

COMMENTARIES

Sue You Sue Me Blues

By Michael Ma

Several of my American friends have told me how the work of environmental protection is done primarily in the courts in their country, because that is often the only way to ensure polluting industries comply with the law. While the basic causes of environmental degradation are the same in both countries, effective enforcement of environmental legislation in China has been hampered by its weak legal system. The seeds of change already have been sown however, in two very different ways.

The previous two issues of the *China Environment Series* ran case studies of Professor Wang Canfa's Center of Legal Advice for Pollution Victims (CLAPV), which has been enthusiastically received by environmentalists in China and abroad. Its pro bono services are noble and its legal practice groundbreaking in China. However, as a nonprofit organization that depends heavily on support from foreign foundations, it is unique and cannot be easily replicated. This model therefore has a limited potential in addressing China's 300,000 environmental disputes per year.

Meanwhile, some Chinese lawyers are taking a more commercial approach to environmental litigation. These are full-time solicitors who make their living from lawsuit earnings. Their decision to take on a case is based on cold financial calculations rather than goodwill. Although one cannot expect them to give clients a commission discount like the volunteer legal assistants, pollution victims can be certain the lawyers will stop at nothing to win a case.

Xia Jun is one such lawyer, and the cases he handles illustrate well the strategies and tactics adopted by this shrewd, tenacious type. One particularly relevant case originated from a water pollution incident in 2000, when a sudden sewage outbreak in the Luan River (located in north China's Hebei province) decimated Laoting county's tidal flat shellfish aquaculture.

When Mr. Xia heard about the incident and the big losses, he and three other colleagues from the Beijing Zhongzi Law Office went to the farmers and encouraged them to sue the polluters. To attract these poor farmers, Mr. Xia's firm offered to collect less than 20 percent of the compensation earnings as payment, and only after the victims received their money. Eighteen desperate farmers finally accepted the deal and filed a class action

suit against nine paper mills and chemical factories in the neighboring Qianan county, demanding 20 million RMB in compensation.

The lawyers knew that to win such a difficult case they must first find the right court. Chinese law allows for considerable leeway in the choice of court, so the lawyers deliberated carefully about where their chances would be best. The first option would be to file suit in the court in Laoting county, where the damage took place. Feeling that the Laoting County Court lacked sufficient power to enforce such huge compensation, they looked elsewhere. They avoided the Qianan County Court, where the polluting factories were located, as well as the Medium Court in Tangshan City, which has jurisdiction over both Laoting and Qianan counties, out of concern that the polluters, who are major contributors to the local economy, may have influence over these courts.

Finally they selected the Tianjin Maritime Court, which has jurisdiction over the region's inter-tidal zone. This court, located in another municipality, is less influenced by the powerful polluters. More importantly, the newly opened court was looking for some big cases to establish its name.

By the time the court was selected several months had passed since the incident took place, making it impossible to collect a sample of the wastewater that supposedly caused the incident. Mr. Xia managed to persuade the judge to try the case according to the rule of "Reverse Onus of Proof," meaning that the pollution victims only need to show basic evidence that the pollution exists and the damage occurred, leaving the onus on polluters to prove, with evidence, that their emissions had nothing to do with the damages. The "Reverse Onus of Proof" rule, in existence since 1992, is often neglected by Chinese judges, resulting in many victims losing their chance of litigation due to failure to collect emission samples.

In this particular case, the "Reverse Onus of Proof" rule proved to be the key move. The checks done by a certified water quality monitoring department under the Ministry of Water Resources at the request of the solicitors proved that wastewater emissions from the defendant factories contained chemical substances that could harm the shellfish industry. The monitors also determined the

quantity of wastewater discharged into the Luan River was sufficient to cause serious contamination of the river's estuary. Meanwhile, none of the nine defendants could present convincing evidence showing that their discharge was not the wastewater that killed the shellfish, or that their wastewater did not flow into the Luan River estuary. The court thus found that emissions by defendant factories were directly linked to the damage sustained by shellfish farmers, and ordered the defendants to pay a total compensation of 13.66 million RMB.

to drought-stricken Tianjin municipality, sewage water from the Grand Canal was diverted into another river resulting in severe losses for local Hebei fish and shellfish farmers. This time the lawyers will call on the state for compensation. The good news is that they do not have to pay a penny in court fees, but Xia expected it to be more difficult to rally plaintiffs for this case, because the defendant would be the government. While the Tianjin Maritime Court was ideal for the Luan River case, the lawyers will have to choose another court in order to avoid

Chinese courts are notorious for not enforcing compensation, even after a verdict requiring it.

Chinese courts are notorious for not enforcing compensation, even after a verdict requiring it, and especially when the ruling goes against old and unprofitable state-owned enterprises. This weakness of Chinese courts could be lethal to commercial lawyers like Mr. Xia who take no commission until compensation is paid. To assure they are paid, in the Luan River case, the lawyers successfully persuaded the judge to rule that the nine defendants shoulder "Joint Tortious Liability," meaning industries, as a group, are responsible for paying compensation. This was a breakthrough because Chinese courts usually impose such liability only when all defendants jointly conspire in an action. The court's ruling enhanced the chance for compensation to be paid in the case that some defendants lacked the finances to do so individually.

To prevent intervention by the polluters' powerful government contacts, the lawyers made skillful use of the news media to whip up public pressure. They regularly briefed newspapers, TV, and radio stations on their progress and published their own articles in newspapers and on news Web sites.

The huge amount of compensation sought is actually the most striking point in this case. It is a double edge sword because the more money the plaintiffs seek, the more they must pay the court for handling the case. In this case the court costs alone reached 160,000 RMB. It is hard for nonprofit legal assistants to bear such high risks, but the potential for high return is very alluring to commercial lawyers like Mr. Xia.

In fact, Mr. Xia and his colleagues are preparing for an even larger case involving over 100 million RMB in economic losses. They read from a news release by the State Oceanic Administration that to guarantee the quality of water in an emergency transfer from the Yellow River

suing the Tianjin government in its own municipal court.

Statistics show that nuisance cases like construction noise, blocking of sunshine by high buildings or waste cooking gas pollution constitute the biggest share of environmental disputes in China. While Professor Wang's center has handled many such cases, lawyers like Xia Jun stay far away from them because it is hard to define losses. Moreover, Chinese courts are unlikely to award compensation for direct losses, let alone indirect loss or mental suffering.

It is more than just a coincidence that another environmental lawyer, Guo Xiapu, deals almost exclusively with water pollution cases. Mr. Guo works for Ruixin Law Firm, based in Yancheng city in south China's Jiangsu province. Almost all of the nine cases he has handled since becoming a lawyer in 1999 have been water pollution disputes because they involved large, definable losses, especially to fish and shellfish breeders.

Just like Xia Jun, Mr. Guo also charges a compensation-based commission for environmental lawsuits—he usually collects 20 to 30 percent of compensation earnings as his fee. If the amount of compensation is particularly large, his commission rate could drop to as low as two percent.

Another similarity between Mr. Xia and Mr. Guo is that they both have special relationships with China's Environmental Protection Departments. Mr. Xia's law firm has a long-term, strategic relationship with the State Environmental Protection Administration (SEPA), while Mr. Guo used to be a local Environment Protection Bureau (EPB) official, handling environmental disputes for 10 years before eventually quitting out of disillusionment with the system. The contacts they established in such organizations provide a considerable understanding of environmental policies, rules, and

procedures; along with the clout necessary to take on cases involving powerful polluting interests.

If the commission ratio and the yardstick in case selection still cannot fully distinguish a commercial environmental law firm from a nonprofit legal assistance center, then those whom they agree to represent surely will. Professor Wang Canfa claimed that he and his center only represent the victims in such cases. But commercial lawyers like Mr. Xia and Mr. Guo would not think twice about defending polluters if they pay. In fact, Mr. Guo recently helped a local factory reduce the pollution penalty from one million RMB to 200,000 RMB in court.

Although the commercial lawyers may look like a bunch of “ambulance chasers,” their actions still win applause in China because without them some victims will almost surely be left uncompensated in hospitals. Considering only one percent of victims choose to fight for their rights in court, it makes sense to have some chasers running for them. To illustrate the challenging and dire situation, to make the Qianan factories pay compensation, Mr. Xia is threatening to sue the Qianan EPB for dereliction of duty.

As it stands, China has passed a great deal of environmental legislation that criminalizes violations, but these provisions are rarely tested. The endeavors of these lawyers will help stimulate eventual recovery of the

“chronic muscular atrophy” of China’s legal body. In the Laoting case a chemical factory was sentenced to pay compensation despite the fact that the wastewater it discharged met state standards. This is the first time a Chinese court has made such a ruling, and it could have far reaching significance for future environmental litigation.

Most importantly, the model being promoted by these lawyers is easy to replicate, as it is fully self-driven. One successful (and well publicized) case could encourage more victims to go to court and attract more lawyers to take on such cases. The rapid changes occurring in Chinese society also are working to solidify this trend. Mr. Guo from Yancheng is pleased that it is easier to win a case than before, as most pollution producing state-owned factories in his city have been sold to private investors—saving the government from loss of face, the environment from unchecked pollution, and lawyers like Guo from a lack of work.

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Learning How to Ride the Wind: The Disappointments and Potential of Wind Power in China

By Joanna Lewis

A visit to China's Nan'ao Island should be enough to convince anyone that wind turbines can be beautiful structures. Driving up the dirt roads to the turbine sites, one is greeted by tall, futuristic towers lining the ridges of the island's mountainous terrain and from the turbine site one can gaze down at the green island



Windmills in Operation on Nan'ao Island

and the surrounding bright blue ocean waters. Nan'ao is a window into another side of China providing a stark contrast to the smog-ridden urban centers—it is a coastal island community exporting clean electricity to the mainland.

China's total exploitable wind power resources are estimated to be around 250 gigawatts (GW).¹ If China develops even one-half of its conservatively estimated wind resources it could generate around 275 billion kilowatt-hours of power each year, or about one-fifth the country's current demand (Lew and Logan, 2001). However, as of 2002, China's installed wind power capacity totaled 468 megawatts (MW), representing only a fraction of a percent of the total wind power potential (Electric Power Research Institute of China, 2001; American Wind Energy Association, 2002).

The Expectations:

Rapid Growth and Local Production

In the late 1990s, many energy analysts within China and abroad were predicting how China was likely to meet its target wind capacity for the year 2000 of 1,000 MW, and would easily meet, if not surpass, the 2005 target of

1500 MW (Zhang, Wang, Zhuang, Hamrin & Baruch, 2001; Lew & Logan, 2001). The chain of events to catalyze greater wind energy growth was expected to proceed as follows: the best available international wind power technology would be transferred to China, and the increased localization of wind turbine production would reduce the cost—by as much as 20 percent (Taylor & Bogach, 1998). The reduced price of the technology would result in increased demand for new wind farms, thereby expanding capacity throughout China. However, today with more wind projects cancelled than new projects sited, expectations are less optimistic. National targets for wind power in 2000 were not met, and it is even less likely that China will meet the target of 1,500 MW by 2010. Clearly this is a disappointing trend to all who were eagerly anticipating the escalation of China's wind industry.

