COMMENTARY

The Third Wave of China's Grassroots Environmental Movement: Regional Youth Environmental Organizations

By Wu Haoliang (Translated by Yan Baohua)

Chinese and international scholars and journalists have become increasingly interested in writing about China's expanding environmental movement, particularly focusing on registered and unregistered nongovernmental organizations (NGOs). China's NGOs have become more visible in recent years in their work to influence environmental policymaking, pushing for stricter enforcement of environmental impact assessments, and increasing the public's awareness of pollution and threats to biodiversity. In its first issue, the *China Environment Series* began focusing on China's fledgling NGOs, and in issue five highlighted what had been a relatively unknown second wave of green groups, namely the rapid growth of student environmental associations (SEAs) at universities across China.[1] This commentary calls attention to the third wave of China's environmental NGO movement—the development of regional youth environmental organizations (RYEOs, *diquxing qingnian huanbao zuzhi*). My years of work as an activist in one of the first RYEOs—Green Stone in Jiangsu Province—gives me a unique perspective on discussing the emergence and potential of RYEOs and how they reflect some important trends within the NGO movement in China.

In the 1990s, after the government extended political space to allow for NGO development, the early green groups were established by professionals (e.g., history professor Liang Congjie who founded Friends of Nature and sociologist Liao Xiaoyi who established Global Village Beijing). Since 2000, young people have begun creating NGOs, often after participating in SEAs at universities—Han Haisha and Green-Web are perhaps the most well-known NGOs created by recent university graduates. While RYEOs have been set up by young people and are affiliated with SEAs, they represent a very new organizational model for grassroots activism in China.

THE ROOTS OF RYEOS

The university students who joined the huge wave of SEAs in the 1990s were very enthusiastic about carrying out environmental awareness raising projects both on and off campus. Their passion helped make SEAs an important player in strengthening China's environmental movement. RYEOs sprouted at around the beginning of the new century, when the explosion of SEAs slowed down (growing from 2 in 1985 to nearly 200 by 2000). One intrinsic weakness of these university green groups is the yearly personnel change as students graduate (Lu, 2003). Thus, the lack of a stable management and fundraising team inside the group has meant SEAs are constantly losing institutional memory and more seriously, facing difficulties in obtaining regular funding.

In the 1990s—before the emergence of RYEOs—a few student associations were formed to serve as platforms for SEAs to communicate and exchange information nationwide. Most notable were Green Student Forum (Beijing) and GreenSOS (Sichuan). Although they provided valuable support and inspiration to the development of the student environmental movement, the long-distance from the growing number of individual student groups needing their support posed challenges to the efficiency of their work. Thus, in 2000, perceptive students around the country began setting up RYEOs to provide support and services to university student groups within a certain locality (e.g., city, province, or region), rather than nationally.

Some of the early RYEOs were Shanghai Green Student Forum, Green Ark in Tianjin, and Student Environmental Front in Xi'an. While they started out as nonprofit organizations that specialized in providing support to college students and youth groups, many RYEOs have expanded their work to run their own environmental projects that involve the general public, as well as students. Within a time span of 6 years, about 20 RYEOs have developed in almost every province in China.

CAPACITY BUILDING ROLE OF RYEOS

Since RYEOs began to operate in 2000, they have helped support the growth of SEAs by: (1) disseminating information, (2) providing training and information exchange services to individual groups, (3) organizing joint activities among SEAs, and (4) becoming regranting organizations.

Information Dissemination and Training

- *Capacity building for student group leaders*: RYEOs make use of their experienced staff and outside experts to provide training opportunities for SEA leaders. These training sessions not only equip SEA leaders with knowledge in organizational management and project implementation, but also provide an opportunity to communicate and establish good relationships with people from other SEAs.

- *Forums, salons and lectures*: RYEOs often invite people from various student groups to come together to share their information and experiences at salons, informal discussion forums, and lectures.

- *Integrated website and bulletin board system*: RYEOs generally have more advanced technical capacities to construct and maintain websites than most SEA groups. SEAs often use a section on a RYEO website to post activity information and carry out bulletin board chats with members and other SEAs.

- *Disseminating and maintaining information:* RYEOs often gather and disseminate information valuable to student group development on grants and training activities, as well as maintain contact information on individual student groups in the region. They also sometimes store important SEA documents (e.g., project plans and reports of individual SEAs), which could easy to be lost during the yearly personnel changes.

Information Materials and Fundraising Support

Most SEAs lack office space and therefore have no storage for books, videos, and other supplies. RYEOs therefore have become important meeting places for nearby SEAs and over the years have accrued large book and video collections that SEA members can borrow for their work.

Many RYEOs are better in fundraising than individual student groups, which often lack the experience and English skills to complete grant applications. While some foundations have been interested in supporting China's student environmental movement, they view working with so many small SEAs too time-consuming and energy intensive. Therefore, foundations find it easier to award big grants to RYEOs, who regrant small funds to student groups. Some of the major foundations supporting China's student groups through RYEOs include Global Greengrants Fund, Pacific Environment, Siemenpuu Foundation, Asia Foundation, Conservation International, Wildlife Conservation Society, Ford Motor Company, and Green Stone Fund.[2]

Projects and Activities Support

Years of work with SEAs have given RYEO staff the insights to provide guidance and critique the activities student groups undertake. Sometimes RYEOs even organize large-scale projects or campaigns and encourage the student groups within their regions to participate. Besides providing SEAS with project ideas, these activities also serve as a training opportunity, for SEA leaders and key members learn the necessary skills for running a project. For example:

- For five years Green Stone, together with volunteers from local SEAs have carried out a number of activities aimed at protecting the rare Chinese swallowtail butterfly.

- For World Water Day in 2003, Xi'an Green Camp gathered its staff and more than 100 SEA volunteers to hold an exhibition and numerous education activities in a park in Xi'an.

- In 2004, Green Anhui initiated its long-term project to save the Huai River, one of the most polluted Chinese rivers, by organizing survey and

propaganda teams whose members were chosen from local SEAs.

- In February 2006, Green Camel Bell began to draft the first green map of Lanzhou city with a volunteer team comprised of local SEAs. (*Editor's Note: See feature box on this RYEO in this issue)*

RYEOs also coordinate activities among student groups. For example:

- In 2004, Guangxi College Students Green Union completed a campaign against disposable chopsticks by uniting ten SEAs together, resulting in cafeterias in each university banning their use.

- In 2005, with the support of Wildlife Conservation Society, Green Jilin Union coordinated eight SEAs from seven different universities to carry out a three-month propaganda campaign pushing for the protection of tigers in northeast China.

- At end of 2005, Green Henan called upon students in Zhengzhou universities to replace paper New Year's greeting cards with gifts of fruit. More than 4,000 fruit deliveries were sent out with the joint efforts of the SEAs.

UNEVEN GROWTH IN RYEOS

RYEOs can be found in almost every province in China, however, some only focus on urban areas, while others coordinate their assistance to SEAs (or carry out their own projects) across several different provinces. Although RYEOs are more evenly distributed around the country than NGOs (see Box 1), not all are equally strong organizations. Some of the stronger RYEOs have emerged in Jiangsu, Anhui, Zhejiang, Sichuan, and Shaanxi, where groups obtained support and official status from local governments (e.g., Zhejiang) or became stable through strong grassroots efforts (e.g., Anhui). Some RYEOs became stable only after undergoing a process of creation, disappearance, and reincarnation (e.g., Tianjin and Guangdong). Some regions have lacked the right "soil" for growing a civil society in the form of RYEOs. For example, RYEOs in Jiangxi and Guangxi fell apart shortly after being created due in part to a lack of local support. Some RYEOs have failed to stabilize despite continuous efforts by local environmentalists—examples of these kinds of stagnant groups include RYEOs

BOX 1. Geographical Distribution of China's REYOs

NORTHEASTERN CHINA
Green Longjiang (Heilongjiang)
Jilin College Environmental Protection Union (a.k.a. Green Jilin)
Jilin Youth Environment Organization

NORTHERN CHINA
Green Student Forum (Beijing)
Tianjin College Environmental Protection Union
Green Henan
Shandong College Students Environmental Protection Union
Shanxi College Students Green Camp

CENTRAL CHINA
Wuhan Green Fund (Hubei)
Hunan College Green Union

EASTERN CHINA
Green Anhui
Green Stone (Jiangsu)
Shanghai College Student Green Forum
Zhejiang College Student Green Forum

SOUTHERN CHINA
Guangdong Green Spot College Students Action Network

SOUTHWESTERN CHINA
Chongqing Youth Environmental Communication Center
GreenSOS (Sichuan)

