodrigues, 2003; Steinberg, 2003). Local producers are the key environmental actors in the system discussed here: The main goal of the transparency-based platform is to achieve pro-environmental behavior change by these actors. It is likely that the worst polluters will also have the least capacity to improve (Agrawal & Lemos, 2007). A well-constructed transparency-based platform will create an incentive for these firms to improve their environmental performance and also connect them to organizations that can supply the technical assistance needed to develop and execute their improvement plan.

The second most significant actor in the system is the national government governing the local manufacturers. Its citizens are the primary victims of local pollution (although the cumulative effects of local pollution have global consequences). The national government has moral, social, and political incentives to promote a healthier environment for its citizens because if problems become significant enough, citizens will become politically active and possibly violent (Haddad, 2014; Hendrix & Salehyan, 2012; Schreurs, 2002).

Unfortunately, the incentives for the national government to prioritize economic growth over environmental performance are intense. Producer groups prioritizing profits, political interests connected to polluting industries, and citizens demanding economic development combine to generate strong political pressure toward business and against environmental interests (Eisner, 2006; Vig & Kraft, 2013). In balancing the complex needs of citizens, communities, businesses, and other interest groups, national governments create environmental policies that set acceptable levels of pollution, mandate certain technologies, require corporations to subject themselves to governmental inspection and disclose certain information, and establish fines and other sanctions for violating environmental regulations. In the system described here, the government has three functions: (a) establish regulations, (b) monitor firm performance, and (c) disclose the environmental data to the public.

If the government efficiently performs a fourth function: (d) effective enforcement that ensures that nearly all firms comply with environmental regulations,

then a transparency-based platform will not be needed. The purpose of a transparency-based platform is to create a mechanism through which market forces are used to generate incentives for firms to comply with local regulations even if government enforcement is low. The platform generates market-based incentives because firms that comply with environmental regulations are rewarded with lucrative contracts with MNCs and funding from banks and investors, while firms that do not comply will have their access to those financial resources diminished. In other words, it combines the benefits of the "green club" goods generated by international certification regimes with a sanctioning mechanism to punish nonmember firms. As in the case of green clubs, behavior change by firms will occur only in cases where the profit generated by compliance/joining exceeds the price paid by noncompliance.

A third key group of actors in this system are multinational corporations and financial institutions. Although they do not have any legal authority to sanction violating companies, MNCs can use the application of financial pressure to motivate compliance with government regulations. A multinational corporation that is the chief buyer of a local company's products is in a far more powerful position to exert influence over that company than a local government official who is dependent on the company's tax revenue, production targets, and political patronage in order to get promoted (Golding, 2011). Many companies have no incentive to improve the environmental quality of their supply chain; their only concern is to raise profits. However, many multinational companies that have globally recognized brands are finding that it is in their strong commercial (and moral) interest to reduce energy use, water consumption, and pollution in their factories. Conservation of resources and waste reduction saves large companies millions of dollars and enhances the power of their global brands (Cheung, 2011; Willard, 2012).

The calculations of multinational corporate executives are complex, involving not only profit but also recruitment and retention of employees, relations with communities in which factories are cited, supply chain reliability and flexibility, and disaster management. Consumers are now demanding that top brands and their suppliers exceed minimal governmental standards and be more transparent in order to demonstrate that they are behaving in a socially and environmentally responsible manner. It is a higher standard, and many of the top global companies have risen to this challenge, bringing much of their competition up along with them (Jamali & Keshihian, 2009). In the system described here, the role of the MNC is to provide the incentive structure for local firms to improve their environmental performance: Firms that comply with environmental regulations and make positive efforts to improve their environmental performance are rewarded with MNC contracts; firms that do not comply and do not make efforts to improve their environmental performance are sanctioned through the loss of contracts and revenue. Essentially, the MNCs take up the enforcer role abdicated by the government.

In addition to multinational corporations, financial institutions can also use a transparency-based platform to exert pro-environmental market pressure on polluting firms. If financial actors—banks, financial institutions, and individual investors—use the transparency-based platform to make choices about lending and investments, they too can create market incentives that encourage local firms to comply with environmental regulations (Aizawa & Yang, 2010; Tan, 2014).