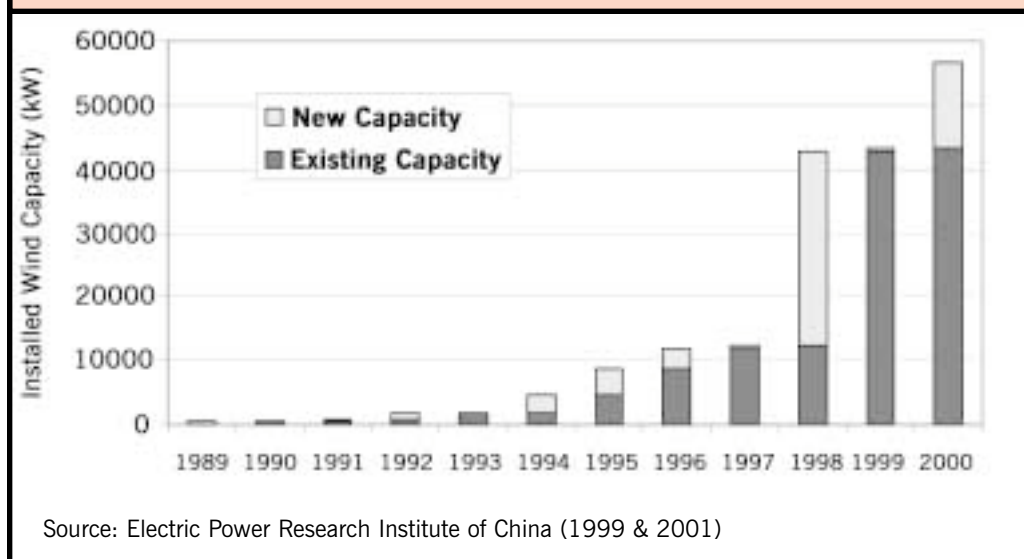
The Disappointments:

Slow Growth and Continued High Costs

Since wind capacity did not increase as rapidly as both international experts and Chinese planners expected, it is important to examine what happened to interfere with this development. As planned, international wind power technology was transferred to China, and production has gradually become more localized—but not evenly across the industry. From the beginning, manufacturers in China created their own innovative small turbine design technology; conversely, producers of medium and large turbines began with technology imported from abroad (Lew, Williams, Xie, & Zhang, 1998). This pattern of foreign technology imports for Chinese wind farms has persisted and local manufacturers of medium and large turbines are still trying to capture a share in the market.

Local production of components for Chinese-foreign joint venture operations also is moving less rapidly than experts and planners had anticipated. Technology transfer programs initiated during the "Ride the Wind" (*Chengfeng*) Program in 1996 began with 20 percent local content with a goal of an increase to 80 percent as learning on the Chinese side progressed (Lew, 2000). The Guangzhou Institute of Energy Conversion asserts that China has "mastered" the manufacturing of the key components—derricks, generators, and gearboxes—and

Figure 1. Wind Power Capacity on Nan'ao Island



Source: Electric Power Research Institute of China (1999 & 2001)

that “progress has been made” on the control system and on glass fiber components.² The Xinjiang Wind Energy Company reports that they have produced their own 600-kilowatt (kW) turbines with 78 percent local content.³ Exactly what components are being manufactured locally and how this shift has been able to impact the overall cost of the technology in China is not well documented and is a topic for future research.

Even if localization resulted in less expensive technology, this has yet to be reflected in either the cost or the price of wind power in China. Although many studies have estimated the cost of wind power in China, the actual cost is unclear. Electricity produced through wind power typically costs more than electricity from coal-fired power plants, particularly in provinces with abundant coal resources (including wind-rich Inner Mongolia). The cost of wind power reported by wind farm developers in China has been conspicuously steady throughout the 1990s rather than declining, as has been the case in wind power markets of other countries such as the United Kingdom (Liu, Lin & Zhang, 2002).

Either the cost of wind power is not falling as rapidly as had been anticipated, or the declining cost is not being reflected in the price of wind power. Regardless of the cause, the continued high cost of wind power has lowered the demand for new wind farms considerably. While some new projects are going forward in China,⁴ other projects that were expected to materialize have been rejected.⁵ Foreign investors and multilateral organizations expected that demand for wind power would be driven partially by local and central governments looking to cleaner electricity sources to mitigate urban air pollution. However, except in a few cases (such as Shanghai),

environmental protection does not appear to be the primary driver in wind power development.

Potential Wind Power “Hot Spots”

The overall situation for new wind farms in China appears grim. However, two places in China will be very important to watch over the next couple of years, as their experience with wind farm development could potentially “make or break” the future of grid connected wind farms in China.

Nan'ao

The island of Nan'ao located near the city of Shantou on China's southeastern coast hosts the second largest wind farm in China, the largest concentration of wind power generation capacity in eastern China, and some of the best wind resources in the world (Zhang, Wang, Zhuang, Hamrin & Baruch, 2001). Wind power development was initially brought to Nan'ao by the local government for electrification of the island. The continued involvement of the local government in Nan'ao's wind power industry has proved instrumental in the continued development of the island's wind resources. Selling about 75 percent of the power produced by the island's wind farms to the mainland has become a profitable industry that brings important revenue to the small island economy (U.S. Embassy Beijing, 1999). Unlike many of China's large wind farms that are located in sparsely populated areas in western China with a relatively low demand for electricity, the location of wind farms in Nan'ao on China's southeastern coast places it close to electricity demand.

Part of the reason investment in wind projects on Nan'ao has been so successful is due to is a series of low-interest loans from foreign governments hoping to

promote their wind technology in China. Even without this benefit, the high cost of electricity in Guangdong province makes wind a competitive source of electricity,⁶ particularly when compared with the cost of other alternatives, such as hydropower from large plants in Yunnan province or locally produced nuclear power. Around 56 MW of wind power capacity is currently operating in Nan'ao (see Figure 1), with much of the island's remaining undeveloped land sited for wind farm development in the near future.

Shanghai

Two wind projects are planned for Shanghai and scheduled for completion by the end of 2003—a 6 MW project in Nanhui and a 14 MW project on Chongming Island. These projects, totaling 20 MW, are the only remaining component of what was initially a World Bank/Global Environment Facility (GEF) project consisting of 190 MW of wind capacity in four provinces that, along with Shanghai, included Inner Mongolia, Hebei, and Fujian.⁷ The support of the Shanghai municipal government was apparently crucial to the project's survival. Shanghai municipal leaders stated their motivations to support the project include “a desire to be seen as a modern, cosmopolitan and green city.” Moreover, this wind project would be a highly visible demonstration project that would both “provide evidence of the municipality's environmental objectives” and promote the development of “a wind equipment supply industry”

(World Bank, 2001). Both the Nan'ao and Shanghai wind projects have benefited from entrepreneurial local governments that recognized the benefit that wind power development could bring to their region.

Shanghai is quite similar to Nan'ao in terms of its wind resources and coastal island geography, and both sites have a capacity factor for power output of about 25 percent. (See Table 1). In addition, both Shanghai and Guangdong have some of the highest electricity prices in China.⁸ The construction of a transnational west-east pipeline from Xinjiang to Shanghai means that the primary source of new electric generation capacity being considered for Shanghai is natural gas-fired power plants. Many believe the cost of natural gas from this pipeline will be much higher than original projections due to underestimates of construction costs for the pipeline and associated distribution networks (“China's Big Bet on Gas,” 2002).

Shanghai and Nan'ao may be leading the way for future wind power development in China. Nan'ao has already been recognized as China's wind power development “success story” (U.S. Embassy Beijing, 1999). Recently, policymakers in Hong Kong—comprised of islands with geography and wind resources similar to those of Nan'ao—have been looking to Nan'ao to aid in making decisions about developing their own wind resources.⁹ The decision to promote the development of Shanghai's wind resources may very likely have been influenced by Nan'ao's success.

Table 1. Nan'ao and Shanghai Wind Power Comparisons

	Total Wind Capacity	Average Annual Wind Speed	Annual Power Generation	Capacity Factor ^c
Nan'ao ^a	56.78 MW	7.0-7.5 m/s at 30 m	~124 GWh/year	~25 percent
Shanghai ^b	20 MW	7.5 m/s at 50 m	44.6 GWh/year	~25 percent

^aAnnual power generation and capacity factor are extrapolated from power output data for two wind farms on Nan'ao totaling two-thirds of the island's total capacity.¹

^bThe Shanghai wind farm is planned for construction in 2003. All wind farm figures are therefore estimates (SETC/GEF, 2001).

^cCapacity Factor (CF) is the actual or predicted output as a percent of installed capacity. Although many calculations estimating power output from future wind farms assume a 30 percent CF, in most cases this is significantly above the average achieved. See for example “Generating Capacity Factors for UK Wind Power Stations” <www.cprw.org.uk/wind/winstat.htm>. U.S. Department of Energy reports the “capacity factor for a wind farm ranges from 20 to 35 percent” <http://www.eren.doe.gov/femp/techassist/wind_energy.html>.

TABLE NOTES

¹ For one Nan'ao wind farm, the capacity factor was predicted by the developer to be 37 percent. However wind farm data shows that in 6 years of operation, the highest annual Capacity Factor (CF) was 35 percent, and the average CF over the 6 years was 27.8 percent (Source: personal data collection in Nan'ao, 2002).

Successful wind development in Shanghai could have powerful implications for promoting wind power development in China's coastal region. As stated in the World Bank/GEF project justification document:

The Shanghai wind farms would demonstrate the viability of wind power in China's coastal regions, where wind resources are very good and costs of conventional alternatives high....As such, assisting Shanghai develop its wind potential will have high payoffs by helping to reduce the perceived risks. Other provinces would be then more inclined to follow suit (World Bank, 2001: p.2 memorandum; p.4 attachment).

There is currently an opportunity for China to use other eastern coastal sites, offshore islands, and even offshore ocean sites for additional wind farm development. The U.S. Department of Energy, the National Renewable Energy Laboratory, and the U.S. Environmental Protection Agency completed a wind resource assessment and mapping of southeastern China in 1998 that identified 47 GW of wind development potential in the provinces of Jiangxi, Fujian, and the eastern half of Guangdong.¹⁰ China's eastern coastal region is expected to be a prime site for offshore wind development, with easily exploitable offshore areas along the east China coastline at a water depth between 2 and 15 meters estimated to have a minimum of 750 MW of resource potential (Shi, 2000).¹¹

The increased decentralization of political authority in China has given provincial and local governments an increased ability to make decisions about electric power technology options and to incorporate regional and local motivations and incentives. The Nan'ao and Shanghai cases illustrate how local government support may be crucial for future wind power development in China. Moreover, local governments may recognize that the environmental benefit of substituting future fossil fuel generation initiatives with coastal and offshore wind development would be so large that even in the face of seemingly adverse political conditions, wind power is not something to be overlooked in planning for China's energy future.

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ENDNOTES

¹ This is an estimate at a 10-meter hub height (http://www.nrel.gov/china/wind_energy.html). Since wind resources increase with height this estimate would likely be greater at a standard tower height of around 50 meters.