NORTHWESTERN CHINA
Shaanxi Youth and Environment Mutual Promotion Network
Green Camel Bell (Gansu)
Xinjiang College Environmental Protection Volunteers Union

BOX 2. Development Status of Regional Youth Environmental Organizations

REGION	MATURE	ACTIVE	NEW	STAGNANT
Helongjiang		•		
Jilin (2 groups)			•	
Liaoning				•
Hebei				•
Beijing		•		
Tianjin			•	
Inner Mongolia				•
Shanxi (山西)		•		
Henan		•		
Shandong			•	
Hubei		•		
Anhui	•			
Jiangsu	•			
Shanghai		•		
Zhejiang	•			
Jiangxi				•
Fujian*			•	
Hunan			•	
Guangdong			•	
Guangxi				•
Hainan				•
Guizhou				•
Yunnan*			•	
Sichuan	•			
Chongqing (2)*			•	
Shaanxi(陕西)	•			
Ningxia				•
Gansu		•		
Xinjiang			•	
Qinghai				•
Tibet				•

*Note: There are three projects counted in this chart that are not listed in Box 1 because while they function somewhat like regional networks they are not yet formal RYEOs:
(1) China Mangrove Protection Project carried out by student groups at various universities in Fujian and nearby provinces;
(2) Youth Monthly Forum among SEAs in Yunnan; and (3) the long-running Training Program for Sustainable Development Leaders of College Students in Chongqing.

in Xinjiang, Shandong, and Hunan. Similarly, in Guizhou and Hebei, young aspiring environmentalists have considered establishing local RYEOs, however, to-date none have emerged. Box 2 categorizes the current 20 RYEOs into four groups according to their development status: (1) mature (stable for several years); (2) active (newly established, but very active and effective); (3) new (newly established, but unclear whether they will be strong); and (4) stagnant (those that fail to form a network or have an unstable network).

RYEOs have typically taken one of two main development paths in forming their organization, either establishing themselves as: (1) informal network associations that have SEA members in decision-making roles or (2) independent and more formal, possibly registered, organizations that not only serve SEAs, but also carry out their own projects.

Green Camel Bell—A Regional Hub for Environmental Protection Efforts in Lanzhou

By Brendan Snow, Global Greengrants Fund

Students participating in a GCB education activity draw their vision of a beautiful environment for their hometown. © Wu Keyi

In 1999, environmental leader Liang Congjie, founder of Friends of Nature, wrote in a *Time* article about how Lanzhou (the capital city of Gansu Province) had earned the distinction of the most polluted city on earth. He lamented that in Lanzhou and other cities across China, few were concerned about the negative impact of unchecked industrialization, "until rivers stank of raw sewage and coal dust clogged the air."[1] This degradation began in the 1960s when there were no advocates for the environment. Today, there is a burgeoning environmental movement, although nongovernmental organizations (NGOs) are not active in all provinces. For example, few independent registered NGOs operate in Lanzhou, but there is one notably active NGO, Green Camel Bell (GCB), that has worked to protect Gansu's forests, wildlife, and rivers, as well as to raise environmental awareness and establish ties to like-minded groups in the province.

GCB began as a regional environmental youth organization (RYEO) that was organized in November 2004 by various university students who wanted to create a network for student environmental associations (SEAs) and advance environmental causes within Gansu and surrounding provinces. (*Editor's Note: See commentary by Wu Haoliang on China's RYEOs*). GCB acts as a regional hub and resource center through which environmental activists can expand their network and coordinate activities.

Global Greengrants Fund (GGF) has recognized the importance of GCB activities and given the group several grants for capacity building, advocacy, and overhead. A 2004 grant helped GCB obtain an office and carry out a "fruit for card" program that encouraged locals to give fruit instead of the usual holiday cards, in an effort to promote awareness about forest degradation and destruction. A 2005 grant helped them purchase a computer and initiate an online monthly newsletter.

In 2005 and 2006, GCB used GGF funds to: (1) distribute information and give public talks about the ethical treatment of animals at the Wuquan Mountain Zoo in Lanzhou; (2) research and publicize the effects of radioactive waste on the people and wildlife of Gansu; and (3) compile the most comprehensive library of ecological and environmental science materials in northwestern China.

GCB is making headway not only on the environmental protection front, but also is breaking down socio-cultural barriers in that GCB's team is composed of the different ethnic groups found in northwestern China—Han, Tibetan, Hui, Mao, and Man. Since 2005, GCB staff has visited the Tibetan region of Gansu twice and developed a good relationship with Muslim communities throughout Lanzhou.

GCB is a true example of the success that grassroots environmental movements can achieve. What began as a few passionate students at universities sprinkled throughout Gansu Province has grown quickly into an environmental protection stronghold in that region.

For more information on Green Camel Bell please visit http://www.greencambell.ngo.cn or email info@greencambell.ngo.cn or greencambell@126.com.

NOTES

1. Liang Congjie. (September 27, 1999) "Most Polluted City on Earth," *Time Asia.* [Online]. Available: http://www.time.com/time/asia/magazine/99/0927/lanzhou.html.

Informal Network Association

One typical informal network association RYEO is the Shanghai College Students Green Forum, which since 2000 has been serving as the main communication link for 18 university groups in Shanghai. It organizes regular meetings of green student volunteers and provides a single communication platform for joint activities among Shanghai SEAs—such as an environmental advertisement competition and a bird-caring week. Its executive committee and chair are elected representatives from SEAs. This decision-making structure is useful for soliciting broad input, but it does render the RYEO work process somewhat cumbersome, especially since SEA leaders change frequently.

One very powerful networking RYEO—Xi'an Green Camp, which recently changed its name to Shaanxi Youth and Environment Mutual Promotion Network—did not actually start out as a regional organization but rather began as a summer field trip project in 2001 for university students to learn more about desertification and forestry biodiversity. Over the years, the Xi'an Green Camp produced many excellent young environmental leaders, many of who wanted the camp to be more than a temporary holiday project. These leaders pushed it to function as a formal networking RYEO, establishing a board of directors and initiating a small grant program to fund SEAs. At the end of 2005, the camp merged with another new RYEO Green Silk, and became an integrated RYEO platform to serve SEAs and carry out environmental programs.

Independent RYEOs

Some RYEOs have gradually developed from networks into independent NGOs that run their own projects, doing work that parallels and complements SEAs. These types of RYEOs have been very stable and succeeded in attracting foundation grants, which they regrant to SEAs in their region. These more independent RYEOs are more like guides for SEAs, rather than just an information clearinghouse platform. The leaders of these RYEOs are able to work much more efficiently than those in informal network association RYEOs since they do not have to constantly consult all the SEA leaders.

The first truly independent RYEO to develop in China was Green Stone, which established its own team and office to provide training programs, seminars, and small grants to SEAs. It also began its own programs to conserve local wildlife and rivers and to hold broadly targeted environmental education activities. Green Stone has become a leading model of RYEOs, and most recently has begun to provide small grants and other assistance to help in the development of new RYEOs.

Future Potential of RYEOs

Similar to other civil society organizations in China, RYEOs face several internal and external challenges. Due to the fact that RYEOs evolved out of student groups, they are often very informally organized, usually depending on periodic volunteers for implementation of projects. The lack of strong internal management and accounting systems means RYEOs are not always well organized or capable of creating long-term volunteer mechanisms or successful fundraising. Many would benefit from having a board of directors to assist in fundraising and pushing for a greater professionalization.

Externally, many RYEOs, like other NGOs in China, face the challenge of gaining a legal status. Only a few RYEOs have been officially recognized by registering as affiliation organizations or companies. Most RYEOs have not registered at all and their legal status remains vague. While staff turnover in RYEOs are not as frequent as that in SEAs, it is still a problem since most key staff are volunteer students. Thus, it will be important for RYEOs to follow Green Stone's example and have paid staff positions and obtain legal registration to become more professional and stable organizations that can carry out their own projects, as well as assist SEAs.

Since 2004, Green Stone, Xi'an Green Camp, and Green Zhejiang have organized three annual development conferences (in Nanjing, Xi'an, and Hangzhou) for RYEO leaders from around China. The goals of these meetings were to establish better cooperation and stronger networks for assisting each other. One major initiative to emerge from these efforts was the establishment of a communication website called GSEAN (Green Student Environmental Association Network at www.gsean.org).