The transparency-based platform is created by an NGO performing three functions. First, it makes the governmental data, which is often difficult to access and manipulate, easily accessible to the commercial actors who wish to use the data to make purchasing and investment decisions. Second, it helps the media, other NGOs, academics, and the public to access and understand the data. Reports, short videos, and press kits can give life and meaning to the dry and voluminous data. Watching a fisherman trying to traverse a river that runs black (or orange or green) with toxic waste and hearing the voice of a twisted toddler damaged by toxins engage people's emotions and motivate them to action. Adding case studies and visual images to data analysis generates information accessible to the media and the public, who are ultimately the ones that pressure the commercial actors to care about the environment (Haddad, 2012; Litzinger, 2007; Miller, 2002).

Third, the NGO also connects polluting firms to resources that can help them assess what needs to be done, create an environmental action plan, and ultimately carry out their those plans. Unlike advocacy NGOs, who are primarily interested in applying pressure to political actors and firms (Bosso, 2005; Dalton, 1994; Onyx et al., 2010; Switzer, 2003), NGOs building a transparency-based platform perform the dual role of advocate and service provider. If they do not provide the environmental auditing services themselves, they actively support the process of matching interested firms with auditing and consulting organizations that can help them address their environmental problems. The goal of the platform-NGO is not just to apply pressure but also to facilitate improvement.

The final important actors in the system are consumers. Consumers must offer the market incentives for all of the other actors in the system to value environmental performance. There is rising evidence that many consumers respond positively to signals that highlight positive environmental performance (Esty & Winston, 2009; Mitchell, 2011) and negatively to evidence that brands or products are not environmentally friendly (Hollenbeck & Zinkhan, 2006; Roberts & Engardio, 2006). If consumers buy products and support brands with good environmental records and avoid products and brands with poor records, then they generate market forces that can work in pro-environmental ways.

Most consumers do not get their information directly from governments, firms, or NGOs but rather from an increasingly wide array of media sources. The speed at which the messages get relayed makes them powerful forces to

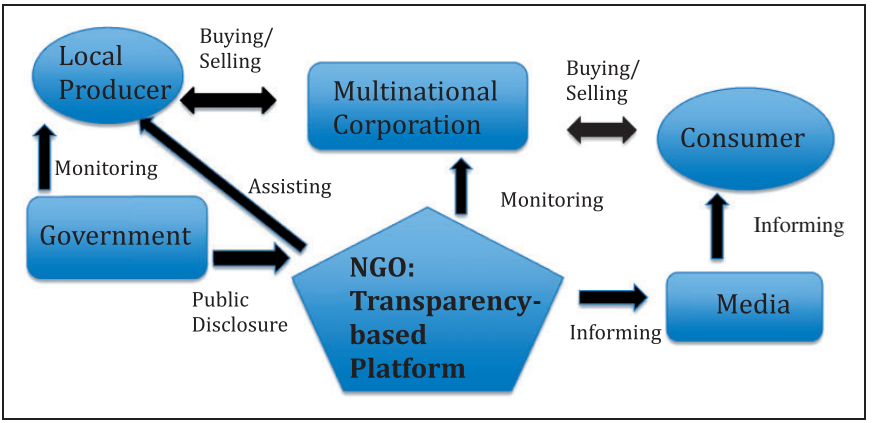

Figure 1. Transparency-based platform for better environmental performance.
Note. NGO = nongovernmental organization.

which even nondemocratic actors such as multinational corporations and authoritarian states respond (Hollenbeck & Zinkhan, 2006; Lagerkvist, 2012; Qiang, 2008; Yang, 2009). Therefore, media actors—newspapers, magazines, press clubs, journalists—are also critically important to the ability of a transparency-produced platform to generate positive environmental behavior change.

The transparency-based platform developed here helps to specify how the multiple types of actors interact in ways that can generate pro-environmental outcomes even in a context of low governmental enforcement. It contributes to our understanding of cross-sector collaborations by specifying a structure that can generate positive incentives for multiple actors from different sectors. It contributes to our understanding of transparency by clarifying how actors are affected by the creation of a transparency-based platform and explaining the ways that incentive structures are altered by the development of that platform. The specific relationships among actors are specified in Figure 1.