² Guangzhou Institute of Energy Conversion (under the direction of State Ministry of Science & Technology, State Economic & Trade Commission, and Chinese Academy of Sciences). http://www.newenergy.org.cn/english/wind/science/progress_windpower.htm

³ Xinjiang Wind Energy Company Web site. <http://www.xjwind.com>

⁴ Projects moving forward include the Asian Development Bank/Global Environment Facility project for three wind farms in Xinjiang, Heilongjiang, and Liaoning provinces, totaling 78 MW (ADB, 2000).

⁵ The World Bank/Global Environment Facility project eliminated wind farms in three out of four proposed sites, totaling 170 MW (World Bank, 2001).

⁶ Guangdong Province electricity rates are approximately 0.6 Yuan/kWh. (Lawrence Berkeley National Laboratory, *China Energy Databook*, 2001)

⁷ It was requested by the China Ministry of Finance that these wind farms be deleted from the project (World Bank, 2001, p.2). It is believed that this was in large part due to the uncertainties surrounding the restructuring of the power sector, as well as inadequate government policies (World Bank, 2001, p.3).

⁸ Shanghai Municipality electricity rates range from 0.612 for residential consumers to 0.776 for industrial consumers. (*China Price Yearbook*, 1998).

⁹ For more information see FoE (HK) article: "Wind Power Hong Kong 2002" Seminar [On-line]. Available: <http://www.ecc.org.hk/3emarinfo9.htm> and Lu et. al, 2002

¹⁰ http://www.nrel.gov/china/wind_energy.html

¹¹ Wind resource is estimated at a height of 10 meters.

Weaving a Green Web: The Internet and Environmental Activism in China

By Guobin Yang

The rise of Web-based voluntary groups in China signals a gradual change in citizens' relationship to state politics, a trend that has been quietly under way for some time. This trend is discernible in other areas of contemporary Chinese life, but seems especially visible in the environmental protection field. If traditional Chinese politics is top-down, the environmental movement represents the rise of a bottom-up, grassroots politics. This grassroots politics is characterized by direct participation (in words and deeds), self-organizing, and community action.

Friends of Nature, the first and one of the most influential environmental nongovernmental organizations (NGOs) in China, was founded in 1994, the same year China was connected to the Internet.¹ It is thus not surprising that as environmental activism has grown, Web sites devoted to environmental issues also have proliferated. While recent research and writings on the environmental movement in China have outlined the rise of NGOs and voluntary community action,² the role of the Internet in this movement has been overlooked.

In China, environmental Web sites have been created not only by green NGOs, but also by government agencies and research centers. In addition, personal homepages on environmental topics—ranging from green lifestyles to the protection of endangered species—have mushroomed. With the rise in public interest for the environment even commercial portal sites such as Netease.com run “green” on-line forums. Environmental Web sites also have begun to multiply among loosely organized groups of volunteers. Usually unregistered and with no full-time staff, these Web-based environmental volunteer groups represent a new trend and potentially powerful new direction for China's environmental movement. Counting such groups is challenging, for many are affiliated with university green groups, are outgrowths of existing NGOs, or simply are the initiatives of some highly motivated individuals.

In the hot summer of 2002 I traveled to China to learn about Web-based environmental groups. My field research, especially the lively conversations with environmentalists, informs the observations below on the character and potential of Internet environmental activism in China.

Four Web-Based Environmental Groups

During June and July of 2002 I tracked down the principal members of four Web-based environmental groups in Beijing, who candidly shared with me the goals and challenges of their groups. The first two groups were born on-line, while the latter two metamorphosed from “off-line” green activist initiatives.

Greener Beijing

Mr. Song Gang launched the Web site Greener Beijing (<http://gbj.grchina.net/greenerbj.htm>) in November 1998, which is now run mainly by his brother Song Xinzhou with the help of volunteers. During the first few years of its existence this site won prizes in national Web design competitions and was widely publicized in newspapers and TV news programs. Greener Beijing's “Environmental Forum” became a popular on-line bulletin board attracting 2,700 registered members. Members of Greener Beijing engage in three kinds of activities to promote a green culture—operating a Web site, conducting environmental protection projects, and organizing volunteer environmental awareness activities. While Greener Beijing does do some on-the-ground work, its central activity is maintaining and expanding the Web site, which has more than 12 informative sections including “Environmental Focus,” “Laws and Regulations,” “Environmental Forum,” and a page featuring the influential environmental writer and activist Tang Xiyang.³ This information packed site, which also has an English version, clearly reflects a significant time commitment of the volunteers.

Greener Beijing's on-line discussion forums have been catalysts for “off-line” environmental activism. For example, in 1999 one of the early on-line discussions on the recycling of used batteries sparked students at the Number One Middle School in Xiamen city (Fujian province) to organize a successful community battery recycling program. Another impressive on-line project of Greener Beijing was the launching of a “Save Tibetan Antelope Website Union” in January 2000, which drew national attention to this endangered species. The creation of the Website union helped Greener Beijing and environmentalists from 27 universities in Beijing to jointly organize environmental exhibit tours on many university campuses.

Green-Web

Green-Web (www.green-web.org) was launched in December 1999. Its main founder, Mr. Gao Tian, previously spent two years as a volunteer Web master for the “Green Forum” of the influential portal site Netease.com. The idea of launching this independent environmental Web site first arose from discussions on the “Green Forum.” Green-Web is first and foremost a virtual community composed of about 4,000 registered users. The Web site currently functions as a space for on-line discussions and exchange on environmental issues, but aims to develop into a portal site on environmental protection in China.

topics on environmental protection, and useful links to other environmental Web sites.

The Tibetan Antelope Information Center

Mr. Hu Jia together with a small group of individuals also interested in protecting endangered species set up the Tibetan Antelope Information Center (TAIC, www.taic.org) at the end of 1998. The Web site is maintained by volunteers on rented server space with grant support from the International Fund for Animal Welfare, the Worldwide Fund for Nature, and the Global Greengrants Fund. Since TAIC launched its site, more than 30 volunteers have contributed time and effort to

For groups of volunteer environmentalists lacking both official status and office space, an on-line presence is a key sign of their existence.

Like Greener Beijing, Green-Web volunteers also have begun to organize community environmental activities. One recent activity was a community education initiative called “Green Summer Night.” Usually with borrowed audiovisual equipment, Green-Web volunteers go into parks in Beijing to put on environmental exhibits or show environmental documentaries.

Green-Web also organizes bird-watching, recycling, and tree-planting activities. One of the most aggressive actions of Green-Web was the February 2002 launch of an on-line petition campaign to protect some wetlands in Shunyi county in suburban Beijing, a habitat of many birds and popular with birdwatchers. The local government planned to build an entertainment center and a golf course neighboring the wetlands—construction that threatened to destroy the habitat. This plan was exposed by the news media in October 2001. Joining a rising campaign against the development plan, Green-Web organized an on-line petition from 2 February to 12 April 2002. Green-Web’s campaign collected hundreds of on-line signatures and sent petition letters to about ten government agencies actions which were covered by the news media. According to the summary report published by Green-Web, the local government eventually canceled its development plan.

As of July 2002, Green-Web had about 20 core members in three cities—Shanghai, Guangzhou, and Beijing. This small group operates on a shoestring—their only computer was donated by a volunteer member and the Web site runs on donated commercial server space. Despite the limited resources, the Web site is beautifully designed and rich in content, with a discussion forum, an information center, an electronic newsletter, special

its construction and maintenance. The Web site serves as an information and communication center on the protection of the Tibetan antelope and some other endangered species in China. TAIC has recently launched a newly designed Web site containing eight links, including Archives on Tibetan Antelope, Research, People, Data Center, News, and a link on how to help in the protection efforts. The News link carries reports about what is happening in the “battlefield” (e.g., the fights against illegal poaching on the Qinghai-Tibetan Plateau).

Although in June 2002 TAIC still only had one computer, TAIC has been at the forefront of fighting poaching on the ground. Its members maintain close contact with anti-poaching patrols on the Qinghai-Tibetan Plateau and have been working hard to assist local environmental protection efforts by helping to set up local environmental organizations.

Han Hai Sha

The newest of the four Web-based groups, Han Hai Sha (literally Boundless Ocean of Sand, www.desert.org.cn) is a volunteer network devoted to desertification problems. Mr. Yang Hao led several other young environmentalists in Beijing (some of whom were members of Friends of Nature and Green-Web) to begin planning the network at the end of 2001. In March 2002, the first group of 50 volunteers was recruited through group e-mails and posted announcements in the on-line bulletin boards of Friends of Nature and Green-Web. These volunteers met twice over four months and launched the Han Hai Sha Web site and an electronic newsletter in June 2002.

Han Hai Sha aims to promote public awareness of desertification and mobilize community efforts to solve

practical problems. It emphasizes the gathering and dissemination of information through the Internet and works closely with experts and volunteers in areas plagued or threatened by desertification. Yang Hao has focused his group's outreach in two rural communities in Inner Mongolia and Sichuan province. Among other activities, it partners with the Institute of Desert Green Engineering of Chifeng city—a local environmental NGO in Inner Mongolia—to enhance public awareness of the challenges of desertification and related problems of rural poverty.

As of July 2002, Han Hai Sha did not own a computer and was completely reliant on volunteers. Despite this lack of resources, the Han Hai Sha Web site is quite rich in content. It contains a collection of historical writings about China's desert areas and an archive of commentaries and analyses of sandstorms.

The Key Roles of the Internet in Environmental Activism

Based upon the experiences of these small innovative Web groups, three general observations can be made about the role of the Internet in China's environmental movement:

The Internet enables voluntary environmental activity with minimal financial resources and in a restrictive political climate. All four groups except for Han Hai Sha have received small grant support from domestic or international environmental organizations, yet one common challenge for all of them is the lack of resources. Thus they depend on volunteers who have personal access to the Internet to gather information, edit material, as well as undertake Web design, and maintenance. Citizen volunteer groups also face obstacles in obtaining legal registration in China. In 1998, the State Council promulgated two regulations concerning the registration and management of social organizations and nonprofit enterprises. The regulations require that applicants have a sponsoring institution and that within the same administrative area there should not be more than one organization for any specific type of work (e.g., Beijing would need only one NGO working on endangered species). Facing these barriers, some environmental and other types of aspiring social groups forgo registration and opt to organize on the Internet.

The Internet can be used for organizing both on- and off-line activities. Web sites can help organizations recruit volunteers for implementing off-line community projects (e.g., tree planting, exhibitions, and battery collection). Whereas virtual volunteering is done on personal, school, or public computers and includes designing and maintaining Web sites, hosting on-line forums, gathering

information for on-line publishing, and editing and distributing electronic newsletters. Virtual volunteering is essential for the operations of environmental Web groups, because they usually lack the office space or resources to bring volunteers together.