As the youth are the future leaders of the country, Chinese RYEOs will become an increasingly important player in China's environmental movement. RYEOs are building stronger networks and training a growing number of young environmentalists, which are important resources for Chinese environmental NGOs. Most registered NGOs in China are located only in a handful of big cities, limiting their development potential. Partnering with RYEOs offers an opportunity for NGOs to expand networks nationwide. Moreover,

through countless training programs, RYEOs are producing a more professional "green" workforce for NGOs and government agencies to help improve China's environmental protection efforts.

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NOTES

1. Lu Hongyan, "Bamboo Sprouts After the Rain: The History of University Student Environmental Associations in China." *China Environment Series*, Issue 5 (2006).

2. Green Stone Fund is one of the most important funder of RYEOs, receiving grants from Finland's Siemenpuu Foundation, which Green Stone then regrants.

COMMENTARY

Notes on Public Participation in Environmental Impact Assessments in China

By Lila Buckley

Stories of citizen participation in environmental impact assessment (EIA) processes have been making headlines in China over the past year. While these routine processes are not usually newsworthy events in developed countries, public participation in the environmental sphere has emerged as a new component of economic development in China—with nongovernmental organizations (NGOs) playing a crucial role. This commentary explores the experiences of one Chinese NGO, the Beijing-based Global Environmental Institute (GEI), and the reflections of its executive director—Mrs. Jin Jiaman—in collaborating with China's State Environmental Protection Administration (SEPA) to draft the new public participation laws for environmental impact assessments.

In early 2005, the World Bank reached an agreement with SEPA's EIA Center to carry out a "Public Participation in China" program. Because the program is aimed at creating regulations for public participation within the recently passed EIA Law, EIA Center staff knew it would be important to include at least one Chinese NGO in the team of regulation writers. At the same time, the staff felt that few NGOs possessed the capacity to provide effective input. GEI, however, had already assisted SEPA with EIA trainings at the local level and Jin Jiaman had previously worked at the Chinese Research Academy of Environmental Science, one of SEPA's main research centers. Thus, the EIA Center selected GEI as the sole NGO participant in the regulation-making team.

The first meeting in the fall of 2005 began with presentations by SEPA and the World Bank on how the public could be involved in the EIA process. The reactions to the presentations by the team were mixed. The development and construction company representatives saw these regulations as very complicated (*fuza*) and troublesome (*mafan*) and were thus not very supportive. The EIA firm participants supported the regulations, which they viewed as strengthening implementation of the EIA law and beneficial to their work.

Many participants were confused about the inclusion of an NGO in the process, in part due to unfamiliarity with the concept and function of an NGO. During the team discussions, Jin Jiaman's argument that true public participation included not just NGOs but multiple stakeholders was viewed as somewhat unrealistic. "It felt very lonely," recalls Jin, finding herself the sole NGO in an environment where her organization and ideas were viewed as a threat. "I began to wonder how we could really help the government achieve its goals when the very concepts of NGOs and public involvement in environmental regulations were so foreign." Moreover, for everyone in the room, the concept of public participation was a completely new experience. By the end of the first day Jin Jiaman felt somewhat frustrated. "While I felt the central government had very good intentions in writing these regulations," she remembers, "I knew that actually creating and enforcing strong public participation regulations would be a very long process."

This initial team dynamic was a microcosm of the challenges such regulations face in China, in an atmosphere where local governments and construction companies prioritize economic development-NGOs and the general public have little voice. Despite the team's steep learning curve, it did succeed in producing draft regulations that were issued by SEPA on 18 March 2006 after integrating feedback received from the public. The *Interim Public Participation Law for Environmental Impact*

Assessments formulated the goals and scope of public participation and clarified the rights and obligations of the developers, environmental groups, and the public. While it represented a significant step forward for the country's sustainable and equitable development, the new EIA regulations are but one step in what has been a "work in progress" for nearly twenty-seven years.

THE LONG ROAD TO ENVIRONMENTAL IMPACT ASSESSMENTS

As China's rapid industrialization and economic expansion over the past several decades has created many of the same environmental problems faced by developed countries around the world, Chinese leaders have begun to recognize the value of the EIA mechanism in promoting more sustainable development and defusing conflict. In China, the EIA concept first entered policy in 1979 as part of the national Environmental Protection Law (EPL). However, the inclusion of EIA in the EPL proved to be pure rhetoric, providing no concrete stipulations or methodologies.

Without clear definitions, the call for EIAs was ignored. Another seventeen years of blind economic growth took a heavy toll on China's resources before the concept of EIA was reintroduced. In 1996, the State Council formulated new legislation for EIAs: Article Two of the *Rules and Regulations for Management of Environmental Protection in Construction Projects* detailed a provision for EIAs, thereby becoming the first legal basis for the real implementation of EIAs. While this was a major step forward, the law only addressed construction projects, with limited requirements for technical, predictive reporting; it lacked a solution-oriented approach needed for meaningful ecological protection and included no provisions for public input.

Public Participation Policy in Fits and Starts

By the late 1980s, environmental officials were starting to recognize the limitations of government and corporations in addressing increasingly severe pollution and ecosystem destruction. They began to look towards civil society to help strengthen environmental protection efforts. It was in this context that the principle of public participation in environmental policymaking was put forth. On 26 December 1989, a new Article Six of the EPL clearly stated, "All companies and individuals have a duty for environmental protection, and have the right and authority to report and bring suit to those companies and individuals committing environmental damage and pollution." This represented an important first statement of individual environmental rights in Chinese law. However, as with the first mention of EIAs in the 1979 EPL, these regulations were merely a set of principles and carried no concrete rules or methodology for implementation.

Under the 1994 law that permitted the registration of NGOs, the first groups to be formed were "green groups" so public participation in the environmental sphere was given a legitimate access point. The growing activism of NGOs and increased pollution protests around China contributed to the push towards more specific provisions for public EIA participation in new legislation. This occurred in the 2002 amendment to the EPL. The amendment stipulates that, "the Country will support companies, experts and the public in using appropriate methods to participate in environmental impact assessments." It also addresses the concepts of stakeholder forums, public hearings and other methods of public participation.

In September 2003, China passed a new EIA Law that was a significant departure from the earlier draft. The new law broadened the scope of EIAs to include all development and construction projects, and legally secured the public's right to conduct analysis, prediction, and evaluation of environmental impacts from construction projects and plans. With EIAs now required for all projects and procedures, and protections for the right to public participation in the assessment process, the conceptual framework was set for a meaningful implementation of EIAs. The World Bank and EIA Center work helped create clear procedures and implementation guidelines so vital to public participation in EIAs.

CHINESE NGO INVOLVEMENT IN PUBLIC PARTICIPATION POLICY FOR EIA

Now that EIAs and public participation rules exist on paper, the hard work of building EIA capacity in many sectors of society is beginning. As civil-society entities with the ability to gather resources and professional expertise, NGOs will be crucial to the EIA public participation process. Unfortunately, Chinese environmental NGOs are still quite young,

Global Environment Institute

By Lila Buckley

Using its strong duel focus on research and on-the-ground projects, the Global Environmental Institute (GEI) is working to redefine environmental protection in China to include financial mechanisms and new models of sustainable development. Founded in Beijing in March 2004 and led by Jin Jiaman, a twenty-four year veteran of the Chinese environmental movement, GEI's mission is to provide market-based models for solving environmental problems in order to achieve development that is economically, ecologically and socially sustainable. GEI's approach is collaborative, working with domestic and international experts, governmental and nongovernmental organizations, businesses, and farmers. GEI's research and project work spans five programs: (1) energy and climate change, (2) biodiversity conservation, (3) rural development, (4) capacity building, and (5) partnerships.

An example of the power of GEI's approach can be seen in the quiet village of Changshui in Yunnan Province, where the organization has transformed a once energy-poor, polluted farming community into a prosperous integrated sustainable agricultural system. The project, supported by the Blue Moon Fund, collects cow manure in inexpensive, easy-to-use upfloating biogas tanks that produce fuel for cooking and heating. This free renewable energy eliminates the burden of high gas prices for the villagers and avoids putting pressure on local forest resources for fuel. The composted manure is then used as an organic fertilizer for a variety of vegetable crops. The two-year old project has resolved the village's manure pollution problem, replaced firewood for fuel, and provided fertilizer for their organic produce. It has also produced a twenty-fold increase in the income of local farmers, who now have healthier yields and are able to tap into lucrative organic food markets to sell their crops. This model for ecologically sustainable development incorporates vegetation, animal husbandry, and horticulture, while meeting the energy and economic requirements of the region. GEI is in the process of replicating the model in villages throughout Yunnan, Guilin, Tibet, and Sri Lanka.

