SPECIAL REPORT

NGO Strategies to Promote River Protection and Restoration

By S. Elizabeth Birnbaum and Yu Xiubo

The great river systems of China and the United States have been intensively developed to further economic goals but at the cost of polluting drinking water; reducing species diversity; interfering with ecosystem services like fishery production, water purification, and flood control; and eliminating opportunities for human enjoyment of natural rivers. In response, nongovernmental organizations (NGOs) in both countries have attempted to protect and restore natural river systems by stopping ill-conceived dam projects before they start, promoting greater public involvement in the decision-making on dams, and advocating for the removal of some older, potentially dangerous dams. And while NGOs in the two countries boast some successes—and also insightful failures—in such river protection campaigns, they face different political contexts and rely on different mechanisms to achieve their goals. Chinese NGOs are far younger than their U.S. counterparts and lack many of the legal and legislative avenues available in the American political context. While U.S. NGOs may offer lessons for those in China interested in promoting broader debates on dams, similar NGO advocacy trends have grown in both countries around dam building. For example, in both China and the United States campaigns to promote more transparency in dam decision-making have helped build NGO capacity and create national networks of NGOs. While dam advocates may perceive NGOs as creating conflict in their calls to block or modify dams, NGOs in both countries have become catalysts for collaboration between dam builders and affected communities. Thus, NGOs can be key players in promoting resolution of disputes sparked by planned dams and other development on rivers.

China is home to the largest number of dams in the world. Southwest China is in the midst of a dam-building boom—a number of new dams are sparking domestic opposition from grassroots groups and increasing tensions on international rivers such as the Lancang (Mekong). The Manwan Dam (pictured), the first dam built across the Lancang River, was completed in 1996. © Marcus Rhinelander.

AVOIDING PROBLEMS BEFORE THEY START—FIGHTING ILL-CONCEIVED DAM PROJECTS

In the case of river ecosystems, one of the easiest ways to avoid creating difficult-to-fix problems is by avoiding the construction of ill-conceived dam projects that radically transform river systems for minimal benefit—in short, following the simple rule, "if you don't break it, you don't have to fix it."

Not every dam is ill conceived or should be stopped, but new dam proposals must meet a high standard to demonstrate their social value. In

America, the simple truth is that society has built dams on the most cost-effective sites already, and new proposals for dam sites are likely to yield diminishing returns. In China, the hydropower production potential is still great and over 200 dams are planned in the southwestern region of the country to help alleviate severe energy shortages. Moreover, the Yangtze River Basin is listed as the river at highest risk with 46 large dams planned or under construction.[1] However, few of these planned dams are undergoing rigorous cost-benefit analyses or environmental impact assessments. In China and the United States alike, dams are promoted by economic beneficiaries who will not have to deal with the negative impacts created by dams. Even when broader public-interest decision-making is involved, water projects like dams are often planned by engineers who have little experience in examining the harm these projects can do to ecosystems and society. U.S. and Chinese NGOs often represent segments of society who are more fully aware or more directly affected by those impacts. When their perceptions lead to the conclusion that the dam projects should be stopped, they may use a wide range of tools to convince decision-makers and society at large not to build the dams or at a minimum to modify the plans.

In U.S. dam debates, the range of tools available to NGOs runs the gamut of public and private decision-making processes. Years of experience have shown that NGO efforts usually prove successful when strategies include strong public education and the building of a network with non-traditional dam opponents (e.g., environmentalists and sports fishers). In addition, they often find support when they help develop alternative solutions for perceived water resource needs. Without creating strong networks to build political opposition, NGOs may only temporarily halt dam construction. Increasingly NGOs have been helping to build dialogues to diffuse tensions and to create collaborative problem solving. Although China lacks some of the legislative mechanisms afforded to groups in the United States, public education and broad-based alliances have also proven key in expanding the debate on dam construction.

Legislative Strategies of U.S. NGOs to Block Dams

Using the National Wild and Scenic Rivers Act

The U.S. NGO-led efforts to stop the construction of ill-conceived dams gave been helped along by some significant legislative initiatives. Most notable is the

San Joaquin Water Project. © American Rivers

National Wild and Scenic Rivers Act, a law passed in 1968 that bans dams on a limited number of rivers individually designated for preservation by a direct act of Congress or by the legislature of the state in which they flow. There are three separate categories of protected rivers—wild, scenic, and recreational—divided by the degree of existing development along their banks. Once designated, all three categories are protected from future dam building.[2]

This act did not emerge within a vacuum; rather it was the product of NGO advocacy. While the idea of a national river conservation system was first proposed in 1962 by conservationists John and Frank Craighead, national conservation groups including the Wilderness Society, the Izaak Walton League of America and the National Audubon Society worked with congressional champions for years until the Wild and Scenic Rivers Act was enacted in 1968.[3] Moreover, once the act was passed, the job of these social groups was not done: the continuing designation of new rivers to the wild and scenic rivers system rests largely on local NGOs concerned about local rivers. Since the federal law was enacted, river conservationists sought to expand the list of federally designated rivers and implement the statute's protections.[4] Disconnected efforts led some activists to conclude a single-focus organization was needed, which led to the founding of a new national NGO dedicated to protection of wild and scenic rivers, the American Rivers Conservation Council (now American Rivers) in 1973. Over the last 30 years, the federal wild and scenic rivers system has expanded to protect more than 11,300 river miles on 164 U.S. rivers, due largely to active, on-the-

ground efforts by state and local NGOs, often with the assistance of American Rivers.

Other Legislative Strategies

The Wild and Scenic Rivers Act is not the sole arena for NGOs' legislative efforts to prevent dam construction. The 1950s and 60s saw at least two major legislative battles over the construction of dams in the Colorado River Basin, with a national NGO, the Sierra Club, taking the lead. In the first, the Sierra Club brought its own engineering calculations to challenge the Bureau of Reclamation's Colorado River Storage Project, which planned a series of major dams for water supply and hydropower production. Arguing that the power produced would be prohibitively expensive and the vast reservoirs would evaporate more water than they would store, the Sierra Club persuaded members of Congress to fight the authorization and the appropriation of federal funds for construction of these projects.