Illustrating a Transparency-Based Platform in China: IPE

Although China has a long history of philosophical and religious traditions related to nature and the environment (Tu, 1998), environmental policy did not feature prominently in Chinese politics until Mao, and then it was largely as antienvironmental policy. Judith Shapiro (2001) argues that Mao's policies were not just pro-industrialization, but that they collectively amounted to a "war against nature." When Deng Xiaoping succeeded Mao, he ceased to target the environment specifically as antimodern, but the economic development that

took off under his rule had similarly negative effects on air, water, and soil quality across the country (Carter & Mol, 2008; Economy, 2004; Xie, 2009).

By the late 1980s, market reforms that had begun as experiments in special economic zones had been expanded to include much of the country. As industrialization spread, so did pollution levels. The scope and intensity of China's pollution has now reached catastrophic levels: Even according to official government statistics put out by China's Ministry of Environmental Protection, in 2011, only 10% of China's urban areas had groundwater that met Grade I standards, and a majority (55%) had water that was unfit for human consumption (Chinese Ministry of Environmental Protection, 2013, http://english.mep.gov.cn/standards_reports/soe/soe2011/201307/t20130715_255508.htm). China's air quality is also very poor; NOx emissions more than doubled between 1995 and 2010, rising from 11 to 26 Mt in 15 years (Zhao et al., 2013). The problem is particularly intense in the north. One recent estimate found that northern Chinese are inhaling air that has 55% higher levels of particular matter than their southern counterparts, resulting in a life expectancy that is 5.5 years shorter (Y. Chen, Ebenstein, Greenstone, & Li, 2013, p. 1).

The rising levels of environmental pollution are not because China lacks environmental policy. In recent years, it has greatly expanded the legal regulatory framework related to environmental issues. In 1998, the National Environmental Protection Agency was elevated to ministry status, becoming the State Environmental Protection Administration, and it was renamed again as the Ministry of Environmental Protection (MEP) in 2008. China has amended all of its most important environmental pollution laws in recent years; it has also adopted or amended laws related to the protection of forests, grasslands, and fisheries. Local provinces and municipalities as well have begun establishing more stringent regulations related to environmental pollution in their areas. By the late 2000s, China had joined 48 international conventions on environmental protection (Ferris & Zhang, 2005; Wang, 2007).

With this significant progress in developing its environmental policy, it is now generally recognized that the main problem in China is not a lack of environmental regulation but rather that those regulations are not sufficiently enforced. There are many reasons why the enforcement breaks down, but the crux of the implementation gap lies in the incentives of local governments and local cadres. Across the country, MEP and local Environmental Protection Bureaus (EPBs) are underfunded and understaffed both in terms of their strength relative to other ministries as well as in terms of the scale of the problems they are trying to address. Furthermore, the limited resources that are given to EPBs often come from local governments, which frequently privilege economic growth agendas over environmental performance. For local officials and businesses, the incentive structure continues to privilege economic growth over environmental goals, and the political system as a whole discourages citizen political activism (Ho & Edmonds, 2007; Kostka & Mol, 2013; Lorentzen, Landry, & Yasuda,

2014; McElwee, 2011; Wang, 2007). These difficulties with enforcement have compounded problems of compliance, which is why the environmental crisis in China has continued to grow in size and intensity even while the regulatory structure has improved.

In order to combat the rising environmental problems he saw in China, Ma Jun founded the IPE in 2006. Ma Jun began his career as a newspaper reporter for the *South China Morning Post*, and in 1999, he wrote *China's Water Crisis* (1999), which has been likened to Rachel Carson's *Silent Spring* for the way that it raised public awareness of China's environmental problems. In 2004, he spent a year at Yale University as part of their World Fellows program developing his vision of a nonprofit organization that would bring more transparency to China's environmental problems and develop a multistakeholder platform that would encourage collaborative improvement. His concept was deceptively simple: Create a user-friendly website that made official government data about pollution readily available to the public. In 2006, with a staff of three people, he incorporated the Beijing-based IPE as a nonprofit organization under the MEP in 2006 and launched its public Web site (ipe.org.cn), which included the China Water Pollution Map.

The IPE's activities soon expanded to include air and solid waste pollution maps, which allow users to click on any part of China and find out the level of various kinds of pollutants in that area as well as their source. With these data, IPE lists those companies that have pollution violations, highlighting companies with the worst pollution records, and making it possible for buyers, investors, the public, and local regulators to put additional pressure on those companies to clean up their facilities. The map and Ma Jun's efforts won him immediate global and local recognition, including being named Green China Man of the Year as well as one of the 100 most influential people by Time Magazine in 2006.