Web sites play a crucial role in providing environmental groups a presence and creating public visibility. For groups of volunteer environmentalists lacking both official status and office space, an on-line presence is a key sign of their existence. Because China's environmental movement is still small this sign is as important to the volunteers as to the outside world. The Web sites of these groups also provide a window into their environmental efforts at the community level—all four Web sites described above devote considerable space to showcasing their off-line activities. Disseminating stories of off-line activities and providing up-to-date information on environmental problems and trends on their Web sites give these groups and their causes greater public visibility. Greener Beijing, for example, increased its public influence by winning Web design competitions.

The Role of Web-based Groups in Environmental Problem Solving

These Web-based groups play two key roles in environmental problem solving: they raise environmental consciousness and help mobilize the public.

Raising Environmental Consciousness

Through their Web sites, electronic newsletters, forums, and on-line projects (such as petitions and publicity campaigns) these Web-based groups publicize environmental activist initiatives and raise the consciousness about China's environmental problems. Particularly important in this respect is the environmental discourse that these Web-based groups produce and circulate on-line. As even the names of Green-Web and Greener Beijing indicate, this discourse celebrates a green cultural consciousness and advocates a set of corresponding practices. In some cases, the discourse produced on-line spurs public action or grabs public attention beyond the audience of the Internet. For example, Greener Beijing's on-line campaign to save the Tibetan antelope was much publicized in national newspapers and TV programs.

How Internet environmental discourse is produced is also notable. Compared with the traditional mass media, the Internet is more open to public participation and interaction. It is therefore not surprising that the Web sites of these groups provide a space for common citizens to share information or voice their opinions. Admittedly,

the size of this public is still modest given that only a small percentage of the Chinese population owns a computer with Internet connection. Internet censorship is another potential challenge, though I did not hear complaints about such censorship from China's environmentalists during my field research in 2002.⁴ Nevertheless, China's Internet population has been growing rapidly, from one million in June 1998 to 45.8 million in June 2002.⁵ China's on-line environmental communities should expand along with the steady growth of the Internet population.

Public Mobilization

Web-based groups also contribute to environmental problem solving by mobilizing and organizing community efforts and resources. All the four groups discussed above move between the virtual and the "real" world to deal with environmental problems by undertaking community-based projects. Using the Internet has enabled these groups to reach and mobilize potential volunteers for educational and advocacy projects:

- The Tibetan Antelope Information Center uses its Web site to recruit volunteers for the Kekexili Nature Reserve;
- Greener Beijing uses its Web site to campaign for the protection of endangered species; and,
- Green-Web mobilized public support for its on-line petition for the protection of wetlands.

Off-line activities of these groups are constrained by their lack of financial and material resources. In the long run these Web-based green groups will need to overcome resource constraints in order to sustain their community efforts.

Web Activism and Political Change in China

The rise of Web-based environmental groups signals two striking political trends in contemporary China. First, Internet technology is facilitating the creation of new institutions for social change. Specifically, the Internet has enabled Web-based green groups to practice new ways of voluntary organizing and collective action. Two of the groups, Green-Web and Greener Beijing, started as exclusively on-line communities before expanding into on-the-ground environmental activism. For both, the Internet first brought together previously unorganized individuals. The other two groups, TAIC and Han Hai Sha, first organized off-line and then went on-line, yet

they emphasize the use of the Internet no less than the other two groups. For all four groups, therefore, the Internet provides a space for ordinary citizens to organize and act collectively and practice bottom-up politics. This was unimaginable even as recent as ten years ago. China watchers should monitor the long-term consequences of this new type of Internet-enabled associational life.

This grassroots politics is also practiced by other elements of the environmental movement in China, notably formally registered environmental NGOs such as Friends of Nature and Global Village of Beijing. It merits mention that registered social organizations in China are not permitted to open branch offices outside their city, therefore such groups may turn to the Internet to enhance their environmental education and outreach work. The four Web-based groups described in this paper provide innovative models in creating grassroots activism, which other Chinese NGOs may follow. Over time the green Web that Chinese environmentalists are weaving may reach far and wide.

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ENDNOTES

¹ For a list of the various technical steps, research initiatives, and agreements that took place in 1994 to create and facilitate Internet access in China see the China Internet Network Information Center Web site: <http://www.cnnic.net.cn/evolution.shtml>

²For studies of environmental NGOs in China, see Elizabeth Knup, "Environmental NGOs in China: An Overview," *China Environmental Series*, Issue 1 (1997), pp. 9-15; Zhao Xiumei, "Guanyu Beijing Huanbao de Diaocha Fenxi" (A Survey and Analysis of Environmental NGOs in Beijing), in Wang Ming (ed.), *Zhongguo NGO Yanjiu* (Studies of Chinese NGOs)

(Beijing: UNCRD and Tsinghua University, 2000), pp. 37-50; Peter Ho, "Greening Without Conflict? Environmentalism, NGOs and Civil Society in China," *Development and Change* Vol. 32, No.5 (2001), pp.893-921; Jennifer Turner and Fengshi Wu (eds.), *Green NGO and Environmental Journalist Forum: A Meeting of Environmentalists in Mainland China, Hong Kong, and Taiwan*, (Washington, D.C.: The Woodrow Wilson Center, 2002); and Fengshi Wu, "New Partners or Old Brothers? GONGOs in Transnational Environmental Advocacy in China," *China Environment Series*, Issue 5 (2002), pp. 45-58.

³ Tang Xiyang is a well-known writer and nature conservation activist in China, who was editor-in-chief of *Nature*, a magazine

established by the Beijing Nature Museum.

⁴ For a broader discussion of Internet censorship issues in China see Guobin Yang. (2003, forthcoming). "The Internet and Civil Society in China: A Preliminary Assessment." *The Journal of Contemporary China*.

⁵ The China Internet Network Information Center has been conducting semi-annual surveys of Internet development in China since October 1997. All survey reports are published at: <http://www.cnnic.net.cn/develst/report.shtml>

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Water Dispute in the Yellow River Basin: Challenges to a Centralized System

By Wang Yahua

Wandering and twisting through arid North China is the country's mother river—the Yellow River (*Huanghe*)—a river short of water and plagued with conflict. The struggle for Yellow River water among the nine riparian provinces began fifty years ago as small-scale disputes between a couple provinces during irrigation season. As economic development in China has accelerated over the past twenty years, disputes over the Yellow River's water have intensified. Surveying the length of this wondrous river over the last six months of 2002, I had an opportunity to see the growing water allocation contradictions within the basin. What I witnessed along the Yellow River reflects the faults of China's water allocation institutions and reveals the challenges facing the river's current governance system.

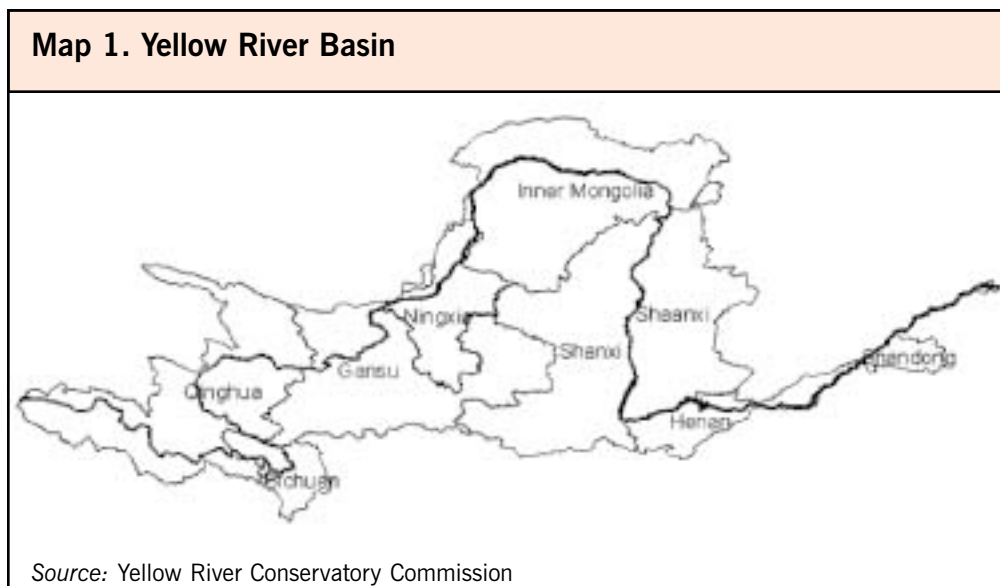
Drought and Disputes in 2002

2002 was a dramatic and stressful year for those managing the Yellow River. According to early rainfall forecasts, much rainwater would come in flood season (July to September). Thus, downstream local governments and the Yellow River Conservancy Commission (YRCC, a basin-wide administrative agency under China's Ministry of Water Resources) were mobilized to prepare for floods. But ultimately, just as in each of the past five years, no floods arrived. Without the rain, runoff from the upper

and middle reaches was down by 70 percent. Instead of floods, the basin faced a severe drought, which frustrated YRCC officers.

The YRCC has many technical and management strategies in its arsenal to deal with floods on this wild river, but the commission cannot make water out of dry riverbeds. The current drought represents a major change in the river, which for over the past 2,000 years has brought countless destructive floods to the basin. Some historians have speculated that the need to control the fierce floods of *Huanghe* necessitated the formation of a strong centralized regime in China (Toynbee, 1948; Wittfogel, 1957). Others have noted that in ancient China the failure of the imperial government to control the destruction of raging rivers was seen as a sign of a weak emperor who had lost the mandate of heaven (Ray Huang, 1989).

Today, the Yellow River remains one of the major natural resource concerns for China. While Chinese in ancient times could hardly have imagined a dry Yellow River, drought in this basin is the reality with which modern Chinese policymakers struggle. "Though it is flood season now, our task has turned to avoiding cut off of the river's flow (*duanliu*)," an officer charged in flood prevention in the YRCC told me with embarrassment. Continuous and severe drought in the 1990s led the central government in 1998 to mandate that YRCC's work



to prevent flow cut-off would become almost as important as flood prevention, originally the commission's core mission. YRCC must now try to maintain a minimum runoff of 30-50 cubic meters per second (m^3/s) at the river's estuary in Shandong.

After meeting and interviewing water officials at YRCC headquarters in Zhengzhou (Henan province), I reached the city of Jinan in Shandong province on 13 September 2002. The first water official receiving me was busy giving orders by phone—I heard him commanding someone to shut off a diversion gate in an irrigation district at once. After the phone call he showed me an electronic screen tracking the runoff in the estuary, which had fallen under $50 m^3/s$. He said YRCC had no choice but to cut back irrigation in Shandong.

Because September was the beginning of fall irrigation season in Shandong, the frequent gate shutoffs hurt the crops just as much as the ongoing drought. *Qilu Evening*, a local newspaper in Shandong, declared on 18 September 2002: "Shandong's severest drought since 1949! Drought is affecting 80 percent of crop areas with 1.2 million hectares suffering serious losses and 466 thousand hectares with no harvest. Agricultural losses amount to more than 10 billion Yuan." Though the figures reported seemed a little exaggerated according to my on-the-ground investigations in Shandong, the drought was indeed severe.