Although the Colorado River Storage Project was authorized in 1956, the Sierra Club reached a compromise that allowed construction of the Glen Canyon Dam near the Arizona/Utah border, but prevented funding for Echo Park Dam near the confluence of the Green and Yampa rivers in Utah. After the loss at Glen Canyon, the Sierra Club redoubled efforts in a second campaign to stop additional dams in the dramatic canyons along the Colorado River. A major public education campaign in the mid-1960s produced floods of letters to congressional offices, thus preventing authorization of the Marble Gorge and Bridge Canyon Dams within the Grand Canyon.[5] In 1975, the U.S. Congress expanded the boundaries of the Grand Canyon National Park to protect these areas of the canyon permanently from dam construction.

The Power of the Endangered Species Act

Even when NGOs lose their case in Congress, U.S. NGOs may still oppose a project in court, if the dam construction violates other laws. The most renowned example of such a court strategy was used against the Tellico Dam, one of several dams planned in the Tennessee River Basin by the Tennessee Valley Authority. Opposition centered on the fact that the dam would flood a free-flowing reach of the Little Tennessee (a major recreational resource and trout fishery) while producing only minimal economic benefits. When the national NGO Environmental Defense Fund (EDF) filed a lawsuit in 1973 opposing the dam, it relied on the provisions of the recently enacted Endangered Species Act, arguing that the dam would wipe out the only known population of a small fish known as the snail darter.[6] The case made its way to the Supreme Court in 1978 and led to the nation's leading legal decision under the Endangered Species Act. The Court ruled that Congress had intended the law to prioritize species conservation over other purposes, essentially deeming the dam illegal.

While successful in court, EDF eventually lost the Tellico Dam fight because of inadequate public and political support. Congressional supporters of the dam responded to the Supreme Court decision by amending the Endangered Species Act, creating a new process whereby a project that was found to jeopardize the continued existence of an endangered or threatened species could be referred to a designated "Endangered Species Committee" for determination of whether an exemption is warranted.[7] The Tellico Dam was referred to the committee, which found that even though the dam was 90 percent completed, its benefits would still not outweigh the cost of completion. However, once again the dam supporters returned to Congress, and passed a rider on funding legislation for the dam, exempting it specifically from the Endangered Species Act. The lack of a broad coalition also explains the failure of one of the first Chinese NGO campaigns to attempt blocking a dam—the construction of the Mugecuo Dam in Sichuan Province.

Early Attempts to Push for Greater Transparency in Dam Building in China

The promise of hydropower has led to a marked increase in the number of dams built or proposed in China since the 1970s, such that the country is now home 86,000 dams—22,000 of which are large dams, accounting for 45 percent of large dams in the world.[8] The construction on China's largest dam—the Three Gorges Dam on the Yangtze River had been debated for decades in China before the government approved the plan in 1992. The goals of the dam were to improve flood control and navigation on the river and provide nearly 11 percent of China's energy needs. The construction of the dam became highly politicized due to the small, but vocal, group of journalists and scientists within China and a major campaign by international NGOs criticizing the damage the huge dam would have on endangered species, relocated villagers, and historical sites. Chinese NGOs were not involved in this debate, for construction began before legislation to permit NGO registration passed in 1994.

Chinese NGOs involvement in dam dialogues began in 2003 when the Sichuan provincial government approved proposals from Chinese energy companies that a hydroelectric dam on the Mugecuo Lake would bring considerable economic benefits for the surrounding poor areas. The plan encountered opposition from environmental groups that predicted disastrous impacts on biodiversity and general livelihood of minority groups. The dam would be situated in the Gongsha National Park and any significant environmental degradation to the area could hurt not only efforts at conservation, but also a nascent eco-tourism industry that could provide a livelihood for rural poor in the region. Additionally, scientific experts added their voice to the debate noting that the dam was planned too close to an active earthquake zone; the creation of a large reservoir could very well trigger earthquakes.[9]

Given that both the local government and industries stood to gain from the dam, the battle to stop construction was uphill from the start. Undeterred, Conservation International Beijing, WWF China, and numerous journalists launched a media campaign, publishing articles in newspapers, organizing workshops and field surveys, sending letters to high-level government officials and lobbying local members of the National People's Congress. The groups expressed concern about this particular dam's impact on the ecosystem, but stressed that they did not opposed all dam building. In addition, the groups involved in the anti-dam campaign attempted to use preexisting laws to their favor, arguing that building a dam in a national park was against the law. Moreover, they criticized the decision-making process, demanding greater information and voice for local residents.

In response, the State Council created a task force composed of staff from State Environment Protection Administration, State Travel Administration and the Huaneng Power Company to investigate the plan. Despite the efforts of the anti-dam campaign, the interests in favor of the dam (who were disproportionately represented in the task force) won over and the dam remains on schedule for construction. Although opposition ultimately failed, Chinese NGOs did gain some valuable insights into how to expand the dialogue on dam building.