While the pollution map began the process, the truly innovative aspect of IPE is the way that it has integrated its data with a change management tool. IPE's pollution data contain the government inspection records of individual facilities, so one can search the database by company name and find out whether that company has met or violated China's environmental regulations, and use that information to track changes over time. The database now contains more than 130,000 inspection records, as well as additional information from companies seeking to explain their environmental records as well as their plans for remediation.[2]

Among the first groups to see the potential of this new tool were global corporations who already had commitments to greening their supply chains but were having difficulty finding ways to monitor their suppliers in China. One of the earliest multinational corporations to approach IPE was Wal-Mart. In 2005, the global retail giant made sustainability one of its corporate goals, and it was interested in using IPE's database to ascertain whether its

suppliers were complying with local environmental regulations. Other MNCs quickly followed suit, and companies such as General Electric, Levi, Nike, Unilever, Coca Cola, and others are now working closely with IPE to check whether their suppliers are violating Chinese environmental standards and offer suppliers advice on how to clean up their facilities (M. Jun, personal communication, 2011; Tan, 2014).

As corporate interest in cooperating with IPE to help manage supply chains grew, it became apparent that IPE, with its tiny staff in Beijing, would not be able to meet the demand for third-party audits by itself. Therefore, in 2007, it initiated the GCA, a coalition of NGOs who would partner with IPE in providing information, supervising third-party audits, and reviewing audit reports. Over the next few years, the number of NGOs in the GCA grew from the original 21 in 2007 to more than 50 by 2014. The GCA also serves important cross-checking, burden sharing, and transparency purposes because approval of all GCA members is required for company records to be removed from "violator" lists.

Third-party audits are important but not a perfect fix to the problem of environmental violations. Deception related to environmental audits is a serious problem in China. In fact, in recent years, specialty consulting firms have been formed to help suppliers find ways to pass inspections and audits without having to address their violations (Roberts & Engardio, 2006). Although it is nearly impossible to guarantee that no cheating occurs, the GCA model that involves so many parties and creates a collaborative process oriented toward improvement rather than punishment, helping to mitigate the risks of cheating. By allowing suppliers to post additional documentation to the IPE website, incremental improvement is recognized (Jiang, 2009). IPE reports also frequently highlight examples of "best practices," documenting and publicizing stories of how violating companies have been able to find creative ways to address their environmental problems.

By 2007, IPE had successfully created a transparency-based platform, but Ma Jun soon noticed that many of the most highly polluting industries were still polluting. Therefore, starting in 2010, IPE and partner NGOs began a campaign to put more pressure on polluting companies. They found that the information technology (IT) industry was largely responsible for heavy metal pollution, which is one of the very worst forms of pollution from a human health standpoint. Strategically, targeting this industry was politically useful because it supported a national government effort to curb these pollutants (e.g., lead and cadmium), which had led to a number of mass incidents in 2009 and were taking a very heavy toll on China's public health, food security, and agricultural sector (Friends of Nature, Institute of Public & Environmental Affairs, & Green Beagle, 2010, p. 1). Furthermore, many of the highly polluting factories were supplying MNCs that had international brands to protect, making those buyers more vulnerable to consumer pressure.

IPE's first report on the industry outlined the negative consequences of heavy metal pollution and discussed industry's poor responsiveness to initial NGO inquiries. The report highlighted the good behavior of the most responsive companies, while also making clear which companies had been unresponsive (20 of the 29 companies did not respond; Friends of Nature et al., 2010). The first IT report was published in April 2010, and three subsequent reports were published quarterly thereafter. They were highly effective. By the fourth report nearly every IT firm had responded to IPE's request for information, and all of the companies were ranked on six criteria having to do with responsiveness (e.g., did the company reply to the NGO letter of inquiry) and an additional four criteria that included action plans for suppliers (e.g., does the company conduct checks on supplier violation cases; Friends of Nature, Institute of Public & Environmental Affairs, & Green Beagle, 2011, p. 28).