Changshui villager gathers composted organic manure from the biogas tanks to fertilize her fields.
© Global Environment Institute

GEI's continued success is based on its fundamental belief that each project must have a sustainable home in both the market and a supportive community. GEI's novel approach signals a bright future for partnership and collaboration in the environmental field in China.

For more information please see www.geichina.org or contact Lila Buckley, assistant executive director, at lila@geichina.org.

and largely focused on education and outreach. Most of them lack the specialized legal knowledge to advocate or provide assistance in the EIA process. However, a growing number of international NGOs are bringing EIA training to China, targeting domestic NGOs, lawyers, and local government officials. Such trainings could help domestic NGOs build capacity to enable individuals and institutions to better anticipate, plan, and manage the consequences of development.

> **"Now that EIAs and public participation rules exist on paper, the hard work of building EIA capacity in many sectors is beginning.**

Over the past several years GEI has been one of the few domestic NGOs actively working to foster the creation of professional domestic NGOs as stronger advocates for environmental protection through tools such as the EIA process. In 2005, GEI began conducting public participation capacity-building workshops for journalists and other NGOs. Working with Green Earth Volunteers, GEI invited experts from around China and abroad to draft curriculums for trainings on how to participate in public hearings. In addition to producing a curriculum for future trainings, the workshops provided an opportunity to explore the role of NGOs in increasing the ability of residents in environmentally impacted regions to participate in public EIA hearings.

GEI also has been involved in other training exercises. Using the curriculum developed and the lessons learned from prior workshops, GEI held a seminar on EIA public hearings for journalists in Beijing in June and July of 2005. The main goals of these trainings were to increase journalists' capacity for reporting on EIA hearings and related processes, and to improve the ability of civil society and the media to work together in promoting public participation.

In addition, GEI conducted a simulation of a public hearing on the Nujiang Dam project EIA for both Chinese and international NGOs late in 2005. GEI also held additional trainings on "Capacity Building for Environmental NGO and Media Participation in Public Hearings" in Tianjin, Nanjing, and Kunming in early 2006. These events have attracted participation from media and NGO employees as well as environmental officials.

The news media has already proven itself a potentially useful mechanism for empowering citizens and NGOs on EIA issues. For example, news journalists drew attention to ecologically destructive development in the Old Summer Palace (*Yuanmingyuan)* and a wetland reserve outside Beijing. In both cases, informed citizens, NGOs, and scientists rallied to stop the development projects.

GEI also has focused on reaching out to government officials with these trainings. For example, in November 2005 SEPA held a training session in Harbin for regional environmental bureau officials and EIA firms as part of the development of public participation laws. Representing China's NGOs at this training, GEI staff addressed the public's role and objectives in involvement with EIAs, and proposed mechanisms for ensuring the public's participation, such as allocating funding for citizen involvement. Parts of these government trainings also have involved GEI bringing EIA and public participation experts from overseas to expose Chinese officials to best practices in citizen involvement. SEPA's willingness to include an NGO in the making of the public participation laws was a direct result of these discussions and trainings.

THE ROAD AHEAD FOR PUBLIC PARTICIPATION IN EIA

Despite the significant progress made to include public participation in the EIA process, many challenges still remain. While today's law provides clear and concrete steps and requirements for public participation, many grey areas in the implementation process need clarification. For example, the law fails to formally delegate authority or clarify the jurisdiction of the public in the process of participation. Nor does it define the scope and jurisdiction for true veto or policymaking power on the part of participants. Furthermore, there are no provisions for supporting human resource and other expert assistance required for public participation in hearings and monitoring of the EIA process.

There also remains the issue of regional rights in China—if an activist in Beijing wants to stop the Nujiang dams from being built, but a local villager supports it because of the attractive government compensation, what right does each party have to

participate in the process? Who ultimately decides whether the project proceeds or not? These are still crucial unanswered questions.

SEPA's EIA Center, which is composed of over thirty highly experienced environmental scientists, is responsible for writing EIA-related regulations, licensing independent EIA agencies, and overseeing the work of regional EIA offices. These regional offices, which have a total staff of less than 300, are similar to all environmental protection bureaus in China—in that they depend on funding from local governments, which generally prioritize economic development over environmental protection. Independent EIA agencies are dependent on development contractors for their survival, which opens the door to corruption during the assessment process, as these agencies are free to demand higher prices to downplay environmental problems. Thus, the organizational structure for EIA enforcement tends to be weak, understaffed, and inadequately centralized.

Recognizing these shortcomings, SEPA has committed to improving the EIA Law and addressing these issues. At SEPA's Eighth Green Forum in September of 2005, SEPA's Vice-Minister Pan Yue mentioned the need to "raise public participation capacity" and "establish mechanisms for public participation." Former SEPA minister Xie Zhenhua further stated, "in the future, improvements and amendments will certainly be made to the EIA law," noting that as the EIA concept is now better understood, it will gradually play a key role in all development policy in China.

BUILDING CAPACITY FOR PUBLIC PARTICIPATION IN EIA

The strong rhetoric supporting public participation at the national policy level has given SEPA the power to push for continued improvements to the law—the recent public participation regulations are a testimony to the commitment of national leaders. However, the challenge of building support and capacity within local governments, NGOs, and the public remains daunting.

As China's NGOs progressively mature, they will play an increasingly important role in the development of public participation in the EIA process. Already, in the case of the Nujiang Dam project, sixty-one Chinese NGOs and ninety-eight environmental public figures jointly wrote a letter of concern to the State Council, SEPA, and National Development and Reform Commission. This large group of stakeholders then opened a series of legal claims, beginning in 2005, calling for public hearings and the halting of construction and surveying of the Nujiang Basin. These legal actions are still in progress, but have already led to the opening of the Nujiang EIA report to the public, and to more stringent monitoring of the basin by the Yunnan Environmental Protection Administration.

The future of Nujiang, as with communities and ecosystems under development throughout China, rests largely on the continued efforts of China's environmental NGOs and their ability to fully utilize existing public participation policy. The road to effective EIAs has been long and remains uncertain, but from GEI's experience, it is clear that those challenges would be far greater without the ongoing work of China's emerging NGOs.

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COMMENTARY

The Role of Public Participation in Ecological Impact Assessment (EcIA) and Environmental Impact Assessment (EIA) in China

By Marilyn Beach, Bill Bleish, and Shelly Yang

Public participation (*gongzhong canyu*) is the new buzzword in China's environmental circles these days. Frequent industrial accidents threatening human health and natural ecology have led to more and more social conflicts and environmental disasters, often at great financial cost to the government. While the Chinese government in theory recognizes that enhanced public participation is essential for bringing about national environment and natural resource protection targets, significant political and technical challenges exist in actually bringing local citizens' voices to decisions about land and natural resources. Indeed, Chinese officials, researchers, nongovernmental organizations (NGOs) and even citizens are struggling to work out the definition of public participation, particularly vis-à-vis environmental impact assessments (EIAs).

The current debate over public participation in the environmental sphere comes amidst rapid economic development in China, which has had a double-edged impact on protection of biodiversity and fragile ecosystems in the country. On the one hand, increasing economic well-being and environmental awareness in China have led to growing concern in the government and among the urban public of the need for the conservation of biodiversity and safeguards for the services that natural ecosystems provide. One result has been a dramatic growth in the number and quality of protected areas and greater opportunities for domestic and international NGO projects focused on biodiversity.

On the other hand, the call for development has led to direct detrimental impacts on biodiversity and ecosystem integrity from projects ranging from linear infrastructure and mining, to major hydroprojects and tourism. Many of these projects are led by local governments, some of which have become increasingly wary of NGOs and public calls for greater attention to ecological impacts of development. Such concern is misplaced, for in the long run, projects that damage ecosystem integrity will limit economic growth.

Indeed, ecological and environmental conditions are intricately linked with social wellbeing and economic vitality. A recent *People's Daily* online report stated that 2004 alone saw over 5 million "public accidents," leading to the deaths of 210,000 people, injuring another 1.75 million, and bringing about an immediate economic loss of over $57 billion (455 billion Yuan). The Jamestown Foundation's *China Brief* newsletter estimated that the direct annual cost of such disasters for China is "more than $81 billion (650 billion Yuan) on average, equal to six percent of the country's annual GDP." The implications are obvious, "most of China's economic growth each year is simply cancelled out by the immediate sacrifice of human lives and long-term damage to the environment."[1]

RELATIONSHIP BETWEEN EIA AND ECIA

In late 2005, Fauna & Flora International's China Representative Office conducted a needs assessment for capacity building in the area of ecological impact assessment (EcIA) in western China. EcIAs in this region are particularly important because of the critical services the fragile ecosystems provide to both local and distant human populations. Box 1 identifies key ecological systems in western China that are particularly vulnerable.