Building Powerful Coalitions to Battle Dams

Creating Winning Partnerships in Colorado

As in the China case, U.S. NGOs may also find themselves fighting battles over new dams at the state or local level. But unlike China, at the state level in America, political fights sometimes involve a direct vote of the electorate. The most common kind of referendum over dams comes up when state governments must seek voter approval to issue taxpayer-backed bonds to finance construction. In 2003, the governor of Colorado proposed a $2 billion bond referendum, Referendum A, for the construction of water projects. Although the nature of the projects was not defined, it was generally understood that the proceeds would go to construct some form of the "Big Straw" project—a proposal to build new reservoirs in western Colorado to serve the rapidly expanding suburban sprawl around Denver. Conservationist groups, under the banner of the Colorado Environmental Coalition, joined with state taxpayer advocates, western farmers and ranchers, sportsmen and paddlers, to oppose what they called a taxpayer-financed "blank check" for state water developers. In the end, this non-traditional coalition earned an unexpectedly large victory, with the referendum losing in every county and 67 percent of voters statewide in opposition.[10]

Colorado's continuing debates over water supply also provide a leading example of conservationists stopping new dam construction through the actions of an administrative agency. The Two Forks Dam, proposed by local Denver water utilities in the late 1980s, would have flooded the Cheesman Canyon, a major recreational area on the South Platte River outside of Denver. While no congressional authorization or funding was required for the project, the Denver Water Board did need a federal permit under section 404 of the Clean Water Act for disposal of dredged and fill material. Section 404(a) requires the U.S. Army Corps of Engineers to serve as the primary permitting authority, but section 404(c) gives the Environmental Protection Agency (EPA) veto authority to declare any particular site off-limits for fill. This authority has been used only a limited number of times, but environmental NGOs in Colorado, led by the EDF's Boulder office, sought a high-profile veto of Two Forks Dam from the EPA Administrator, William Reilly. Knowing that the environmental quality of the site alone would not prevent its development, EDF and others developed alternative proposals, demonstrating that incremental additions to Denver's water supply would be less costly and more efficient. They also worked on a major public education program to reduce the potential political backlash if Administrator Reilly

chose to veto the dam. In 1990, Administrator Reilly issued an administrative veto of the dam permit, ending the threat to Cheesman Canyon. Over the following decades, the Denver Water Board ultimately used many of the alternative water supply solutions the NGOs proposed.

Power of Broad Coalitions in Changing the Dam Debate in China

Like the Colorado case, for dams to be successfully derailed in China, opponents must find a sympathetic ear in influential government organs. The Yangliuhu Dam, planned for construction in Sichuan Province, is one such example. As with other dam projects in China, the Yangliuhu was proposed by the lead beneficiary—a state-owned enterprise of the Sichuan Department of Water Resources Bureau. The advocates suggested that the dam would provide steady water supply for urban use and irrigation with no negative effect on a preexisting downstream hydroelectric dam, the Zhipingpu Dam. What is more, the planners warned that without a new dam, the government stood to lose 50 million Yuan each year from hydropower generation of Zhipingpu Dam.

On the Skagit River (pictured), which empties into Puget Sound in Washington State, Seattle City Light worked with American Rivers to develop license conditions that would restore a salmon fishery in the river, moving fish past three dams and improving flows at reasonable cost to power users. © American Rivers

Despite significant government support for the dam, it soon encountered significant public opposition. Most of the criticism focused on the potential damage to the 2,220 year-old Dujiangyan Irrigation System, listed as a Word Cultural Heritage site in 2001. Scientists, journalists, and public interest groups took their campaign to newspapers, television and Internet. Public outcry well beyond Sichuan prompted officials in the State Ethics Administration and the municipal National People's Congress representatives to submit letters of protest to the Sichuan Provincial People's Congress. Following an investigation by a task force—led by the Ministry of Construction and the State Ethics Administration—plans for the Yangliuhu Dam were cancelled.

Yangliuhu was the first dam to be successfully suspended in recent history. Although NGOs were not directly involved in this case, the suspension of the dam plans has given Chinese environmentalists insight into the strategies for stopping particularly damaging dams.

Death by 1,000 Cuts

Successful Opposition to the Auburn Dam in California

One major dam construction fight in California shows how NGOs have brought together a broad array of tools to halt dam construction over a long period of time. The Auburn Dam in northern California has been advocated as a project to create an enormous reservoir on the Middle and North Forks of the American River for more than four decades. Opposition to the Auburn Dam took many forms. Local NGOs worked with sympathetic members of California's congressional delegation to designate upstream and downstream portions of the American River as components of the Wild and Scenic River system. The same NGOs also joined the Natural Resources Defense Council (NRDC) in federal court, winning a case preventing construction of certain water supply facilities from Auburn Dam. After an earthquake raised safety concerns at another California dam in 1975, NGO activists also forced reevaluation of the safety of the dam site, which led to further documentation and seismic redesign. The final problem for the dam arose in 1984, when a new federal cost-share policy for water projects under the Reagan administration would have required significant support from Auburn Dam water and power beneficiaries. When these beneficiaries declined to assume the costs, Auburn Dam seemed dead.

In 1986, however, a high water year on the American River and poor water management by the Bureau of Reclamation contributed to flooding and threatened levees along the lower river through Sacramento. The Army Corps of Engineers resurrected the Auburn Dam proposal as a tool to provide additional flood protection for Sacramento, and a new authorization battle began in Congress. Over

the next few years, several federal agencies conducted competing feasibility studies for the Auburn Dam. Ultimately, the Corps brought an authorization for a flood control dam back to Congress. Environmental NGOs joined together with taxpayer advocates in fighting the project based on both environmental and cost concerns, and won a vote on the floor of the House of Representatives preventing reauthorization.[11]

Congress and the Sacramento Flood Control Agency have moved on to approve alternative flood control measures for the city of Sacramento, while local NGOs have joined with taxpayer advocates and the city of Sacramento in arguing for the construction of the cheaper flood control measures. These local NGOs also worked with the California Attorney General to persuade the Bureau of Reclamation to close the diversion tunnel that had made a portion of the American River impassable since the 1960s. And local cost-sharing policies for federal flood control projects have also risen. Despite all of these actions that doom the construction of the dam, even in 2006 Auburn Dam advocates continue efforts to reauthorize a federal dam at the site.

Nationalizing the Dialogue on the Nujiang Dam in China

While the Mugecuo Lake Dam case represented a failed NGO effort to stop construction of an ill-conceived dam, the ongoing Nujiang Dam case indicates that NGOs may have more ability to successfully broaden the debate around dam building. The Nu River (Nujiang) is unique in that it is one of the last remaining "wild" or un-dammed rivers in China. Although this pristine river system achieved listing as a World Natural Heritage site in 2004, in that same year the Yunnan provincial government began planning a series of 13 hydroelectric dams on the river.