Sixty percent of Shandong's irrigated areas depend on Yellow River water, thus late delivery of water to the fields would mean the province would suffer more economic losses. Because irrigated crops would need the bulk of the fall waters by the end of September, mid-month the Shandong government sent a delegation to Beijing led by a vice chief of the province. The delegation reported the drought situation to the State Council and asked for 1.8 billion m^3 of water from upper reservoirs. The central government responded quickly to the request. Six days later, the State Council approved a diversion plan of 0.8 billion m^3 of water to support Shandong's fall irrigation.

The YRCC was responsible for executing this water redistribution plan to transfer water from upper reservoirs 4,000 kilometers away from Shandong; reservoirs that had been almost depleted by continuous drought. To carry out this water diversion YRCC had to restrict irrigation in the upper basin by about 200 million m^3 of water. Ningxia province and the Inner Mongolia autonomous region were hit the worst and both were reluctant to execute these water restrictions, so YRCC sent some inspectors to monitor the closing of diversion gates.

By the time I arrived in Ningxia and Inner Mongolia

in December, all irrigation for the year was finished. But I heard universal complaints from the local people about the fall water restriction measures. One Ningxia water official told me that the water reduction scheme had seriously lowered the harvest of 70 thousand hectares of crops and nearly 170 thousand hectares of fields yielded no harvest. They estimated that direct economic losses amounted to 3 billion RMB. In the Hetao irrigation district in Inner Mongolia—the largest irrigation area in the Yellow River Basin—one water official claimed their losses were even larger than Ningxia. These officials were especially worried about the coming year, because water in the upper reservoirs had been almost used up by the transfer and fall irrigation.

In the severe drought of 2002, a developed, industrialized province in the lower basin was the winner. Shandong's tactic to beg for water from the central government earned them valuable water for free from the upper regions during the driest season. This water transfer exacerbated the economic losses in the upper basin regions, which clearly were the losers in this situation.

How to Gain Extra Water?

The water dispute in the Yellow River Basin in 2002 supports the Chinese belief that the "baby good at crying suckles more" (*buiku de haizi younai chi*). Alternately, one could view the intergovernmental dynamics surrounding this water dispute through a Confucian lens—the strong "fatherly" central government doling out resources, keeping the provinces dependent and filial. These centralized power dynamics have a long history, but in modern China the central government gained considerable strength through the creation of a planned economy after the foundation of People's Republic of China in 1949. Naturally, under the centralized planning system the provincial "sons" strived to gain more resources from Beijing—each was inclined to disguise some production failings, aggrandize difficulties, and bargain ceaselessly to earn economic, political, and even natural resources.

Some of these power dynamics began to change between provincial and central governments when the 1978 market-oriented reforms decentralized economic and administrative authority. This devolution enhanced the power and autonomy of local governments and lessened the burden on central government coffers to support the "sons." Local governments became more competitive with each other as they promoted and protected their own benefits. New laws and institutions have made resource allocation somewhat more transparent and neutral, but competition for natural resources,

Table 1. Water Allocation Schemes for the Yellow River (in Billion Cubic Meters)

Provinces	1987 Allocation ^a	Percentage of River Runoff	1992 Actual Withdrawal ^b	1997 Actual Withdrawal ^b	2002 Actual Withdrawal ^b
Qinghai	1.41	2.4	1.58	1.23	NA
Sichuan	0.04	0.1	NA	0.07	NA
Gansu	3.04	5.2	2.45	2.58	2.43
Ningxia	4	6.9	3.37	3.95	3.58
Inner Mongolia	5.86	10.1	6.62	6.12	5.47
Shaanxi	3.8	6.6	1.32	1.97	NA
Shanxi	4.31	7.4	2.1	1.22	NA
Henan	5.54	9.6	3.38	3.67	2.3
Shandong	7	12.1	8.93	8.7	6.9
Hebei & Tianjin	2.0	3.4	0	0	0.51
In-stream Flow	21	36.2	16.78	4.13	NA
<i>Total River Runoff</i>	58.0	100.0	52.13	34.63	NA

Notes: ^a Allocation Scheme for Water Supplying of the Yellow River, enacted by the State Council in 1987.

^b Author calculated from data provided by YRCC.

particularly water, has become intense.

While decentralization helped stimulate economic development in China, the competition among provinces has put pressures on natural resources within and between provinces, especially water in northern China. In the early 1980s, as water contradictions grew among riparian regions—especially within the Yellow River Basin—the central government realized the importance of establishing a water allocation institution. After conducting investigations and negotiations with provinces for five years, the State Council enacted a scheme in 1987 to allocate the river's runoff. Among the total water of 58 billion m³ in an average year, 37 billion m³ was allocated to eleven riparian provinces and the remaining 21 billion m³ was reserved for ecological purposes (mainly to transfer sediment and breakdown pollution). Each province received a different quota, for example, Shandong was given a 7-billion m³ quota and 5.86 billion m³ was granted to Inner Mongolia. (See Table 1).

However, provinces have not complied strictly to this water allocation scheme. For example, actual withdrawals by Shandong and Inner Mongolia have exceeded their permitted quotas almost every year. Though some other provinces also periodically overdrew from the river, Shandong and Inner Mongolia remain the leading

transgressors. Additionally, because of the long-term droughts, in the past decade runoff in the Yellow River has often been much less than the average year in the 1980s (when the 1987 allocation quotas were set). Lower runoff has drastically lowered in-stream water allocations meant to protect the river's ecological health. Lacking the in-stream allocation has meant the river flow stops before it reaches the ocean. The most serious flow cut-off occurred in 1997, when the Yellow River reached the ocean on only eight days.

Over the past 20 years many rivers have dried up in arid North China, generating little concern. However, the growing cuts in the Yellow River's flow alarmed journalists and scientists and prompted them to voice their concern about China's mother river and the basin's citizens. By the late 1990s, scientific and public outcry became so strong that the central government could no longer ignore the problem.

In 1998, the State Council revised the 1987 water allocation scheme, decreasing the previous quotas by a fixed proportion during times of drought. Decreases were evenly divided among provinces. (See Table 1). Ecological in-stream benefits would be guaranteed if provinces adhered to the new allocation levels.

While this water allocation scheme forces each

province to tolerate limits on water in times of drought, there are explicit clauses in the 1998 documents that prescribe how special drought areas can gain extra water during droughts. In other words, nothing prohibits provinces from asking for extra water from the central government—which Shandong successfully did in 2002, harming upper stream provinces. This new institution thus does not safeguard riparian water users from arbitrary reallocations.

One American friend asked me: “Why doesn’t Shandong buy water from the upper reaches? In the American West, one state can buy water from another state.” However, since all water rights reside with the government in China, water trading is currently prohibited by law. Reallocation of water quotas can only be achieved by administrative measures. In a property rights regime like this, making requests from the central government may be the only way for some region like Shandong to gain extra water.

“Shandong should pay the expenses for its extra water, and the upper regions should be compensated,” was the opinion I heard from a senior official at the Ministry of Water Resources. Others have echoed this sentiment. In response government officials have realized the disadvantages of the current allocation system and have recognized the necessity to introduce water trades. But in China’s current system, water trade is very complex in practice and cultivating trading regimes will require a rather long time. One potential first step towards change could be measures to require downstream provinces like Shandong to compensate upper provinces for water transfers.

Need for Dialogue and Cooperation

If the next two years produce a drought like 2002 or water demand increases, how will the central government balance the benefits of riparian regions and mediate disputes between the upper and lower regions? Equally important is whether maintaining a 50 m³/s flow in the estuary is enough to protect the river’s ecological system. As water disputes increase who will speak out to defend the river’s ecological health?

The conflict in the Yellow River Basin illustrates the challenges facing China’s current water governance system. The top-down system of allocating water has proved incapable of balancing water needs and preventing disputes, especially in times of water stress. Fears of having their water reallocated to other regions prompt local governments to construct diversion projects in order to show they are fully using their water allocations (e.g., Shanxi province constructed the Wanjiakai Diversion



Collecting Sand from the Dry Bed of the Yellow River

Project to fully tap its quota). In other words, provinces are not rewarded for conserving water. Moreover, instead of riparian users valuing and managing the water at a basin level, each province competes with others to use water as much as possible to protect their allocations.

The central government needs to create measures to promote water conservation and horizontal cooperation among provinces. One of the first steps down a more decentralized and equitable water use path would be to allow provinces more voice in the formation of new allocation schemes, which also should be infused with incentives for water conservation. New water allocation systems should promote an ethic of joint responsibility among provinces to monitor and protect the basin’s ecological health. Under the supervision of the Ministry of Water Resources river basin commissions, provinces should be allowed to negotiate water reallocations and even water trades, with special emphasis given to proper compensation. In this new framework, Shandong could buy water from Ningxia in drought or invest in water-saving projects in Inner Mongolia or Shanxi and in return use the water saved from the upper regions.

With rapid industrialization and urbanization, China’s water shortages are becoming increasingly serious. Along the Yellow River in particular, economic growth has created innumerable demands on water and it is impossible to mediate conflicts among so many stakeholders solely by administrative orders. Centralized water management was necessary to cope with floods, but may be inadequate to resolve water shortage conflicts in the basin. The water crisis in the Yellow River demands that true inter-provincial dialogue and cooperation replace the current competitiveness over water. While in the short-

term state ownership of water will not change, the central government could introduce new water entitlement systems and allocation mechanisms that promote equity and conservation.

There already are encouraging signs of water reform. On 29 August 2002, China amended the Water Law. While the law continues the state ownership of water resources, it endows the river basin commissions with greater power through integrated allocation and centralized control over water diversions (*jizhong fenpei, tongyi diaodu*). Additionally, the amended Water Law introduces a new entitlement of “withdrawal right” (*qushuiquan*), requiring a permit to withdraw water and the payment of water resource fees—both of which can be regarded as an innovation for China’s water entitlement regime. But the new Water Law does not mention the right to trade withdrawal rights. Some senior officers of the Ministry of Water Resources have strongly supported water trading and early drafts of the new Water Law included provisions to allow trading to promote water saving. The legislature deleted this water trade clause, for most legislators were not ready to accept this innovation, denying water managers a useful water conservation policy tool.

Nonetheless, the Ministry of Water Resources has realized the importance of reforming the water entitlement system and made it a long-term goal. Indeed, water trading will be an important trend in China, but it will demand a long process to create a functioning market for water rights—water trading may only play an auxiliary role in

mediating water disputes along drought-stricken basins.

2002 may represent a turning point for water management in the Yellow River Basin. The conflict-ridden water diversion to Shandong highlights the urgent need for an innovative overhaul of the current water allocation system. If the Chinese water managers cannot improve equity and the ecological impact of water allocation, the future health of the river and the basin’s economy will be endangered.

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A Multi-Stakeholder Watershed Management Committee in Lashi Watershed: A New Way of Working

We need a road to bring our heavy potatoes to the market and to have more access to social services because it takes us two hours to walk to the nearest shop. We were able to obtain the funding for the explosives from the government but we volunteered all of our time to construct the road. Each Yi family is responsible for maintaining one section of the road; even villagers from Yangyuchang have helped in hope that the road will be able to continue to their remote village.