EcIAs, which are rooted firmly in ecological sciences, are practiced in China as a part of EIAs.

BOX 1. Threats to Vulnerable Ecological Systems in Western China

In western China, development projects threaten several key ecosystems. Major ecological challenges in Qinghai include vegetation degradation from construction, desertification, glacier reduction, grasslands mismanagement and pasture degeneration, poaching, and over-collection for the medicinal industry. In Xinjiang, significant threats to the environment and ecology include desertification, secondary salinization of soil arising from irrigation, pollution, and overall urbanization. Mining and other extractive industries pose significant ecological threats to soil, land and air conditions in both Qinghai and Xinjiang. Soil erosion is of special concern in the limestone karst regions in Guizhou, with degradation affecting 41.5 percent of land province-wide. Mining and smelting are also among the dominant industries threatening the ecosystem in Guizhou today.

However, our study confirmed that EIAs in China currently do not sufficiently incorporate ecological issues, generally do a poor job of considering likely ecological damage as a result of a given infrastructure or industrial project, and provide few useful alternatives for how to avoid or mitigate such impacts. While too few EIA practitioners specialize in ecological sciences, our survey did show a strong desire for more information about EcIA methods and guidelines.

REGULATORY CONTEXT FOR EIA AND ECIA

EIA and EcIA processes in China are best understood within the broader political context. In order to address past problems of environmental damage associated with poorly planned development and industrial projects, the Chinese government is now refining and restructuring the EIA process. The most recent EIA Law was enacted in 2002 and came into force on 1 September 2003.[2] In 2004, SEPA established a special division in charge of EIA affairs, the Appraisal Center for Environment and Engineering (ACEE).[3]

When projects are expected to strongly impact social and environmental conditions in neighboring communities, the developer is required by law to hold a public hearing or seek comments and suggestions from experts and the public before submitting EIAs for approval.[4] When light or very small environmental impacts are expected, the law requires completion of an Environmental Impact Form but no public hearing.

The new EIA law states clearly that, "the state encourages relevant organizations, experts and the public to participate in the EIA process in proper ways." Indeed, China has signed the Rio Declaration on Environment and Development, which includes Principle 10, articulating that public access to information, participation in decision-making, and access to justice are key principles of environmental governance. SEPA's February 2006 publication, *Provisional Measures for Public Participation in Environmental Impact Assessment*, gives slightly more detail than the EIA Law, stating that, "NGOs and volunteers are an important force in public participation," and stipulating that the public may participate by answering an EIA questionnaire, consulting with experts, or participating in a symposium or public hearing. It also requires project contractors to provide the public with details of how construction could influence the environment and what preventive measures they have taken. The State Council *Information Office White Paper for Environmental Protection in China (1996–2005)*, published on 5 June 2006, refers to appraisal meetings or hearings for construction projects that may cause unfavorable harm to the environment to collect opinions of the public, relevant government authorities, and experts in the field.

Translating these legal requirements for citizen input, however, has been challenging, particularly in the area of ecological assessments. Active public participation in decision-making about development priorities is virtually non-existent, and most of the meetings and hearings take place after decisions and investments have already been made.

ECIA TRAINING NEEDS ASSESSMENT IN WESTERN CHINA

In 2005, FFI administered written questionnaires and conducted interviews and field visits with environmental assessment practitioners (both

private and government) in Qinghai, Xinjiang, and Guizhou. The FFI surveys revealed several key gaps in the field of assessment:

- Lack of baseline information about ecological subjects;
- Inadequate skill sets among environmental assessment practitioners related to impact prediction, mitigation and restoration, and monitoring. Moreover, post-impact monitoring is not strongly emphasized in training programs;
- Little value of the importance of public participation in assessments and methods to involve communities; and,
- Insufficient sharing of best practice models and international experiences among assessment practitioners.

In sum, awareness of biodiversity and its value is still quite low, even among EIA practitioners. In addition to evaluating the limited capacity of assessors, through the survey, FFI was able to assess the level of public involvement, or the lack thereof, in the environmental review process in general and especially when focused on ecological impact.

Without exception, all three regional environmental protection bureaus (EPBs) and EIA practitioners respondents requested additional training opportunities that address new EIA guidelines, strengthen certain skill sets, provide new methods and techniques, and offer case studies from relevant projects both in China and internationally. Our survey also revealed crucial baseline data that the practitioners designated as most crucial and often lacked, such as studies on: (1) construction projects, especially roads, dams, and mines; (2) indirect and direct impacts on habitats and biodiversity in project areas as well as in downstream regions; (3) wildlife mortality and fecundity; (4) water tables and other hydrological changes, especially affecting herding and agriculture; (5) water quantity and quality; and (5) soil pollution. The skill sets these practitioners identified as priorities included:

- Impact prediction and analysis (impacts of erosion, tourism, nature reserves and scenic areas on biodiversity and ecosystem integrity);
- Impact mitigation;
- Restoration methods and models (drought, extremes of cold weather, reservoirs, dry and arid regions and other fragile ecosystems); and,
- Long-term post-project impact monitoring.

The EIA practitioners who were interviewed were all hard-working, well-educated members of their communities. Our study revealed a genuine, albeit nascent, interest in learning more about how to predict environmental impacts and to work better with communities. These desires to strengthen the assessment process need to be backed up by a system that produces an EIA capable of influencing decision-making at local government offices and local industries. We also found a number of key broader issues for EcIA that still need to be addressed:

- How do local development plans measure up to national and regional biodiversity goals and plans?
- How can stakeholders work together to find opportunities to maintain species populations and ecosystem integrity?
- Is there risk of species extinction due to economic and urban development, and, if so, how can it be prevented from happening? What will be the consequences of extinction?
- Might alien species invade the local ecosystem as a result of the proposed project? What are the social and economic consequences of this?
- In what ways are the ecosystem process and services threatened? If they are damaged, how will local communities be affected?
- If habitats are lost or altered, is an alternative habitat available to support associated species populations? How can the project proponents and the community ensure that the habitat is made available?

ROLE OF PUBLIC PARTICIPATION

Impact assessments in China rarely recognize the dynamic relationship between development projects and local community members. Many EIAs include information about local economic development, but often do not explore how a given project will impact the community. Although human beings are a critical part of the ecosystem and a critical parameter in ecosystem management/protection, they are not widely recognized as key stakeholders in the EIA process, perhaps because the local community members currently have little influence over land use decisions. In the words of one respondent, "government officials are decision-makers. EIA workers examine and execute laws and regulations, and communities are passive and must obey."

Our study found a striking resistance within the private assessment companies, developers, and even among local EPBs on the role of communities and public participation in all phases of project planning, development, assessment, mitigation, and implementation. Because the public is not seen as an important stakeholder, EIA practitioners often stated that communities do not need to be consulted and their views are not considered useful. What is more, those conducting EIAs and those completing the survey questionnaires are hired or chosen by the factory or company sponsoring the assessment. Responses therefore cannot be objective and likely do not represent views of the broader community. In the words of one interviewee, "perhaps as a result, over 99 percent of the community members interviewed generally show agreement with the project."

Moreover, some practitioners in Xinjiang claimed that, while the goal of community involvement should be to limit negative impacts on the community and help the company refine their development plans, community consultation is actually done to satisfy legal requirements in the approval process. The environmental assessment practitioners do not aim to understand how companies and project managers can interact better with communities, get increased support for their activities, or develop a more sustainable project.

On a brighter note, there was some evidence that public participation is gaining more credence as a useful tool for assessments among practitioners, no doubt because conflicts over land and resource use often involve community members. In the words of one respondent, "in new EIA projects, it will be important to pay attention to the public's participation, as well as pay attention to how water, land and air is affected. The public can help us understand how pollution is damaging our environment in construction zones and how we can protect ecological systems."

While more discussion of public involvement is necessary, neither the agencies responsible for conducting EIAs nor the NGOs working on related issues fully understand how to work together to ensure that ecosystem services and biodiversity are protected. Some key measures the local governments and assessment practitioners can take to strengthen public participation in the overall EIA process include:

- Enhance understanding of the role of communities as key stakeholders, and their potential role in monitoring and protecting ecological health;
- Inform citizens of legislation and legal rights, especially of recent laws providing public access to information and participation;
- Strengthen awareness among local officials and industry managers of the business case for working cooperatively with communities;
- Organize public hearings and other channels for public participation; and,
- Work with, develop, and protect rights of NGOs working on environmental justice issues.