Unlike the Yangliuhu Dam, the campaign launched against the Nujiang Dam was, from the beginning, a product of local- and national-level NGO networking and reporting by environmental journalists. In the fall of 2004, NGO activists in Beijing heard rumors of these planned Nujiang dams and organized a group of environmental journalists to tour the basin. The investigative reports written by this first group of journalists revealed that the construction companies neglected to complete the required environmental impact assessments (EIAs) and ultimately these dams would destroy a beautiful river and create more economic hardships for poor ethnic minority communities in the basin. As more journalists reported on the danger of the dams, NGOs from around China formed alliances with scientists to undertake workshops, dialogues, field surveys, letter writing campaigns, local farmer visits and education of local communities in the Nujiang basin.[12] The campaign notably supported efforts by China's State Environmental Protection Administration to push for stronger EIAs and greater public participation in infrastructure projects. The NGO alliance emphasized a desire to promote greater transparency in dam building decision-making so as to prevent damaging projects from moving forward and causing irreparable damage to the ecosystem and local people. By early 2005, the pressure against the dams culminated in Premier Wen Jiabao ordering a halt to planning the dams due to the insufficient EIAs and concern the dam debate was causing too much social instability.[13]

Like the Auburn Dam case above, local dam advocates are still pushing for at least a scaled-back version of the Nujiang dams. In late summer 2005 the central government agencies reviewed the revised EIA but did not disclose it as required by the EIA law. Thus, on 31 August 2005, a broad coalition of Chinese groups (which included 61 NGOs and 99 researchers and government officials) sent an open letter to the government urging public disclosure of the EIA for the Nujiang dams.[14] Although the debate is ongoing and NGOs have even threatened a court case, the NGO efforts to push for greater openness in debating the dams is a testament to the increased freedoms and capacity of Chinese environmentalists.

The Auburn and Nujiang dam cases represent a catalogue of the steps that environmental NGOs have used to stop or slow down dam building. While U.S. NGOs have relied more on legislative and court battles than their Chinese counterparts, in both countries NGOs have cultivated dam opponents within government and sought to create broad-based alliances. Both campaigns have required staying power, as no single step thus far has driven the final stake into the heart of the dam proposal. These all fit into the broad array of tools necessary for dam fighting.

FIXING EXISTING PROBLEMS—RIVER RESTORATION PROJECTS

River restoration can involve a broad range of activities—dam removal, dam re-operation, pollution

SPOTLIGHT ON NGO ACTIVISM IN CHINA

Chengdu Urban Rivers Association

By Betsy Damon

One day in late May 2006, I hopped into a mini van with eight Chinese colleagues for the 50-minute trip from Chengdu's city center to the peri-urban farming village of Ping Li. Soon we found ourselves far from the bustling high rises, driving through a bucolic landscape of small farms among bright yellow rape fields, women crouched over small streams scrubbing their washing, tractors hauling hay, and most refreshingly, clean air.

Unwinding our bodies from the mini van we were greeted by local farmers who took us on a tour of the methane gas collection units being installed on each farm. The farmers were proudly displaying the larger enclosures they were building to raise more pigs and chickens. More manure for the gas means more pigs for the market and crucially less polluting runoff into the local rivers. This is but one initiative that the village is doing in partnership with the Chengdu Urban Rivers Association and other Chinese and U.S. nongovernmental organizations (NGOs) to turn the village into a model to train nearby villages to better protect the local watershed.

Next to a small lake, the village and the NGOs are building a training center to hold classes in organic and sustainable farming practices and demonstrate watershed protection techniques and technologies. We walked around the lake with our hosts, discussing stream bank protection and ended up in a large courtyard where tables full of food were waiting. On this day, we were received with an air of excitement and genuine smiles, quite a contrast to our first visit five years ago when our proposal to create a model watershed protection village was met with distant politeness and skepticism. After five years, this project has generated enough local, county, and provincial support to begin. While the installation of methane collectors has helped gain community support, the next steps to implement watershed protection and extensive education programs will demand considerable support from many sectors.

CURA and Keepers of the Water talking over tea with farmers about creating a model watershed protection village. © Betsy Damon

The background to this project and the relationships making it possible actually began eleven years ago. As part of a municipal five-year campaign (1992-1998) to clean the rivers of Chengdu, the U.S. NGO Keepers of the Water, which I founded, was invited to create the first public art project in China for water. This multi-media international art event on the Funan River in Chengdu led the municipal government to invite me to design a park to teach people about natural water cleaning systems. This park became the Living Water Garden, a recreational park that hosts a functioning seven-step water cleaning process that Chinese mayors, designers, developers, and citizens throughout China have come to enjoy and study.

The Chengdu municipal leadership realized that the pollution control and awareness raising activities in the five-year campaign were not sufficient to improve the city's rivers. Thus, the municipality created the Chengdu Urban Rivers Association (CURA, which is now an independent NGO) to investigate ways to address industrial and agricultural pollution in the peri-urban areas and devise strategies to restore and preserve the municipality's watershed. In 2001, I was invited to be a consultant to CURA. Keepers of the Water subsequently gave CURA small grants to conduct research and

design a plan for a model training village that would integrate sustainable watershed protection practices with economic development.