By that time of the fourth report in January 2011, only one of the 29 IT companies had still not been responsive to IPE's inquires about its supply chain: Apple. The NGO's campaign shifted its focus to target that industry leader, publishing "The Other Side of Apple" in January 2011 (Friends of Nature et al., 2011). The campaign included a compelling web video clip that was circulated widely across the Internet, and the report received extensive global media coverage immediately after it was launched (Adams, 2012). Pressure was intensified by a follow-up report in August that focused extensively on environmental problems caused by Apple suppliers and Apple's persistent avoidance of responsibility (Friends of Nature et al., 2011). The campaign worked to activate numerous stakeholders to pressure Apple to disclose more information about their supply chain and work harder to green it (Friends of Nature, The Institute of Public & Environmental Affairs, Envirofriends, Nature University, & Nanjing Greenstone, 2013, p. 5) and was supported by activism from other organizations such as Greenpeace, Change.org, as well as extensive international press coverage.

After years of evasion, Apple executives met with Ma Jun in September 2011, and by January 2012, Apple began to disclose its suppliers in China and take concrete steps to engage in better supply chain management in China. In keeping with its policy of focusing on improvement and rewarding incremental change, the following IPE report on the IT industry was titled "Apple Opens Up" and highlighted three major Apple suppliers that had been committing serious environmental violations and documented the ways that they were moving to improve their practices (Friends of Nature et al., 2013).

In addition to working with MNCs, IPE is also working to encourage other financial actors—banks, investing houses, corporate investors, and individuals—to use their transparency-based platform to inform their investment decisions. Since 2007, the Chinese government has instituted a Green Credit policy that requires that companies seeking loans from the People's Bank of China demonstrate compliance with environmental regulations (Aizawa & Yang, 2010;

Cheung, 2011). In 2014, IPE and the Natural Resources Defense Council created a Corporate Information Transparency Index designed to make it easier for investors to access environmental data and use it when making investment decisions. The initial Corporate Information Transparency Index report included an assessment of 147 global brands. Unlike previous reports, which only targeted foreign-owned MNCs, this report included several Chinese firms (Institute of Public & Environmental Affairs & Natural Resources Defense Council, 2014). As MNCs and financial institutions increase their use of IPE's transparency-based platform, they contribute to the development of pro-environmental market incentives for producing firms.

What Makes a Transparency-Based Platform Effective?

This section argues that three characteristics are key to transparency-based platform efficacy: (a) relying exclusively on publically available government data; (b) oriented toward improving business' environmental performance, not shutting them down; (c) creating a platform from which many additional initiatives can grow, enabling expansion and the creation of informal governance structures beyond the initial platform. Together, these three characteristics create a political, social, and commercial context that encourages cooperation among government, NGOs, and business in ways that promote positive environmental outcomes even in the absence of additional legal or regulatory changes.

It cannot be denied that there are serious problems with the reliability of Chinese government statistics (Chow, 2006; Ghanem & Zhang, 2014), and there are several major efforts to generate more reliable data about pollution in China. One of these is the Harvard China Project, which is generating pollution information from satellite data and on-the-ground independent measurements by scientific experts. Greenpeace China also engages in independent research on specific pollution issues and then publishes its reports, releasing much of its data to the public. The U.S. Department of State has long made its emissions data available to U.S. embassy staff, and now anyone can now get real-time air quality readings on their smartphones using the China Air Quality Index App. Although these efforts to gather independent environmental data in China are expanding, none of them offers facility-specific data, nor can their data be as comprehensive as official government monitoring data.

Beyond its comprehensive scope, relying on government data offers a number of important political benefits, namely legitimacy among stakeholders and political protection. NGOs often have difficulties with legitimacy among the stakeholders that they are trying to reach (Arenas, Lozano, & Albareda, 2009). This view is particularly true in China where the nonprofit sector is still relatively new and only just beginning to be professionalized (Yang, 2005). By relying exclusively on governmental data, the NGO is able to avoid accusations that it might be "doctoring the data," as it is not acting as a decision maker with respect to the

types of inspections undertaken or data released. Although relying on government data might be delegitimizing in some contexts (e.g., in Japan after the Fukushima nuclear disaster; Aldrich, 2012) in contemporary China, the government is still seen by the public as a reliable data provider (Xie, 2009).