KEY MESSAGES FROM FFI'S ECIA STUDY

Incorporate consideration of biodiversity and ecosystem services into the EIA process. Until recently, environmental protection in China largely focused on the impacts of industrial pollution on water and air quality. EIA practitioners, government planners and supervisors, project proponents, and affected communities would all benefit from increased understanding of the role of biodiversity and natural ecosystems in providing the services on which communities depend. EIA practitioners also need specialist skills and mastery of concepts for EcIA, to enable them to predict impacts of project activities on ecosystems and species populations, and to propose measures to avoid, mitigate, and restore.

Protect against bias and influence in EIA. In order to strengthen the role of EIA/EcIA and to ensure scientific quality, all studies should be peer reviewed by fully independent panels that are made up of appropriate experts and financed separately for the sole purpose of review. Expert peer review allows for better development of standards for the study, clarification of the terms of reference, and an opportunity to ensure that ecological issues are included in the practitioner's approach to the assessment. These panels must come with enabling legislation that provides full funding, authorized by law, so that enforcement officers are not subject to political influence. SEPA's EIA expert database could potentially be used to identify appropriate independent review panel members.[5]

A good review process is especially valuable for government officials involved in decision-making. Besides verifying the scientific quality of the EIA/EcIA, expert peer review can also help protect against environmental disasters that are financially and politically costly to local and provincial governments.

Ensure full public access to EIA reports and NGO involvement. Another approach to improve EIAs and EcIAs would be to allow the public full access to EIA reports and give NGOs and the public enough time to review and comment on the reports so as to allow them time to mount their own independent assessment. Publishing EIA reports on government websites would be a cost-effective method to help achieve this goal. There are some good examples indicating that the public has awareness and is able to participate in some areas such as the Yuanmingyuan Park public hearing, the Beijing high-pressure cube construction, illegal logging by the Asia Pulp and Paper (APP) Company in Yunnan, and disputes over the construction of a dam on the Nujiang. Most of these cases notably involved public comments in large urban areas, which highlights the need for expert facilitation in remote rural areas that often lack the access to information and capacity necessary to participate effectively in an EIA review.

This indicates a need for better-trained, well-positioned environmental NGOs to help act as expert facilitators. Environmental science and urban planning departments could also be set up or strengthened to help such communities and local governments conduct some of the needed baseline studies and other background research. Such an initiative would help communities and simultaneously train and expose students to field methods and environmental protection.

Institutional context and factors influencing EIA. Effective impact assessments require independent research, from the funding and scoping stages to data collection, report writing, and the review of results. The assessment process must operate with transparency and accountability, and the research institutes must be governed in such a way that quality of ecological and environmental impact assessment results are held to the highest standards. Public participation can be incorporated into the process so that social forces are leveraged, and industries and construction projects can avoid and mitigate problems. In addition, awareness is needed not only among the public, but also among local leaders and industry professionals, who must understand the value of engaging community members in their project.

CONCLUSION

In summary, the capacity to conduct EcIAs needs to be strengthened, especially in the more remote regions of China. Additionally, a more conducive policy environment is necessary to give EIA reports more influence in determining which projects are approved, disapproved, or cited for violation. As in all countries throughout the world, local government and industries in China need to work more cooperatively to preserve the ecological integrity of the land and water. Just as important, technical and scientific management of the environment must include public participation as one of its key features.

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4. It should be noted, however, that in practice when a project is considered sensitive or confidential, this law has not been applied and public consultation does not occur.

5. "Management Regulations for EIA Supervision Experts Bank" specifies that the experts who attend the evaluation of an EIA report should be chosen at random from an approved bank of experts, based on their expertise and profession. If the expert has an interest with the EIA servicing institution that might impact objectivity of her/his evaluation, then she/he should voluntarily excuse herself/himself.

COMMENTARY

Coal Burning and Children's Health in China

By Frederica Perera, Deliang Tang, Barbara A. Finamore, and Li Ting-Yu

Air pollution from coal burning in China adversely affects the health of people living in China and—as we discuss later—worldwide. Moreover, coal burning power plants in China and many other countries are a major source of carbon dioxide (CO_2), the most significant global warming gas. Since 2002, the Columbia Center for Children's Environmental Health (CCCEH) has been leading an interdisciplinary research project in Tongliang county within Chongqing municipality, investigating health benefits to children from the elimination of a coal burning power plant in the county. The research is unique in combining state-of-the-art molecular epidemiologic techniques with air monitoring data, geographic information system analysis, and clinical pediatric assessments. It is anticipated that the study will provide policy-relevant data on the health, environmental, and economic benefits of adopting alternatives to uncontrolled coal burning for energy production.

As the most populated country in the world, with 1.3 billion people, China has struggled to provide sufficient energy to fuel continued economic growth. Like many rapidly developing countries, China has relied heavily on coal for low-cost energy production, with the result that coal combustion accounts for 70 percent of total energy production. Coal-fired power plants in China currently produce nearly 75 percent of the country's electricity. The majority of new power plants are being built to burn coal; China burned approximately 1.9 billion tons of coal in 2005—a 12 percent increase from 2004. If such production practices continue, China alone could negate the progress of other countries that are cutting back on dirty coal emissions, phasing in cleaner fuel alternatives, and limiting greenhouse gas emissions.

Coal combustion emissions are of particular concern for children's health because they contain

Tongliang power plant before closure. © Authors

polycyclic aromatic hydrocarbons (PAHs), particulate matter (PM), sulfur dioxide (SO_2), and metals such as mercury. Adverse birth outcomes, developmental problems, asthma, and various cancers have all been linked to these air pollutants. Fetuses and young children are likely to be especially vulnerable to these pollutants due to their rapid development and immature cellular defenses. Because of long-range transport of air pollutants, emissions from coal burning in one country can adversely affect children's health worldwide. An estimated 40 percent of mercury in the United States, for example, comes from power plant emissions overseas. Therefore, air pollution is one of the main issues of concern to the Chinese government. China has been making efforts to save energy, optimize its energy structure, and increase energy efficiency to balance consumption and environmental needs, For example, since 1999 Chongqing has supplied natural gas instead

of coal to families and hospitals throughout the municipality. The local government also asked power plants to move to rural areas or shut down to improve environmental quality.

THE CCCEH PROJECT

The overall goal of the CCCEH project is prevention of developmental disorders, asthma, and cancer in children. Working with Chinese colleagues, CCCEH scientists are documenting exposure, biomarkers, and health outcomes in two groups of newborns—the first enrolled before the Tongliang power plant was shut down in Chongqing in 2004; the second enrolled after the closure. Both cohorts of children are being followed to compare their exposure to air pollutants and their health and development over the first years of childhood. The specific objectives are to:

(1) Conduct repeated studies of newborns using monitoring, biomarkers, and assessment of clinical outcomes to document the health benefits of reducing PAHs and co-pollutants in ambient air; and,

(2) Translate the results so they are useful to both the scientific community and to policymakers responsible for protecting child health and developing sustainable energy policy.

With a population of more than 32,000,000, the municipality of Chongqing is one of the largest and heavily polluted cities in China, largely due to coal combustion by industry and power plants. The county of Tongliang in Chongqing has a population of over 800,000. Tongliang is situated in a small basin approximately 3 kilometers in diameter. Prior to 2004, a coal-fired power plant located south of Tongliang's center operated 6 months each year (from December 1st to May 31st) to compensate for insufficient hydroelectric power during those months. The plant was the principal source of local air pollution; in 1995 nearly all domestic heating and cooking units had been converted to natural gas and motor vehicles were not yet a major source of air pollution. The plant was not equipped with modern pollution reduction technology and burned about 25,000 tons of high sulfur coal during each 6-month period of operation.

Since 2002, a diverse group of U.S. and Chinese investigators have been gathering and analyzing pollution emission and children's health data in Tongliang. CCCEH collaborators include Chongqing University of Medical Sciences, University of Nevada Desert Research Institute, Natural Resources Defense Council (NRDC), Chongqing Institute of Environmental Science, Chongqing Center of Environmental Monitoring, Harvard University, and Chongqing Municipal Economic Commission.