One of these CURA grants went to Duncan Cheung, then a sophomore from Tufts University, who wanted to work in the field before applying to the Yale School of Forestry. Duncan took a year off of school to conduct research and help launch the model village project. After nine months with a team of 12 volunteers he completed the much needed research on the main threats to Yi Ping village's watershed. His research and proposal for designing and implementing the model village were met with praise and financial support from the government and business communities in Chengdu. This funding is enabling CURA, Keepers of the Water, and other partners—such as the Jane Goodall Institute (JGI)-China; the regional student organization GreenSOS; local environmental protection bureaus, and some international experts—to begin carrying out research and design trainings on a broad range of issues—watershed mapping, stream bank protection, biological wastewater treatment, recycling and conservation, biogas, and organic farming. The first focus of the education program is watershed protection and remediation, which will begin with training the local farmers who will then reach out to rural students, farmers, businesses, and local governments in the neighboring ten villages.

Many environmental efforts in China fail because they are too narrowly focused and lack sufficient cooperation among the various sectors. After ten years of involvement in Chengdu, Keepers of the Waters has built many coalitions across government, NGO, and community sectors in the municipality. This network has been vital to facilitating the start of this rural watershed protection village program. However, ultimately CURA is the leader of this program, beginning with Duncan and the first group of volunteers who developed the vision and continuing with the current volunteers and CURA director Tian Jun, who are navigating the bureaucracy to keep the program moving forward. CURA's networks with international and domestic NGOs and local governments will help create a model village program that demonstrates how development and watershed protection can go hand in hand.

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Almost 300,000 people from thirteen different ethnic groups live in the Three Parallel Rivers (Nu, Lancang, and Jinsha) World Heritage Area. Chinese NGOs are working to ensure communities in this region are given a voice in dam-building decision-making. © Wang Yongchen.

control and habitat restoration. In the United States, the tools used by NGOs to address conflicts over river restoration are similar to those used in conflicts over dam building, but the diversity of restoration projects makes river restoration activities by NGOs even more complex. As with dam-building conflicts, NGOs may work on river restoration at a federal, state, or local level, and may use all aspects of government and private decision-making. And again, the chances of success improve as NGOs ally themselves with other interests, help to find alternative methods of reaching water management goals advocated by developers, and build political support for restoration efforts.

Glen Canyon Dam

One straightforward way to achieve river restoration in the legislative arena is simply to change the statutory requirements for how a river is managed. Designation under the Wild and Scenic Rivers Act can protect a river from new dams, but other legislative fixes are necessary to require restoration measures. In the early 1980s, river rafters and conservationists discovered that the recently completed Glen Canyon Dam upstream of Grand Canyon National Park was having detrimental downstream impacts. The dam and reservoir served to settle out the natural sediment and the depth of the reservoir also cooled the warm waters of the Colorado that supported native fish. As the water warmed it scoured the riverbanks, taking away sediment rather than dropping its load of sand. The scouring effect was exacerbated by the Bureau of Reclamation's effort to maximize the value of Glen Canyon Dam's hydropower generation by operating the dam in "peaking" mode—raising and lowering the river flow daily to correspond to daily fluctuations in power demand.

The impacts of Glen Canyon Dam were initially addressed in 1989 when the Department of the Interior produced the *Glen Canyon Environmental Studies*, in response to an earlier Secretarial order. Scientific data over the next several years demonstrated that the dam was having negative impacts on aquatic and riparian ecosystems and recreation in the Grand Canyon. But administrative will to change operations was lacking; agencies were influenced by a powerful association of utilities benefiting from dam operations, and cited existing laws that they asserted restricted them from operating the dam to protect ecosystems. In response, the National Wildlife Federation and the newly formed Grand Canyon Trust joined with Grand Canyon river outfitters and congressional champions to introduce the Grand Canyon Protection Act. The law was enacted in 1992, requiring explicitly for the first time that Glen Canyon Dam be operated in a manner to protect the Grand Canyon.[15] It also required a full environmental impact statement (EIS) on the dam's operations—something that had not been required previously because dam construction began before the National Environmental Policy Act (NEPA) was enacted. Currently, scientific study continues as experiments with artificial flooding and other flow changes have been tried to improve canyon conditions for native fish, wildlife and recreation.

Complex River Restoration Work

Efforts to restore the complex river ecosystems of California's Central Valley and San Francisco Bay and Delta have proven far more difficult than the Glen Canyon case in that they involve many interests and multiple conflicts over appropriate solutions. This case embodies many of the same

complexities faced by Chinese and international NGOs working to promote restoration on the Yangtze River, discussed below.

California's river restoration problems center around two enormous water projects designed to bring water from the precipitation-rich north to the major agricultural areas and urban centers of the drier south. The natural river system includes two major rivers in the Central Valley, the Sacramento in the north and the San Joaquin in the south. The San Joaquin River is dewatered for many miles downstream of Friant Dam, and two large canals bring water "upstream" from the Delta south to the farms and cities of southern California.

The impacts of this huge plumbing system have been severe along the trunks of the rivers, but even more severe in the Sacramento-San Joaquin Delta and San Francisco Bay. Insufficient freshwater outflows confuse migratory fish species traveling through the bay and delta and lead to saltwater intrusion that harms the estuarine ecosystem. For many years, a large coalition of NGOs has worked through litigation, administrative action, private negotiation and legislation to try to restore the affected ecosystems. The first legislative effort came in 1992, with the passage of the Central Valley Project Improvement Act, a law that changed the governing standards for the federal Central Valley Project to require fish and wildlife protection as a major purpose, and created a fund from fees on water users to restore fish and wildlife resources.[16] In passing this law, groups like the NRDC, EDF, and Save The Bay worked with Congressman George Miller, representing residents of the Delta and East Bay areas, to encourage urban water users to support a reauthorization of the water transfer project that could work to balance water demand in southern California and fish and wildlife restoration needs.

As California sought more imaginative ways to deal with its water and conservation needs, however, an even larger alliance began to form. In 1996, an alliance of water districts and conservation groups brought to Congress a larger restoration and water management project, CALFED. The proposal involved billions of dollars of new investment by the state and federal governments to pay for ecosystem restoration and water management measures designed to improve water deliveries at the same time as San Francisco Bay and Sacramento-San Joaquin Delta conditions. A three-year federal authorization for CALFED passed in 1996, although reauthorization of this restoration project has proved quite contentious, with water development interests attempting to exert political power to require a new water supply project. The restoration and management projects continued to receive funding through 2003, but because the large state, federal, and NGO alliance broke down, this massive restoration project has received little funding since 2004.