-Yi villager in Yulong county, April 2002

By Kate Lazarus

Lashihai (Lashi Lake), at an elevation of 2,500 meters, is the largest highland lake in Yulong (formerly Lijiang) county¹ in northwestern Yunnan province and is situated along the southeastern slopes of the Jade Dragon Snow Mountain and surrounded by mountains on all sides. The lake, a provincial-level nature reserve, is an important habitat for over 57 species of migratory water birds. During the winter months, the bird population increases into the thousands and includes protected species such as the black-necked crane, whooper swan, and black stork. The birds come to Lashihai to feed on its abundance of local crops, aquatic plant species, and fish.

Over 15,000 people live in the watershed—made up largely of the lowland Naxi people (95 percent) who make their living off of the resources of the wetland and the upland Yi (4 percent) who practice slope farming, animal husbandry, and until recently, forestry (Oxfam America, 2000 and Northwest Yunnan Ecotourism Association, 2002).

Lashihai is an important watershed area as the water feeds into the Yangtze and Lancang (upper Mekong in China) rivers. Prior to 1991, the water from Lashihai flowed through an underground waterway to a tributary of the Lancang River. In 1994, the Yulong county government built a dam in Lashihai to divert water to the town of Yulong causing most of the water to flow into the Yangtze River, ultimately changing the natural water regime. In recent years, deforestation and agricultural pollution have degraded the watershed and the area's animal species have faced a number of threats—most notably, rare and endangered birds often are hunted for food. These numerous threats to the ecosystem have led to increased government protection of the wetland within the Lashihai watershed, including a partial ban on fishing. Though the ban provides limited protection for the fish, it is also negatively impacting the livelihoods

of Naxi fisherfolk—fishing is allowed during the spawning season, which is significantly lowering fish stocks. Additionally problematic, the natural forest in the watershed is over-harvested, contributing to soil erosion, landslides, and floods.

A ban on logging imposed nationally in 1998 by the central government has alleviated some of the environmental pressures in Lashihai watershed but also has contributed to a loss of livelihood for the upland Yi people who relied on work from state-owned logging companies. Additionally, the over exploitation of natural resources by the Naxi, Yi, and others has heightened tension among upstream and downstream users. For example, environmental degradation in Lashihai and other upstream watersheds has detrimentally impacted the 65 million downstream users, namely those living in Burma, Thailand, Laos, Cambodia, and Viet Nam, who rely on the Mekong waters for their livelihoods (Oxfam America, 2002).

Oxfam America's East Asia Regional Program

Oxfam America's (OA) East Asia Regional program focusing on the Mekong River Basin—initiated in 1999 with activities in five downstream countries—seeks to improve the management of water and living resources and secure people's rights to food and income security in the river basin. In addition, since the Mekong River Basin is home to some of the poorest, natural-resource dependent people in the world, a key component of the OA program is to ensure that these people have an effective voice in decisions affecting their livelihoods. In 1999, OA became involved in the development of a watershed management program in Lashihai after recognizing the need to integrate work in China into the whole of its Mekong program. The Chinese government's goal to build eight dams along the Lancang (two are already completed) and other basin development plans will



Fishers on Lashi Lake

significantly influence the Mekong's flow and water quality, as well as the livelihoods of communities in Southeast Asia.

Given that the Mekong Basin is trans-boundary in nature and threatened by a multitude of complex watershed management issues, the OA watershed project in Yunnan province specifically aims to address the fragile Lashihai situation through a regional lens. The program's objective is to lay down the foundation for participatory multi-stakeholder watershed management within a framework of constructive dialogue and collaboration between local government and villagers. However, before discussions among villagers and the government could proceed towards developing a community-level watershed management committee for Lashihai, a food security issue exploding among the upland Yi people had to be addressed.

Logging Ban and Food Insecurity

In August 1998, the Chinese government implemented a national ban² on logging natural forests in 18 provinces in west and southwest China, which permanently closed 65 large state-owned logging companies, scaled back another 70, and introduced some sustainable forest management measures. This ban benefits nature conservation but does not take into consideration the social and economic costs. Many workers—particularly in Yunnan province—lost their jobs and fell into poverty.

Particularly hard hit by the ban have been the Yi people in Yulong county who live in high and frigid mountains in villages inaccessible by road and lacking electricity and social welfare services. Tough living conditions often frighten teachers away, leaving the majority of Yi functionally illiterate with only two years of primary education. Apart from limited potato cultivation, prior to the ban many Yi villagers were employed in state logging concessions.

With no alternatives in place, the logging ban and previous degradation of natural resources drastically lowered incomes in the Yi communities. It is not

surprising that in 1999 the Yi in Yulong county could not sufficiently provide for their food and clothing. Nationwide, the Chinese government only granted a minimal grain subsidy to logger families leaving the worst-off communities with a food gap of six months. In addition, no long-term sustainable poverty alleviation or local development assistance program was implemented (Oxfam America, 2000). Therefore, the OA project targeted poverty alleviation among the Yi in the initial participatory watershed management work.

OA Poverty Alleviation Initiatives

As part of the Lashi watershed project, OA collaborated with the Lashi governments and Women's Federation groups at the county and township levels to develop a micro-credit revolving loan scheme. The program provided credit that allowed Yi women to purchase goats, acquire better quality potato seeds from a neighboring village, and establish small shops in their homes. In addition to the revolving loans, OA and its partners provided training in agricultural development, animal husbandry, agro-forestry, and health issues.

During a monitoring visit to Lashihai in the spring of 2002, my Chinese partners and I traveled by jeep to East Upper Nanyao Village to attend a monthly micro-credit meeting. Driving up the hillside was particularly rewarding, for OA's project activities had sparked the Yi to build this road—just one year before visitors had to walk 2 to 3 hours to reach the upland villages. Through a participatory rural appraisal (PRA) exercise, Yi communities prioritized the construction of a road to mitigate various socioeconomic constraints.³ Due to their geographically remote location, these communities lacked access to critical political and economic power centers, which left them with insufficient social welfare and agricultural services.

In 2001, the Yi collectively built an eleven-kilometer road. Villagers volunteered all of the labor through a system in which families adopted segments of the road that they would maintain. Through the watershed management committee (at the village and township level), the community then lobbied the county government for the funds to purchase explosives and other supplies for road construction. On 12 April 2002, the Yi, together with officials from county, village, and township governments, celebrated the opening of the road to traffic. This construction project demonstrated the improved capacity of the Yi communities to determine their needs and carry out a plan of action.

After two years of project implementation that (1) created micro-credit schemes with capacity-building

components, (2) organized trainings on PRA and watershed management, and (3) built a road, the immediate food security issue for the Yi was solved. Beyond these crucial poverty alleviation efforts, the various capacity-building components of the project have helped the Yi understand how their agricultural and forestry practices have devastated the watershed's natural resource base. Moreover, community and local governments learned how small-scale efforts could help realize a long-term goal of sustainable watershed management and protection. One of the key program components that brought about this awareness was the creation of a multi-stakeholder decision-making institution for managing the watershed.

Multi-stakeholder Decision-making for Integrated Watershed Management

In the past, decision-making in Lashihai was top-down, leaving little room for villagers to participate in decisions that impacted their livelihoods. Prior to the development of the Lashi project, no concrete mechanism existed to allow for participatory processes to determine a sustainable resource rehabilitation and management scheme. Another weakness of the top-down decision-making system was that the numerous government agencies responsible for managing the watershed did not integrate or coordinate their work, which led to mismanagement and conflicts. Through consultation, government and villager participants in the project agreed to establish an integrated, multi-sectoral, participatory approach to address the various conflicts over resources and critical mismanagement problems.

An implementing board made up of various county-level agencies and the township mayor was created to coordinate the implementation of all watershed-related projects in order to ensure efficient collaboration and successful results. The implementing board acts as a liaison with the Watershed Management Committee (WMC), which was developed at the township government level to serve as the main negotiation, communication, and coordination avenue for village stakeholders. The WMC has roughly 30 members and is composed of six project village committees and representatives of all township government agencies (such as the Lashi Lake Protected Area Bureau, Water Management Office, the Agricultural Extension and Education Committee, finance, health, veterinary services, and the Women's Federation), as well as county departments of Forestry and Lashi Protected Area bureaus.⁴ With the creation of the watershed management committee, stakeholders were ready to learn community-based resource management (CBRM) tools

and techniques.

OA and its consulting partner from the Philippines, the International Institute of Rural Reconstruction (IIRR),⁵ introduced the CBRM approach and worked with the watershed management committee in Lashi to develop the capacities of the local government and villagers to use participatory approaches to solve community resource management problems. The participatory management approach is based on the understanding that communities should learn to share natural resources within a watershed irrespective of ethnicity and village administrative boundaries.

As the case of Lashi watershed has shown, the consequences of ignoring the community-environment relationship will lead to a vicious poverty-natural resource degradation cycle. Furthermore, conservation, sustainable use, and enhancement of biodiversity can contribute towards food and livelihood security and sustainable development. Such optimal outcomes only can occur if the interconnected communities in a watershed work together to deal with common issues in a collective and planned manner (Igbokwe, et al., 2002).

Catalysts to New Cooperation

Dr. Yu Xiaogang, a Chinese social and environmental scientist, played a key role in helping the Lashi community understand these new watershed management and cooperative decision-making institutions. Dr. Yu worked with villagers, helping them determine their priorities and use participatory rural appraisal (PRA) to express their needs and propose strategies to government stakeholders. In the process of working within the project, Dr. Yu created a nongovernmental organization (NGO)—Green Watershed—to address integrated watershed management in southwestern China. Green Watershed has become a permanent liaison between various stakeholders in the Lashi watershed. (*Editor's Note: See feature box on Green Watershed for more information on this NGO*) Though the creation of a local NGO was not in the original OA plan, Green Watershed has become a key facilitator in the project and has helped build trust and support in the community for the Lashi project.

IIRR was key to promoting cooperation through its effective training work. IIRR created a number of capacity-building initiatives including PRA, a training needs assessment, and a highly successful participatory watershed management course. The course raised awareness among the stakeholders on the principles, practices, and benefits of participatory watershed management and participants developed an action plan for Pu Man Luo (Xihu village) micro-watershed in Lashi.

The plan has served both as a learning site and a takeoff point for scaling up to other areas in Lashi watershed.



Yi Women Celebrating After Road Construction

One of the most important elements of a workshop in Xihu village was not the draft action plan that emerged, but rather the participatory planning process to which the community members were exposed. Villagers and government staff lauded the usefulness of the Xihu management planning process to better design

watershed conservation and development. Another positive outcome of the Xihu workshop was the way in which village representatives disseminated the new lessons learned to their own villagers. A representative from one village organized a small village meeting to discuss insights from the workshop, while another traveled from house-to-house discussing the workshop with each family. These small conversations about the workshop led to impressive levels of awareness regarding basic watershed management and possible solutions at the local level. One village leader who participated in the Xihu workshop even felt he could replicate the training in his village.