Air monitoring collected as part of the CCCEH project showed ambient concentrations of the representative PAH, benzo[a]pyrene ($C_{20}H_{12}$), in Tongliang county were up to three and a half times higher during the power plant's operational period. The average ambient $PM_{2.5}$ levels were five times higher than the annual $PM_{2.5}$ U.S. National Ambient Air Quality Standard (NAAQS) of 15 μg/m^3 (micrograms per cubic meter).[1] Marked seasonal variation in air pollution (PAHs and particulate matter/PM) was attributable in large part to power plant emissions. Newborns in the first cohort (those who were *in utero* during operation of the coal burning power plant) had higher levels of DNA damage due to prenatal exposure to PAHs than newborns in either New York City or Krakow, Poland.[2] CCCEH researchers observed that newborns with high levels of PAH-DNA damage had smaller head circumference at birth, as well as lower weight growth rate in childhood, although they are still within the normal range.[3] Mercury, another air pollutant detected in Tongliang, is known to be toxic to the developing brain, with adverse effects on children's intelligence and the ability to learn. In addition, the Tongliang study has found evidence that children with the higher estimated exposure to PAHs performed less well on developmental tests at age two. Finally, the study is examining the relationship between coal burning emissions and respiratory problems.

In May 2004, the power plant was permanently shut down after the Tongliang county government determined that its closure would have minimal adverse social and economic consequences. The second cohort of children was enrolled between March and June 2005 and similar data are being collected on these children to estimate the health benefits of eliminating the polluting source. Another cohort will be collected in 2006.

REWARDING PARTNERSHIP

The research partnership between U.S. and Chinese investigators has been mutually rewarding in many ways. New Chinese investigators have been trained in molecular epidemiology and monitoring, while

the U.S. investigators have learned new lessons in mounting field studies rapidly and efficiently. For example, to support the study in Tongliang, a fully equipped laboratory was established almost overnight at Tongliang County Hospital to process and store all biological samples collected at delivery from the mothers and newborns. The laboratory operated around the clock in order to maintain the quality of specimens. When a centrifuge broke, a replacement centrifuge was immediately found in the Children's Hospital of Chongqing University of Medical Sciences and quickly driven to Tongliang—one hour and a half away; no samples were lost. Throughout the enrollment period, blood samples were picked up immediately after delivery at the four participating hospitals by the laboratory coordinator—on a bicycle. The same bicycle was also used to collect the global position system data on the location of study participants' residences—a practical merging of low and high technology.

POTENTIAL IMPACTS

It is anticipated that the CCCEH China project will continue to contribute vital scientific information to the debate on energy policy in China, both at the local level and nationwide. Fortunately, Chongqing municipality is considering a plan to shut down more of its highly polluting coal-fired plants and expand the use of natural gas and energy efficiency measures. Preliminary NRDC work in Jiangsu Province has shown that energy efficiency incentive programs administered by the local government through the utility company could eliminate the need for two large power plants every 3 to 4 years. Multiplied nationwide, children's health and general air quality benefits would be substantial. With its partners, the CCCEH China project plans to quantify the health benefits from lowered coal burning emissions and apply that quantification to key utility energy efficiency demonstration areas, such as Jiangsu Province, Chongqing municipality, and other regions.

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COMMENTARY

Opening up the Floor: Environmental Performance Information Disclosure Pilot Programs in Zhenjiang and Hohhot

By Wanxin Li

The Chinese government has been promulgating ever-stricter pollution control laws over the past 25 years—experimenting with harsher penalties for pollution violations, incentives for industries, market-based tools, and most recently a stronger environmental impact assessment (EIA) law. One notable gap hindering the effectiveness of all of these more innovative pollution control policies has been the lack of transparency and formal involvement of the public. In 2006, China's State Environmental Protection Administration (SEPA) introduced—with much fanfare—groundbreaking regulations requiring public hearings for EIAs, as well as another much less publicized national program on environmental performance information disclosure (EPID).

The EPID program stems from a major pilot project supported by the World Bank's InfoDev Program, which since 1998 has enabled SEPA, China Research Academy of Environmental Sciences (CRAES), and Nanjing University to carry out two municipal-level pilot programs. Adapted from Indonesia's PROPER, EPID in China rates the environmental performance of industries from best to worst in five colors—green, blue, yellow, red, and black. The ratings of each industry are then disseminated to the public through the news media. Two municipalities, Zhenjiang (Jiangsu Province) and Hohhot (Inner Mongolia) were chosen to pilot this program between 1999 and 2000.

The EPID pilot program was extensively implemented in Zhenjiang. A well-publicized press conference was held in July 2000 to announce the color rating results of the 91 participating industrial enterprises. The Zhenjiang environmental protection bureau (EPB) subsequently transformed its EPID pilot into a standardized operation and since 2000 has greatly expanded its size and scope. The number of enterprises participating in the EPID program in Zhenjiang increased from 91 in 2000 to 800 in 2005. In 2005, besides manufacturing industries (e.g., iron, steel, paper, and pulp), the environmental performance of about 80 tertiary industries (e.g., restaurants and hotels) was color rated and disclosed in Zhenjiang. In 2002, EPID was expanded province-wide in Jiangsu.

In contrast to Zhenjiang, the Hohhot government never enthusiastically embraced the EPID pilot. In fact, the color ratings of 107 enterprises in 1999 in Hohhot were never presented through a press conference and the city's EPID program was stopped after the first year's pilot.

Between November 2004 and August 2005, I spent ten months conducting fieldwork for my dissertation, seeking to make sense of the contrasting results of these two pilot programs. I carried out countless open-ended interviews and structured questionnaires to examine the implementation processes and program impacts in the two cities. SEPA is attempting to make EPID a national program, which underscores the importance of investigating past experience and finding out what drove the success and shortcomings in these two very divergent pilot programs. My investigation focused on two crucial questions: (1) how the two EPBs perceived their tasks in implementing the EPID program; and (2) what resources (e.g., financial, technical, political, and informational) were available to the EPBs to carry out the program.

PERCEPTION OF THE TASK

Two Chinese research institutions—Nanjing University and the Hohhot Research Academy

of Environmental Sciences (HRAES) signed a contract with the World Bank to execute EPID. Nanjing University positioned itself to provide technical assistance and gave the responsibility of implementing EPID to the Zhenjiang EPB. The bureau leadership embraced EPID immediately. Of central importance was the EPB Director Chu who believed EPID would be instrumental for his EPB to better manage industrial enterprises and to utilize the pubic pressure to help keep industry clean. In Hohhot, HRAES did not formally partner with the Hohhot EPB to implement EPID. Therefore, the Hohhot EPB leaders viewed EPID as a research project and not a management tool with which to advance their pollution control capacity. In general, the Hohhot EPB viewed the EPID pilot program as an extra and unimportant task.

RESOURCES AT DISPOSAL OF THE IMPLEMENTERS

Accessibility of Environmental Information

To implement EPID, access to industry-level pollution information—such as pollutant discharge, administrative penalties, fines, and citizen complaints—is key. Within EPBs, the records of violations, penalties, and citizen complaints are kept in the offices of compliance and enforcement, pollution control, and planning. Monitoring stations run by local EPBs are responsible for collecting information on both ambient environmental quality and pollution. In China, a station monitoring industries will generally carry out the following four types of tasks: (1) regular monitoring of general pollution sources once a year, which is assigned by the EPB planning and pollution control offices; (2) targeted monitoring of important pollution sources, usually 3 to 4 times a year as assigned by the same EPB offices as noted above; (3) monitoring specifically for environmental campaigns or investigations ordered by the local EPB compliance and enforcement office, local People's Congress, or other upper level agencies; and (4) contracted monitoring by industry.[1]

Despite EPB requirements for industries to self-report pollution information once a year, most Chinese factories lack the capacity to monitor their emissions. Thus, industries must contract with local EPB-run monitoring stations, which use charges to industries for employee salaries. As a result, monitoring stations tend to prefer contract work to mandatory assignments, which have more modest compensation. Not surprisingly, sometimes the reliability and accuracy of pollution information are compromised because business interests prevail under such contractual relationships.[2]

The pollution information for both EPID pilot programs was mainly acquired through regular monitoring once a year for low polluting enterprises and 3 to 4 times a year for highly polluting enterprises. However, the administrative capacity—budget size, percentage of environmental professionals, and monitoring facilities—of the Zhenjiang EPB was superior to that of Hohhot. (See Table 1). As a result, the environmental information available for EPID in Zhenjiang was much more comprehensive than that in Hohhot.

Technical Support

To develop a computerized color rating system, Nanjing University provided technical support directly to the Zhenjiang EPB. In contrast, CRAES assisted HRAES but rarely interacted with the Hohhot EPB. Nanjing University is only 80 kilometers (km) away from Zhenjiang. A then-doctoral student at Nanjing University was working fulltime on this Zhenjiang EPID pilot. Between early 1999 and July 2000, he visited the Zhenjiang EPB office 2 to 3 times a week attending meetings and discussions, and writing and testing computer programs for the rating system.