Most recently, however, a remarkable negotiation over the operations of the Friant Dam has produced the latest restoration success for the San Joaquin River. NRDC has opposed renewal of water supply contracts for irrigation water supplied from Friant Dam ever since those contracts expired 18 years ago, due to the effect of water withdrawals on fish and downstream water quality. Through political action and state court litigation, NRDC prevented the finalization of the renewed contracts and forced irrigators into negotiations over how the project might be operated to return water to the river, which had been dewatered below the dam for 60 years. In September 2006, the parties announced a settlement agreed to by the state and federal governments, which will restore water to the depths of the 1940s by 2009. All parties are now seeking legislative confirmation of their agreement through the U.S. Congress.

Re-licensing of Dams as an Opportunity for Removal

In some cases, U.S. NGOs can also work with federal administrative agencies to restore rivers affected by nonfederal projects. For example, the Federal Energy Regulatory Commission (FERC) regulates nonfederal hydropower projects nationwide. Although many projects were licensed long before modern environmental standards came into play, the Federal Power Act requires that these projects be re-licensed every 30 to 50 years, creating an opportunity to reevaluate the projects' impacts on rivers. A major period of re-licensing for hundreds of projects began in 1993 and will continue through 2015. NGOs can participate in FERC proceedings as full parties, and FERC has created incentives for licensees to negotiate with all interests affected by river management to reduce conflict in hydropower licensing.

The Federal Power Act requires that FERC give equal consideration to fish and wildlife as well as hydropower production, and requires fish passage as mandated by federal fishery agencies. By participating in utilities' re-licensing processes, NGOs have been able to insist that the environmental

BOX 1. International NGO River Restoration Work in China

WWF-CHINA. WWF-China has several major integrated river basin management initiatives on the Yangtze River, which include demonstration projects to improve flood control by restoring wetlands and lakes and increasing public participation in water management through community education and NGO capacity building activities. In 2005, WWF established a small grants program for local NGOs and communities to fund projects aimed at promoting the conservation of Yangtze aquatic species.

CONSERVATION INTERNATIONAL. Since 2005, Conservation International (CI) has been working with The Nature Conservancy and China's State Forestry Administration to carry out a pilot project in Lijiang, Yunnan focused on watershed protection and reforestation. The project aims to set up a program in which downstream water users in the city of Lijiang compensate upstream farmers for protecting the watershed. CI also is collaborating with the Environment and Natural Resource Protection Committee of China's National People's Congress in research and projects to help inform the creation of payment for environmental services legislation in China.

THE NATURE CONSERVANCY. In partnership with Chinese government agencies and academic institutions, in 2006 The Nature Conservancy has catalyzed an assessment of sustainable energy options for an integrated power grid in which hydropower development is designed to the greatest extent possible to conserve freshwater ecosystems and sustain local livelihoods.

OXFAM HONG KONG. Since 2004, Oxfam Hong Kong has partnered with Lanzhou University's Resource and Environmental Sciences College to conduct a rights-based water pollution assessment and governance project on the Hongyashan reservoir in the Shiyang River Basin. The project aims to: (l) assess the sources and process of pollution to provide a scientific basis for an integrated management approach, (2) promote dialogue between community members and the government on pollution control, and (3) establish strategies for river basin water resource and pollution management.

standards of the Federal Power Act be met, either through negotiation or through adversarial processes in front of FERC.

Many utilities are pleased to work through negotiating their licenses, to reduce the costs of conflict over re-licensing and create more certainty regarding the content of their licenses. For example, on the Skagit River, which empties into Puget Sound in Washington State, Seattle City Light worked with American Rivers to develop license conditions that would restore a salmon fishery in the river, moving fish past three dams and improving flows at a reasonable cost to power users. The utility was so proud of the outcome that it penned an op-ed in the *Seattle Times*, touting the successful return of the fish and the minimal cost to utility customers.[17]

Litigation and Negotiation Strategies in the United States

Litigation can also provide an important tool for U.S. NGOs to compel river restoration measures. There are numerous examples in which a broad coalition of environmental NGOs has used the Endangered Species Act to take the Army Corps of Engineers or the Bureau of Reclamation to court over dam projects. Such cases are costly, time-consuming and do not always lead to lasting solutions. (*Editor's Note: See Eng and Ma article in this report for more details on the failure of litigation to resolve river restoration cases*).

One NGO that has taken a different approach to negotiations for river restoration is the Oregon Water Trust, an organization that was founded to take advantage of Oregon's unique Instream Water Rights Act, allowing the state to protect the level of water flow necessary to maintain and restore river ecosystems. Since these water rights can be purchased from other water users and donated to the state for permanent protections, the Oregon Water Trust's program involves raising money and negotiating with existing water users, sometimes working through local watershed councils, to obtain the water rights necessary to protect key watersheds. So far, the Trust has identified five priority river basins in the state, based

BOX 2. Chinese NGOs and River Protection Activism

CHINA RIVERS NETWORK. Based in Beijing, the China Rivers Network is a loose coalition of Chinese environmental NGOs and individuals who care about the preservation of Chinese rivers. The coalition formed in 2004 during the initial months of the Nujiang Dam debate to act as an information-sharing platform for pushing transparency in the EIA process regarding dams. This volunteer network continues to act as a liaison organization on water issues in the NGO sector.

GANJIANG ENVIRONMENTAL ASSOCIATION. In response to the rapid degradation of the Gan River (Ganjiang) in Jiangxi Province, in 2003 concerned environmental experts created this NGO, which as been: (1) conducting water quality research, (2) producing publications on water resource protection, (3) sponsoring lectures at schools, and (4) shooting a documentary on environmental protection needs in the basin.