In response to the workshop training, the villagers identified four practical ideas for improving watershed management:

- (1) Involve all women in training and project activities—if women change from collecting live fuel wood to dead fuel wood it reduces stress on forest resources;
- (2) Improve biogas over the next 2 to 3 years—this also will lead to a considerable reduction in fuel wood collection;
- (3) Plant “cash trees” such as Sichuan pepper in the highlands and plums and cherries in the lowlands for soil stability and cash income; and,
- (4) Plant more herbs (medicinal value) and other trees to prevent soil erosion (Howes, et al., 2002).

Potential of Integrated Watershed Management in China

There are undoubtedly many challenges to implementing an integrated watershed management structure in China. Organizing a multi-stakeholder committee requires a change in working style among governments; agencies

must be willing to cooperate with each other and include community voices. The change is long term in nature and requires sustained input; as the Lashi project revealed a cooperative foundation can begin in two years, but it is not enough time for significant changes in government decision-making to occur. The demands on the WMC to assess the current watershed management situation using a participatory process were challenging. While the participants in the WMC were committed to promoting sustainable development in their community, it became clear that significant capacity building, education, and exposure of “best-practice” management systems was needed.

Another challenge to the program was considerable turnover of water management committee members, including a change in township leadership. Furthermore, it became apparent that the WMC was not meeting regularly but only during planned training activities held by IIRR and Green Watershed or when OA sponsored activities. This underlines the need in the beginning to have a third party spark and sustain the intergovernmental and community dialogues and watershed planning.

Despite some problems associated with establishing a truly participatory WMC (and the mechanisms training needed to make it work effectively), the Lashi project produced many positive outcomes—especially in the area of capacity building efforts. The project succeeded in creating a space for stakeholders to come together, discuss, and understand the issues and problems facing Lashi watershed. Local governments and communities have become committed to the program not only because the IIRR training workshops have taught them useful skills, but also because OA and Green Watershed have shown dedication to doing more capacity building work. In conclusion, the initial project outcomes, although small, provide a platform to move forward towards the implementation of micro-projects with the goal of alleviating poverty among the poor communities while stabilizing the water resources base through participatory watershed management.

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ENDNOTES

¹ Lijiang county has recently been split into two counties—Lijiang and Yulong. Lashihai now resides in the new Yulong county. The events described in this commentary took place when Lashihai was part of Lijiang, but to reflect the new political reality I use the new county name.

² China launched a new forestry program that immediately banned logging in natural forests in 18 provinces over 12 years and introduced a new Natural Forest Protection Program (NFPP).

³ Such PRA exercises enabled OA to collect baseline data for the watershed, which was a key component of the Lashi project.

⁴ These county-level agencies oversee the wetland. The forestry representative on the WMC is the liaison from the IB.

⁵ The International Institute for Rural Reconstruction is based in Cavite, the Philippines, and specializes in delivering training relevant to the field of rural development. The training delivered in Lashi included watershed management and capacity building.

Green Watershed

Green Watershed is an environmental nongovernmental organization (NGO) focusing on integrated watershed management in western China, particularly in the Lancang-Mekong River Basin in Yunnan province. Founded in 2002, Green Watershed emerged from a group of concerned Chinese environmental and social scientists and representatives of ethnic minority groups, working within and outside government. The mission of Green Watershed is to provide the requisite knowledge, technology, decision-making, and planning methods to support participatory watershed management in China. Through participatory watershed management training and education projects, Green Watershed strives to help various stakeholders work collectively to support and mobilize local people to effectively conserve and use their natural resources drawing from indigenous knowledge. Such participatory management not only will improve the livelihood of upland watershed communities, but also benefit downstream communities by maintaining ecological services. Green Watershed activities aim to establish a larger ecological-economic system, whereby upland watershed communities are compensated for their efforts in environmental management through significant economic return.

Through its activities, Green Watershed is building a growing network of domestic NGOs and individuals as well as universities and international NGOs that are concerned about the protection of the Lancang-Mekong River Basin. Green Watershed has two offices in Yunnan province and is supported by the Yunnan Academy of Sciences and has received grants from Oxfam America, Ford Foundation, Rockefellers Brother Fund and Novb. In Yunnan province Green Watershed aims to:

- Promote the development of NGOs and community groups to address resource management issues;
- Work with a broad range of stakeholders to help correct water crises caused by ill-conceived development and unsustainable management practices;
- Initiate projects that combine a scientific orientation with a strong commitment to community-based management; and,
- Increase participatory development by empowering local people.

(continued on p.104)



(continued from p.103)

Current Green Watershed projects and initiatives in Yunnan province include:

Lashi Watershed Management Committee (Lijiang county). With assistance from Oxfam America, Green Watershed established, and now facilitates, this committee to run dialogues among a broad range of stakeholders to help them evaluate and choose watershed development options. Dialogues and debates have included issues such as: (1) promoting tourism or maintaining traditional resource management of the watershed, and (2) comparing the environmental impact of a lake created by a dam with maintaining the natural wetland without a dam.

Participatory watershed management planning. Together with Oxfam America, Green Watershed has helped communities in Lashi formulate a watershed management plan through a participatory approach. The villagers not only are consulted but also directly participate in decision-making. The participatory watershed planning begins at the village level (a six-day participatory planning workshop held in five sites covering 16 villages) and is gradually scaled up to township-level planning, which covered the whole watershed.

Food Security and Poverty Alleviation Initiatives. In order to protect forested areas in the Lashi watershed and help upland Yi minority communities develop their economy outside logging, Green Watershed—with support of the Oxfam America poverty reduction fund—worked with the Watershed Management Committee office and local Women's Federation to implement food security and micro-finance projects. Green Watershed also helped the Yi community apply for the Oxfam America funding to build a mountain road to connect upland communities with lowland markets and towns, making the Yi community no longer economically and politically marginalized in development and watershed protection programs.

Sub-watershed management and protection pilot project. This project promotes watershed management in one Naxi ethnic minority village within the Lashi watershed. Through a participatory approach, villagers have made a project plan and established a village watershed management group to lead all villagers in implementing the plan. The project will transform steep-slope farming into agro-forestry to sustainably increase household income and reduce soil erosion. The villagers will be trained in horticulture and rehabilitation of the watershed ecosystem.

Our Watershed Lashi Community Eco-history Initiative. In the Lashi watershed, Green Watershed has worked to raise the local community's awareness of watershed protection and to build their capacity to conduct dialogues with county and provincial governments. Green Watershed coordinated seven villages (covering the whole watershed) to write their community eco-history. This eco-history activity has enabled the local communities and supervising government entities to review past ill-conceived development and unsustainable management practices and formulate a common vision for sustainable watershed development. This initiative has joined the regional Oxfam America Mekong Initiative and My Mekong Fair to advocate pro-people, pro-environment regional watershed development.

UNEP Dam and Development Program's Local Process. Within this program, Green Watershed has (1) translated and distributed *The Citizen Guide to the World Commission on Dams Report* and (2) developed a Participatory Social Impact Assessment framework, indicators, and tools to empower people potentially affected by a dam. The Report of Participatory Social Impact Assessment that Green Watershed completed on the Manwan Dam—the first large hydropower dam built on the Lancang River—was sent to central and provincial governments. The response from the government has been positive and efforts to mitigate the social impacts of the dam have begun.

Broadening the dialogue. In the first government-sponsored Yellow River Basin Dialogue (August 2002), Green Watershed advocated bottom-up participatory watershed management, which brought the “fresh air” of citizen and NGO standpoints into a centralized and engineering-oriented river basin dialogue. Green Watershed will continue to promote the participatory watershed management concept in order to improve future river basin management in China.

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E-Waste Recycling in China

By *Luyuan Li*

During his 27-year reign, Mao Zedong's strategy for taking China down the Communist path emphasized self-sufficiency and closing the country off from the capitalist world. Such an isolationist stance allowed for little foreign trade and investment into China. During these early decades, the central planning and communist party patronage systems gave the Chinese central government tight control over the sub-national governments, so little black market trading with outside countries occurred at the local level. Since Deng Xiaoping began promoting the outward-oriented development strategy through reform and opening in 1978, flow of foreign trade, investment, and technology has fueled dynamic economic growth in China. China's entry into WTO in 2001 has sparked trade and investment volume to soar even further, especially in high-tech products. However, accompanying the flourishing international trade between China and the outside world has been an unwelcome flow of highly polluting electronic wastes.

The Scope of the Problem

Every year tons of wastes, many of which are hazardous, are imported into China. Among the many types of garbage, discarded electronic equipment has become the fastest growing waste import threat to the environment and human health in China. According to a European Union report (Commission on the European Communities, 2000), worldwide electronic wastes increase by 16 to 28 percent every 5 years, three times faster than the total amount of other hazardous wastes. Currently there are about 50 million tons of electronic wastes produced annually in the world. In the United States, electronic wastes took up 2 to 5 percent of the total garbage volume. Much of the U.S. e-waste is exported for recycling in developing countries, especially China.

According to a recent report on National Public Radio (U.S.),¹ tens of millions of old computers thrown out by Americans in 2002 ended up in Chinese villages, where they were burned by night and hand-stripped by day. Since it is very expensive to recycle computers and other electronic gadgets under the current U.S. environmental standards, most of them are transported to developing countries such as China.² In addition to the United States, electronic wastes also flow into China from Japan, South Korea, or Europe by way of a third party—often businesses in the Philippines, Taiwan, and Hong Kong.

When obsolete computers (which contain lead, mercury, cadmium, and other hazardous content), printers, and circuit boards arrive at their destination in China they usually are recycled through primitive methods. Most Chinese processors, which include both factories and family-run workshops in poor villages, burn or apply hydrochloric acid on the plastic outer covers and wires at night so the electronic equipment can be hand stripped the next day for valuable metals. The most sought for metal is gold—every ton of computers contains about 0.9 kilogram of gold. The next is copper, which is then sold to metal-processing manufacturers. The empty “carcasses” and broken, unrecyclable internal components are dumped indiscriminately. These improper recycling methods release large amounts of pernicious gases and toxic materials such as lead, tin, mercury, and cadmium into the air, soil, and water—causing particularly severe contamination of rivers and irrigation canals. Workers in these recycling operations usually do not wear protective gear as they melt and strip away plastic wiring. The human health costs of these toxins in the air, water, and food include stomach and lung diseases, miscarriages, birth deformities, and premature deaths.

Although the Chinese central government has banned more types of e-waste and has issued warnings about violating regulations prohibiting the importation of foreign electronic gadget wastes, some profit-hungry Chinese merchants still bring in such garbage, and the trend is rising. In 2001 alone, the customs office of Xinjiang Autonomous Region sent back 11,000 tons of such garbage, which was six times more than the previous year.³ Many of the 14-inch monitors and old-fashioned laptops in the yearly Zhongguangcun second-hand computer fair in Beijing were directly purchased from foreign dumpsites. These products are mostly reassembled with parts stripped from foreign electronic wastes, without quality guarantees and toxic-protection measures. Many of them do not last more than six months and cause financial losses and health problems for the innocent buyers.