A second and perhaps even more important benefit of relying exclusively on publically available government data is that it offers political protection for the NGO against businesses that feel unfairly targeted. If a business calls IPE to complain that the numbers listed in the database are not correct, IPE can legitimately respond that they are just using the official government numbers, so all inquiries related to the data should be directed toward the appropriate government agency. Furthermore, the process through which an identified polluter can get their records moved from the "violator" list to the "complying" list requires unanimous approval of all the NGOs in the GCA. Therefore, it is usually easier for the polluter to fix the problem than to bully/bribe all of the relevant organizations. IPE further insulates itself from political pressure by refusing all corporate funding and relying on private donations and grants for financial support.

Finally, relying on publically available government data offers useful political support to pro-environment actors inside the government. While many in the Chinese government aspire for better environmental outcomes, the incentives for local cadres favor economic growth over environmental compliance (Golding, 2011; Kostka & Mol, 2013). Relying on government data, and encouraging other NGOs and businesses to do the same, helps support hardworking public servants who are trying valiantly to improve environmental outcomes but whom are often hindered from being effective because of financial or political constraints. Raising the visibility and importance of their work contributes to their status inside the Chinese government and helps support these allies as they struggle to transform policy making from the inside (Mertha, 2009).

Another key factor contributing to the success of a transparency-based platform is that it is oriented toward helping businesses succeed, not fail. IPE's strategies are aimed at helping companies improve environmental practices, not shutting them down. In its consultations with the MNCs, it urges them to give violating companies a chance to improve and to work with suppliers to clean up their manufacturing processes. This practice is in line with the interests of the multinational because it is often difficult and costly to find a reliable new supplier. Local manufacturers also often would prefer to use less polluting production methods but lack either the technical capacity to improve or the economic incentive to do so, or both.

Perhaps the most important element for success is that the transparency-based platform creates a foundation on which others can build and offers a model that can be used by a variety of actors. For example, building on the idea that financial backers can pressure violators to comply with regulations, the local EPB in the municipality of Ningbo sends its findings about local

environmental violations not just to the MEP and the violating company but also to the People's Bank of China (Tan, 2014, p. 50).

On the other side of the world, large IT purchasers, such as universities, can use IPE's information to begin conversations about green supply chains with their vendors. For example, after a visit by Ma Jun to Wesleyan University in fall of 2011, we began integrating green supply chain management into our campus IT purchasing decisions. Initial interactions have been positive so far. To quote our senior IT staff member who negotiates large IT purchases,

> I referenced the Green Choice Alliance (GCA) site when talking to a vendor for the first time last week. I mentioned that we would be factoring in supply chain records when making purchasing decisions, and they were confident that they had no issues. I brought up the GCA site, which showed them having a neutral rating. The effect was extraordinary. The vendor's representatives were confident that any issues were solely related to communication between them and the GCA, but they seemed very motivated to straighten it out so they would have a positive rating. We'll see. It was all very non-confrontational. They seemed genuinely concerned about their company's environmental record and wanted to do whatever they could to preserve/improve it.[3]

Conclusion

This article has taken the example of IPE to demonstrate how a transparency-based platform can contribute to promoting better environmental performance even in a context of low governmental enforcement. While the platform itself cannot solve any environmental problems, it helps create a mechanism that enables the coordination of multiple government, corporate, and NGO actors in ways that create positive market, social, and political incentives for better environmental behavior. This concluding section outlines the main strengths and limitations of the model.

The main strengths of a transparency-based platform are that it creates an incentive structure for win–win outcomes for actors that might otherwise prefer to pollute. Governments (local and national) can enhance their legitimacy by demonstrating that they are responsive to citizen concerns about pollution. Large MNCs can build brand loyalty, reduce labor and environmental liability, and improve market share. Local firms can gain valuable MNC contracts and protect their workers. The transparency-based platform can also help actors who are already interested in improving the environment, such as NGOs, consumers, and workers, by giving them information that enables them to make better choices as consumers and supports multiple forms of additional advocacy.