GREEN HANJIANG. The main activities of this NGO, registered in September 2002 in Hubei Province, include doing research on environmental hotspots in the Han River Basin, communicating public concerns to local government agencies, acting as watchdog against local pollution, and educating rural residents on the importance of river protection. This NGO also has advocated for greater compensation for citizens who will be displaced by the construction of the South-North Water Transfer project.

GREEN RIVER. This NGO has worked since 1994 to protect the ecologically fragile Yangtze headwaters region through activities at two ecological research centers. In a new initiative, Green River is developing a program to help promote ecologically sustainable tourism in one Tibetan village in the Minjiang Basin (a tributary of the Yangtze).

GREEN WATERSHED. This NGO focuses on integrated watershed management in the Lancang-Mekong River Basin in Yunnan Province. With the assistance of Oxfam-America, Green Watershed established—and now facilitates—the Lashi Watershed Management Committee. This committee runs dialogues among a broad range of government and community stakeholders to help them evaluate watershed development and protection options. In order to promote broader multi-stakeholder participation in the decision-making surrounding dams in southwest China, Green Watershed set up some exchanges bringing villagers from the Nujiang basin to visit to villages at the Manwan and Xiaowan dams. This village-to-village visit enabled the Nujiang basin villagers to see first-hand the potential detrimental effects of dam building on remote rural communities.

HUAI RIVER PROTECTORS. This NGO began its work using photo exhibitions to help promote information on the severity of human health and ecological damage stemming from the extremely polluted Huai River. Huai River Protectors also has conducted health surveys in over 100 villages in the river basin and discovered abnormally high cancer rates, which appear to be caused by the water pollution. Chinese news media have reported on these health surveys and assistance activities in these cancer villages. Such news reports have pushed local governments to invest into drilling deep wells to supply safe and clean water for villagers.

on the ecological conditions, community interest and other factors indicating a probability of success. The Trust has completed numerous deals, sometimes compiling significant water rights out of a dozen agreements with local farmers willing to contribute a little water towards local stream restoration and fisheries.

Local negotiation can not only produce better flows to restore river health, but can also sometimes lead to selective removal of dams that no longer serve their original purpose, or where the benefits of restoration outweigh dam usefulness. Public education is often a key component of these efforts, as local citizens are often accustomed to reservoir recreation, or simply to the "look" of the dam and impounded river. The River Alliance of Wisconsin is one state NGO that has taken a lead in dam removal, negotiating, for example the Waterworks Dam on the Baraboo River, an unused dam owned by the City of Baraboo. When the city realized it would cost less to remove the dam than

to resolve significant dam safety problems, the city worked with River Alliance of Wisconsin to research dam removal impacts and calm local resistance to the loss of the dam. The dam was removed in 1998.[18]

River Restoration in China

China's experience with dam removal and river restoration is considerably shorter than that in the United States. The largest impediments to the protection and restoration of river ecosystems are the continuing building of dams, past destruction of wetlands and lakes through landfill for farming, and growing water pollution. Unlike the United States, China is still in the heyday of dam building, driven by government concerns for energy and economic development. To help meet the country's predicted energy demands of 930 million KW by 2020, hydropower is targeted to increase by 10 million KW each year for the next fifteen. Put differently, the equivalent to one Three Gorges Dam must be finished each year to meet these energy targets.[19] In January 2005, the State Environmental Protection Administration halted 30 key projects, mostly hydropower plants, as they had not completed required EIAs, which indicates that the new hydropower development may be facing stricter environmental inspections in the future.[20]

Dam Removal—A Future Agenda?

Paralleling the 200+ dams planned by local governments in southwest China, has been acknowledgement by central officials in the Ministry of Water Resources of some negative impacts of dam building—resettlement difficulties, sediment in water ways, damage to fisheries, river ecosystems, and danger of dam failure among older dams.[21] Thus, policymakers and the public are now focusing more attention on improving how dams are planned and carried out, rather than the question of their removal. However, the issue of removing some dams is beginning to be raised in China, since many that were built in the 1950s are reaching the end of their life cycle. Dam maintenance costs and the risk of failure are rising, which might convince both public and private interests to reevaluate their existing support for dams and move toward the removal of some dams. The U.S. NGO experience in this area should provide useful insights for such future movements in China.

Perhaps most ripe for this appraisal is the forty-year old Sanmenxia Dam, situated on the border of Henan and Shaanxi provinces. The first major dam built in the Yellow River Basin, Sanmenxia has been the subject of heated debate since its construction. But opposition to the dam reached a head in 2003 when the Wei River was beset by large-scale flooding. Fifteen members of the National People's Congress from Shaanxi Province publicly expressed suspicion that raised water levels from the Sanmenxia Dam were the primarily cause of flooding. One noted hydropower expert, Zhang Guangdou, went so far as to declare the dam an absolute "mistake." Even one high-level official in the Ministry of Water Resources, Vice Minister Suo Lisheng, considered reducing the water level and lowering the dam's energy production.

As evidence of the great interests pushing against the destruction of preexisting dams, the Yellow River Conservancy Commission rejected calls for diminished capacity at Sanmenxia, suggesting that removing the dam would mean an annual loss of 1 billion W/hr of power and $200 million income from electricity sales, crucial for the general operating costs of the commission. Apart from dam removal, Chinese NGOs are also carrying out projects—often with international NGOs—to help in restore wetlands and flood control lakes or address pollution that is destroying river ecosystems.

NGO Activism in River Restoration

Over the past few years, international NGOs have begun to do more work in the area of river basin protection and management. These international NGO projects have been building networks that bring together (often for the first time) central, provincial, and local government agencies, research centers, and Chinese NGOs to work on river restoration and protection issues. Such projects are creating new lines of communication and increasing stakeholder participation around water protection in China, which lays the foundation for better management and protection of China's stressed river ecosystems. International NGOs—many of which with strong local offices (e.g., WWF-China and Conservation International)—also work with central policymakers to strengthen legislation aimed at protecting river ecosystems. (See Box 1).