In some areas, local officials overlook the pollution from e-waste and regard factories that specialize in dismantling and reassembling foreign electronic garbage as technical “innovation projects” of benefit to the local economy. Although the process of cracking open and burning electronic garbage is dangerous and illegal, this toxic-producing industry has survived numerous

crackdowns in China. High profits, local government collusion, weak enforcement, and eager exporters are some of the key reasons e-waste recycling still prospers.

“The Whip Can’t Reach Far Enough”

One of the most important reasons behind the e-waste importing and recycling boom over the past decade is the central government’s inability to challenge local government and business interests. Since 1978 a significant dimension of China’s reforms has been the decentralization of economic and administrative authority. Local authorities have been given greater autonomy to enforce national policies and laws according

while the balance, 80 percent are returned to the polluting entities to subsidize pollution control investments (Panayotou, 1998). The current polluter pays policy creates absurd incentives: local EPBs have little incentive to severely punish the polluters lest the companies go bankrupt and stop providing the EPB revenue. In the face of lax enforcement, violators do not always use the returned fines to install pollution control equipment.

The problem of importing foreign garbage is a relatively new occurrence in China. Under Mao Zedong’s rule, Chinese bureaucracies down to the grassroots level tended to obey the draconian orders and prohibitions issued from the top level. Due to dependence on upper

Tens of millions of old computers thrown out by Americans in 2002 ended up in Chinese villages, where they were burned by night and hand-stripped by day.

to their “special circumstances.” Because central and provincial governments do not generally use environment protection as a measure for local government performance, local officials have few interests in closing down the e-waste recycling workshops. Such recycling centers not only bring in tax money and boost the local economy, but also provide much-needed jobs for the laid-off workers from nonperforming state-owned enterprises and surplus labor from the countryside.

Although the revised People’s Republic of China Criminal Law (effective 1 October 1997) contains new provisions that specifically deal with “the crime of sabotaging the protection of the environment and resources,” in reality criminal charges against polluters are rarely lodged, especially if the culprit has some close connection (*guanxi*) with the local political elite. In the rare case where local business and government collusion on e-waste is exposed, import violators usually only receive a slap on the hand. For example, on 16 December 2001, Lianyungang customs office in Jiangsu province ferreted out 399 tons of electronic garbage, returned them to the exporter in Korea, and only fined the importing company You Jin Corporation 100,000 RMB (\$12,000) to close the case.⁴ In this and many other cases, bribery has made the officials look the other way.

Another weakness in the enforcement of e-waste regulations stems from flaws within the financing system for environmental protection, which actually creates incentives that exacerbate pollution problems. Currently, 20 percent of the fines local environmental protection bureaus (EPBs) collect are used for bureau operations,

levels of government for resources, local government and industries did not dare accept imports in violation of national policy.

The reforms initiated by Deng Xiaoping (and continued under Jiang Zemin) have unleashed a new set of relationships between different levels of government, allowing for more independence and innovation at the lower level. Due to fiscal decentralization, all levels of government below the center use their control of local industry to maximize local benefits of growth and try to minimize obligations to higher levels (Cannon, 2000). While the decentralization of authority was the catalyst for phenomenal economic growth in China, it also led to a loss of control by the central leadership.

In an attempt to regain some control and curb local government corruption, Premier Zhu Rongji pushed forward governmental reform in 1998 to set up a “small government” modeled after western industrialized countries. One central feature of these reforms was to sever the ties between governmental agencies and industries. This key reform has not been fully implemented. In fact, only the central government agencies have cut their financial linkages formally with industries. Lower-level governments continue to control land and most local industry resources, refusing to give up their powers over the economy. At the local level the concept of private and public ownership remains blurred. Thus, local governments continue to protect their own enterprises and resources, making it harder for the central government to push through national environmental rules.

Unethical Overseas Exporters

In addition to the ineffective oversight and management structure of China, unscrupulous behavior of overseas companies and shippers also plays an important role in the growing e-waste problem. For example, in September 2002 the Wenzhou customs office in Zhejiang province opened a batch of 40-foot containers and found that all the supposed “electronic products” inside were actually discarded computer monitors, circuit boards, copy machines, and printers. The 405.5 tons of electronic garbage had been dispatched from the United States to a nonexistent Chinese company. Because the transportation agent was not able to find a receiver, these containers remained at the port for several months. After the customs officers’ discovery was publicized by the news media, public outrage arose over the “immorality of the foreign shipper.” Since no domestic culprit was found, a customs officer concluded “this is most likely a deliberate move to transfer electronic garbage” (Xinhua, 2001)—China has demanded its return to the United States.

The U.S. Embassy in Beijing issued a statement in 1996 that it “desires to assist China in protecting its environment and opposes the transfer of mislabeled and unwanted waste to developing countries” (Tempest, 1996). However, as the cost of e-waste recycling has been rising exponentially, the U.S. federal and some state governments have turned a blind eye to the practice of exporting toxic e-wastes. For instance, the California Department of Toxic Substances Control recently issued a proposal on permanent regulations for electronic hazardous waste, including cathode ray tubes (or CRTs, video display components of televisions and computer monitors), and consumer electronic devices. Although CRTs will be regulated as universal waste, the proposed regulations would allow for the export of CRTs and consumer electronic devices to developing countries where the safety and environmental standards may be much lower than those in the United States. Exporters of these products are not even required to provide a copy of the EPA Acknowledgement of Consent Form for any shipments to non-OECD countries, as they must do with other universal wastes (Californians Against Waste, 2002).

Being the only advanced country that refuses to sign the 1995 revised Basel Convention (which bans exporting electronic hazardous wastes to foreign countries in the name of recycling); the United States has become *the* major exporter of e-wastes in the world. A number of state EPAs in the United States, such as Massachusetts and California, forbid direct dumping or burying of electronic materials at domestic landfills (Goodman, 2003), but have few restrictions on sending such wastes

abroad. Many profit-seeking middlemen purchase old computers and electronic gadgets from recycling events organized by cities and counties that collect such the old equipment from well-intentioned citizens and businesses (Goodman, 2003). Much of this e-waste is then shipped to China without further U.S. government supervision.

E-waste Cooperation

For a country like the United States whose economic growth over the past decade had been driven by high-tech industries, disposal of electronic garbage incurs tremendous costs. For instance, the disposal and treatment expenses for one ton of electronic wastes are generally above \$400 (Zhang, 2002). Nevertheless, shipping such wastes to a neighbor is not a responsible way to solve the problem, for ultimately, exporting e-wastes will produce tension among nations and more damage to the earth and humankind. Although the U.S. government has initiated talks on e-waste trade, it has not set up regulations similar to the responsibility codes established by the EU requiring manufacturers make products recyclable.

As for China, the country’s leaders can no longer close off the country from trade. In order to eliminate the e-waste, local bureaucrats must shift their priorities from short-term profit making to an overall balance of economic, social, and environmental interests (State Council 1996). Thus the financing mechanisms of China’s environmental protection system must be restructured and the reform of cutting governmental ties from businesses must be carried out completely and government regulators must actually regulate the local industries. With broader local and national news media attention directed towards the issue of e-waste, the central government of China has begun to further strengthen the legal system overseeing the imports and customs.

Businesses and governments in the United States and China share the responsibility in creating this growing e-waste crisis in China. While both countries are independently taking some steps to halt the trade, it is unlikely e-waste trade will stop. Therefore, the United States and China could join forces in research to create safer methods to recycle e-waste. Moreover, the two countries could create joint education programs for Chinese businesses and workers about the severe harm of improper handling of e-wastes and create training workshops on safe procedures for recycling such materials. In short, the United States and China could transform this area of tension into bilateral cooperation to help the environment, public health, and trade relations between the two countries.

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- ³ <http://www.peopledaily.com.cn/GB/huanbao/56/20020314/686898.html>
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The Ecologies of China's Go West Strategy

Panel at the 99th Annual Meeting of the Association of American Geographers
March 5-8, 2003 New Orleans, Louisiana

Dr. Tim Oakes, University of Colorado (Timothy.Oakes@Colorado.edu)

Energy and Environment in China's 'Go West' Campaign

Under China's Great Western Development Campaign, energy development in Guizhou, and western China more generally, is being promoted under the policy of "Giving Western Electricity to the East" (*xidian dong song*). This paper explores the implications of this policy, its historical and political contexts in China's western development campaign, and environmental concerns being raised in Guizhou over intensified exploitation of the region's energy resources. Rather than marking a departure from China's established regional development trends over the past twenty years, the "Go West" campaign entails an intensification of these trends.

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China's Relationship with the Environment: Is "Sustainable Development" New?

China's recent "Go West" policy has elevated the concept of "sustainable development" in the country's development discourse. Does this mean that the human relationship with the environment has changed drastically from the early socialist period (pre-1978), which witnessed numerous campaigns against nature? By investigating the experience of Uxin Ju (a community in Inner Mongolia) in the nature campaign during the Cultural Revolution and its lasting impacts on current-day land use, I argue that there is a strong connection and continuity in the perception and use of the environment between the pre-1978 and post-1978 periods. By comparing official ideologies about the environment during the two periods, underlying environmental destruction and ecological construction appear to be a very similar ideology, one that is based on the utilitarian value of the environment and the assumption of nature's inadequacy. The early socialist period has indeed paved the way for post-reform environmental policies that center on economic development.

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The Go West Strategy in Tibet: Migration, Urbanization, and Development

The launching of the *Xibu Dakaifa* (Go West) strategy across China in 1999 has accelerated both migration and urbanization in Tibet. In this paper, I use peri-urban greenhouse vegetable farming by Han migrants in Lhasa to examine several economic, environmental, and ethnic aspects of these changes. China's insertion into the global economy has given rise to a large "floating population" composed of laid-off workers and excess rural labor. Although driven by many of the same push-pull factors as migrants to eastern China, Han migrants in Lhasa are not "second-class citizens." Instead, they are viewed as development entrepreneurs, whereas in eastern cities these same farmers are scorned as "backward." Many of these migrants sublease land from Tibetan farmers for vegetable cultivation. In some peri-urban villages, more than half of the arable land is now literally covered in plastic as a result of their efforts. The "environmental imaginaries" of these migrants are often quite different from that of local residents, leading to significantly different environmental practices, especially vis-à-vis use of agricultural chemicals.

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Ecological Construction, China's "Go West" Campaign, and Globalization

The "Go West" strategy aims to speed up the development of the western ethnic borderlands that make up 56 percent of China's area in a bid to narrow the substantial economic gap between the coastal and inner regions. This is a large-scale, systemic campaign for "enabling the eagle to spread both wings and quicken the progress of China as a whole." One of the major six tenets of the plan is to engage in the "ecological construction" of the West so as to stabilize the fragile ecology of the region. Massive afforestation projects are a pivotal dimension of the overall ecological plan in order to save the nation's mother rivers. In this paper, I examine what is driving the reconfiguration of landed property regimes in Sichuan that forms part of a new type of afforestation approach for ecological reconstruction, the *tui gen huan lin* project. The new ecological governance regime being set up in the West is an attempt to stabilize ecologies that have been disrupted by reform year policies and to create a more secure environmental ground within which China can engage more openly with the opportunities, as well as vulnerabilities, of economic globalization.