TABLE 1. Staff and Equipment of Zhenjiang and Hohhot EPBs in 1999

	Zhenjiang	Hohhot
EPB Administrative Staff	**70**	**21**
Compliance & Enforcement Office Staff	**20**	**3**
Monitoring Station Staff (percent professional)	**60 (90)**	**81 (70)**
Real time mobile monitors (in 2004)	**4**	**0**

Source: Compiled by author through interviews in 2004-2005.

In contrast, CRAES is located in Beijing, 669 km away from Hohhot. CREAS is a research organ of SEPA, where the in-house experts are always fully loaded with urgent work of national or regional importance. Because of the travel time and already extensive workload, it was difficult for CREAS experts to go to Hohhot frequently for meetings and discussions on EPID. Between February 1999 and March 2000, CREAS researchers paid less than ten visits to Hohhot. The computerized color rating system was mainly developed in Beijing and tested with pollution data provided by Hohhot EPB through HRAES.

Delegation of Authority and Trust

In Zhenjiang, Director Chu relied on a colleague who had worked with him for over 17 years—Ms. Qu, the head of the environmental management and environmental science and technology office—for EPID implementation. There were occasions when urgent decisions on EPID needed to be made when Director Chu was not available. When these moments arose, Qu was always available to take over; for example, Qu drafted a memo and submitted it to the legal office of the Zhenjiang city government when Director Chu was overseas. Upon Director Chu's return, he praised Qu for taking the initiative. Such delegation of authority is relatively rare within China's risk-averse bureaucracies where asking for advice from and reporting to higher-level officials before one acts is the norm. So the trusting relationship Director Chu and Ms. Qu developed over the years made Qu the *de facto* decision-maker on EPID. Under this attentive manager the Zhenjiang EPID program's implementation was very smooth and productive.

In contrast, the EPID pilot in Hohhot was contracted to HRAES and the director of HRAES struggled to get sufficient power to implement the pilot program. Since HRAES is lower than the Hohhot EPB in the government hierarchy, HRAES researchers had to work through the Hohhot EPB in dealing with relevant municipal agencies and industries in Hohhot. In short, while HRAES was assigned the responsibility to carry out the EPID pilot it was not given the authority. Throughout the pilot program, the administrative authority remained with Hohhot EPB, which greatly hindered the ability of HRAES to implement EPID.

Financial Resources

In Zhenjiang, implementing EPID did not require additional financial resources since local EPB staff members carried out the work. Making the color rating results headlines of local newspapers cost the Zhenjiang EPB about 100,000 Yuan in 2005. The Zhenjiang EPB paid 24,000 Yuan to cover EPID training expenses with the Jiangsu provincial EPB in 2003. The funds from the World Bank's InfoDev Program helped cover much of the research costs in both cities. In short, for both the Zhenjiang and Hohhot EPBs, funding was not an obstacle in implementing EPID programs.

CONTEXT OF THE EPID PILOT PROGRAMS

China has a long reputation of government secrecy. Thus, disclosing the environmental performance of industrial enterprises—many of which are government owned—inevitably brings local industries and governments under unaccustomed public scrutiny and potentially could reveal corrupt conduct. Economic development has been the top priority in China for the past 25 year, which has meant environmental goals are frequently compromised by local government agencies that even help their enterprises circumvent pollution control regulations (Economy, 1997; Chen, & Uitto, 2002).

To help prevent the potential logjam over revealing industry information, Director Chu of the Zhenjiang EPB actively reached out to the city government and relevant agencies to articulate the improvements EPID could bring to the environmental protection work in Zhenjiang. By making the environmental performance of industrial enterprises visible, the public would be empowered to target bad polluters and help the EPB take enforcement actions.

> **"Environmental goals are frequently compromised by local government agencies that even help their enterprises circumvent pollution control regulations.**

The Zhenjiang city government was receptive to Director Chu's proposal to strengthen environmental enforcement, for in 1999 SEPA carried out the "Midnight Action" environmental campaign,

aimed at bringing industrial enterprises located along the Yangtze River into compliance with pollution emission standards by conducting surprise inspections at night. This campaign put great pressure on the Zhenjiang city government, because if SEPA had discovered the large number of industrial enterprises out of compliance, the Zhenjiang EPB and city government would have been put to shame. Thus, the city government was open and supportive of the EPID pilot.

In contrast, the Hohhot EPID pilot implementation team never actively reached out to the city government. In January 2000, when the color rating results were ready to be made public, the Hohhot city government was at odds on how to proceed, as an enterprise that contributed over one-third of the local tax revenue had received a rating of "black." Consequently, the city government refused to disclose the EPID pilot rating results. It was not until March 2000 that an internal meeting was held in a government office building, in which only select news reporters and representatives of enterprises who participated in EPID program were invited to discuss the rating results.

IMPACT ON THE ENVIRONMENTAL BEHAVIOR OF INDUSTRY AND THE PUBLIC

The EPID programs in China are voluntary for municipal governments but once a municipality adopts the program, participation by local industries is mandatory. This requirement preempts industry negotiation on conditions for participating in an EPID program.

The Zhenjiang EPB officials are exploring ways to strengthen the EPID program to improve monitoring and enforcement work. For example, they are planning to target "yellow" enterprises that are in partial compliance and require them to adopt cleaner production methods that could potentially bring them into full compliance. Ironically, the Zhenjiang EPB faces a challenge in keeping the highest rated industries interested in the program, for such industries were not satisfied with simply having positive publicity in local newspapers. For example, "green" and "blue" enterprises in Zhenjiang requested more substantial benefits for their good performance, such as favorable treatment by the Zhenjiang EPB in loan applications for environmental protection work or rights to label their product as green. These

> **These cleaner industries were frustrated because they did not see how their time and commitment to the EPID program helped their bottom line.**

cleaner industries were frustrated because they did not see how their time and commitment to the EPID program helped their bottom line.[3] The dissatisfaction of these industries highlights an important follow-up issue that EPBs should address in later implementation of the EPID program.

Another notable gap in Zhenjiang's program is the lack of public engagement. The two EPID pilots published color-rating results in local newspapers or on the Internet. But neither undertook active public education programs to teach citizens how to understand and use the rating information. Thus, without the government involving the public in the EPID pilot, a key piece of the information dissemination program was missing.

Between June and July of 2000, poor public engagement was made increasingly apparent when the Zhenjiang EPB distributed pamphlets entitled *Background, Definition, Purpose, and Outlook of EPID* to city government agencies and the mass media, but not to the general public. Since the pilot project failed to engage the public, it is not surprising that a 2000 poll conducted in Zhenjiang by Nanjing University on the information disclosure program showed that although 56 percent of the 845 survey respondents were aware of the EPID pilot program, only 8.3 percent understood its objectives (Wang, Cao, Wang, & Lu, 2002). The Hohhot EPID pilot also did not carry out any public education program on EPID.

Despite the lack of public empowerment, some industries did feel public pressure. For example in Zhenjiang, the CEO of a construction materials manufacturing company which was rated "black" in 2002 decided to invest in wastewater treatment because he could not stand comments his friends made at dinner parties, enquiring into why his company was rated "black." By 2003 this company had raised its rating to "blue." [4]

IMPLICATIONS OF EPID PILOT PROGRAMS FOR REGULATORY ENFORCEMENT IN CHINA

An informational approach to environmental regulations like EPID allows firms to choose whether or not, and how, to comply with environmental regulations. For EPID to have an effect on environmental regulatory enforcement, the government needs to have the capacity to collect accurate and reliable information and disseminate the results to both industry and the public. The public has to come to understand that they are not only passive information receivers, but that EPID empowers them to take action. In this manner, poor industry performers will know they might become the target of pressure from government and the public.

However, for disclosure programs to bridge the information and enforcement gap in China's environmental governance system, there is an urgent need to establish multi-stakeholder dialogues on environmental information disclosure between the government, industry, and the public. In regions where the level of public environmental awareness is low, such dialogues will be crucial in helping the public understand pollution information and transform society into environmental enforcers. While the Zhenjiang pilot program was more successful in engaging the government and industry participants than the Hohhot pilot program, both failed to establish stakeholder dialogues on EPID or to engage public participation in environmental enforcement in a meaningful manner.

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NOTES

1. Interview 07182005-01. The names of these four types of monitoring of pollution in Chinese are: (1) *changgui jiance*; (2) *zhongdian wuranyuan jiance*; (3) *zhuanxiang jiance*; (4) *weituo jiance*.
2. Interview 07182005-01.
3. Interviews 06062005-02; 06062005-03; 06062005-04; 06072005-01; 06072005-02; 06082005-01.
4. Interview 06082005-03.