A transparency-based platform for environmental data is not a panacea for solving all environmental problems. While it is scalable and can contribute to the

improvement in the environment in the largest polluting countries, it will not work in many developing countries. This kind of platform is not possible if the government does not have sufficient capacity to gather detailed environmental data and make those data public. Similarly, it is not viable if there is insufficient rule of law—the builders and users of the platform must feel that their efforts will not result in incarceration, or worse, or they will not build or maintain the platform. Additionally, a transparency-based platform relies on the actions of large, powerful MNCs who have both the incentives and the resources to respond to consumer demands for better environmental performance. If global consumers are indifferent to the suffering of the people making their products, if they do not positively reward companies for making greener choices and punish companies for making poor environmental choices, then there will be little incentive for corporations, large or small, to improve their environmental behavior.

Finally, many of the world's worst polluters cannot be influenced by a transparency-based platform of pollution data that is aimed at MNCs with global brands. Power companies and trash incinerators are among the highest polluters around the globe, but they are usually operated by local government monopolies that are not subject to market competition. The mixed success of IPE's Pollution Information Transparency Index, which scores local governments in China on how well they have met transparency requirements set by the central government, suggests that a transparency-based platform will be an insufficient mechanism to encourage local utilities to improve environmental outcomes in the absence of greater economic or political incentives to do so (Lorentzen et al., 2014; Tan, 2014). Similarly, local factories that supply local companies are unlikely to change their behavior unless some additional factor, such as a widespread consumer advocacy, pressures them to make changes (Wu, 2013).

If the transparency-based platform can target the financial supporters of these facilities, then there may be some progress. Indeed, IPEs most recent report (published in August 2014) highlights wastewater treatment plants as having the highest rates of noncompliance and lists the stock codes for several of the largest companies (Gu Beibei, Liu, & Qingyan, 2014). If investors supporting these polluting public facilities can pressure the facilities to clean up, there could be dramatic improvements in environmental outcomes even among these nonmarket actors.

Although a transparency-based platform for environmental data cannot solve all pollution problems everywhere, in China it is contributing to the development of a new political, social, and commercial environment that encourages more environmentally responsible behavior. So far, most of China's environmental data fall into the category of second-generation "targeted transparency," which relies on government-generated data, although as technology develops individuals are gaining increasing access to data that is relevant to their lives. Since 2012, the China Air Quality Index app (formerly China Air Pollution

Index) has enabled individuals with smartphones to access real-time access air quality readings for more than 190 cities in China. In June 2014, IPE launched its own app, enabling individuals to see the pollution records of facilities near them (www.japantimes.co.jp/news/2014/06/10/asia-pacific/science-health-asia-pacific/china-group-launches-app-shame-polluters/#.VEa3pL5B3lc).

There is some evidence that third-generation "collaborative transparency," where data are customizable, interactive, and user generated (Fung, Graham & Weil, 2007), is beginning to be developed in China. In 2013, Kevin Gurney of Arizona State University launched the Ventus Project (http://ventus.project.asu.edu), which is collecting citizen-generated data about the location of power plants around the world, including China (Tollefson, 2013). Safecast.org, which was started as an effort to crowd-source radiation readings in post-Fukushima Japan, also has a handful of user-generated readings for China (http://safecast.org/tilemap/) IPE has also recently released an app that allows the public to report information about pollution including its location, a description of the pollution, and even photos (www.ipe.org.cn/PollutionMapApp_DownLoad.aspx).

One of the biggest benefits of transparency-based platforms for environmental data is that they need not be large in scale to create positive change. When one international company pressures one supplier in one town to clean up its factory, all of the men, women, and children working and living in that town benefit. So do the all of fish and the birds and the plants. So do all the consumers of the products made in that factory. When one university professor or one municipal official starts to spread the word about green supply chains and begin conversations that remind vender companies about their global environmental responsibilities, they are contributing to the development of a new kind of corporate culture. These efforts all contribute to new norms about public disclosure, corporate governance, and consumer responsibility. While these changes certainly fall short of a comprehensive global governance structure for the environment, they do provide the mechanisms that can help move toward such a governance structure and create positive change in the meantime.

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Notes

1. See the IPE Notice page for links to the communications: http://www.ipe.org.cn/en/about/notice.aspx.
2. For the searchable database, see http://www.ipe.org.cn/En/pollution/corporation.aspx (accessed February 25, 2013); for additional reports, see IPE Notices, http://www.ipe.org.cn/En/about/notice.aspx (accessed February 25, 2013).
3. For more about how to promote green supply chains at universities including video presentations and sample letters to vendors, see http://ecopurchasing.wesleyan.edu.

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