River protection and restoration—sometimes linked to dams—have become a growing area for Chinese NGO activism. For example, Green Volunteers League of Chongqing has been working with the municipal government and citizens in Chongqing to mitigate some of the potential pollution problems in the Three Gorges Dam reservoir.

The group is concerned that the reservoir will be turned into a dumping ground for the untreated wastewater and agricultural runoff of more than 15 million people living in Chongqing municipality. Key to the success of the Green Volunteers League has been their efforts to collaborate with local government agencies and push for greater citizen input into matters of public health and welfare linked to the reservoir.[22] (See Box 2 for more examples).

CONCLUSION

The differences between the experiences of U.S. and Chinese NGOs are not surprising, considering their very different histories and the legal structures in which they operate. That being said, the parallels between their strategies for river protection and restoration are striking. In both nations, environmental groups focused first on preventing damaging new projects from being constructed, but see a much larger potential in advocating restoration of already-degraded rivers. Both U.S. and Chinese NGOs have learned to build broad coalitions, create public awareness, and enlist assistance from interested government officials to achieve their goals. And in both countries NGOs have recognized that river protection and restoration require long-term commitment to overcome entrenched special interests.

At the same time, the community of river protection and restoration NGOs in the United States is simply larger, with the longer history of NGO participation in public life driving a huge amount of citizen involvement in river issues. The literally thousands of organizations dedicated to river and watershed conservation around the United States range from national groups like American Rivers to statewide groups like River Alliance of Wisconsin to the very local Friends of Sligo Creek. Thus, the U.S. NGOs have engaged in a much larger number of river conservation efforts and had many more setbacks and successes from which to learn. But stories of river protection and restoration success can be told in both nations, and U.S. and Chinese NGOs can both continue to learn from each other's experiences.

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NOTES

1. WWF & World Resource Institute, 2004, *River at Risk*, Gland, Switzerland.
2. Rivers on federal lands found eligible for inclusion in the wild and scenic rivers system are protected while Congress considers whether to designate them.
3. Anne Watanabe. (1988). "Two Decades of River Protection: A Report on the National Wild and Scenic Rivers System Past, Present and Future," (November 18). Unpublished paper on file at American Rivers.
4. While the federal law was under consideration, local activists worked to develop similar statewide river protection programs. The first such system was established in Wisconsin in 1965. Thirty more states have followed suit. Although provisions vary among states, each provides some protection against new dam construction on protected rivers.
5. Marc Reisner. (1986). *Cadillac Desert.* New York: Penguin Books.
6. *Cadillac Desert,* pp. 335-340.
7. 16 U.S.C. § 1536(e)-(o).
8. World Commission on Dams. (2000). *Dams and Development*. London: Earthscan Publishers.
9. "Destroying a National Treasure in the Name of Progress." (2003, August 16). *South China Morning Post*.
10. Jones, Else. (2003). "Executive Director's Corner." *The Colorado Environmental Report*, Fall, p. 3; Bender, Michael C. (2004, December 31). "2003 year in review: Top ten stories: No. 6: All 64 counties vote against water measure." *The Daily Sentinel*.
11. Roll Call. (1992, September 23).
12. Jim Yardley. *(*March 10, 2004). "Dam building threatens China's grand canyon," *The New York Times*.
13. Hu Kanping with Yu Xiaogang. (2005). "Bridge Over Troubled Waters: The Role of the News Media in Promoting Public Participation in River Basin management and Environmental Protection in China." In

Jennifer L. Turner and Kenji Otsuka (Ed.), *Promoting sustainable river basin governance: Crafting Japan-U.S. water partnerships in China.* (pp. 125-140). IDE Spot Survey No. 28. Chiba, Japan: Institute of Developing Economies/IDE-Jetro.

14. Background information and translation of NGO letter demanding public disclosure of the EIA are available on the International Rivers Network webpage: http://www.irn.org/programs/nujiang/index.php?id=050903disclose_pr.html.

15. Title 18, Reclamation Projects Authorization and Adjustment Act, P.L. 102-575 (1992).

16. Title 34, Reclamation Projects Authorization and Adjustment Act, P.L. 102-575 (1992)

17. Nancy Glaser. (2003, February 9). "Fish power: Skagit River salmon are back in huge numbers," *The Seattle Times*.

18. American Rivers, Friends of the Earth and Trout Unlimited. (1999, December). "Dam Removal Success Stories: Restoring Rivers through Selective Removal of Dams that Don't Make Sense."

19. Wang Shucheng. (2004). "On dams and ecology" Presented at the Eighth National Member Conference of the China Water Resource Society [in Chinese].

20. *China News Agency*. (2005, January 18). "SEPA Declared to Stop 30 Illegal Launched Projects."

21. Wang Shucheng. (2004).

22. Pomfret, John. (2003, June 18). "Three Gorges Dam spurs environmentalist's fight." *The Washington Post*.

SPECIAL REPORT BOX

Interbasin Transfers as a Water Conflict Resolution Mechanism: The Yellow River/Hai River Basin Transfers and the San Juan-Chama Project

By Jay F. Stein and Xuejun Wang

Fishers paddling on the highly polluted Lake Dianchi. One contentious proposal to mitigate the lake's severe eutrophication is to dam the Tiger Leaping Gorge in the upper reaches of the Yangtze and then build a major transfer project from the reservoir water to Lake Dianchi. Without a transparent decision-making process that gives voice to the citizens in Tiger Leaping Gorge, this water diversion could spark conflicts bigger than those occurring in the Yellow River transfers. © Michael Klossen:

In China and the western United States, interbasin water transfers have aimed to resolve conflicts over water shortages facing municipalities and agricultural areas. This paper compares interbasin transfers in the two countries as a conflict resolution mechanism. We examine the water transfers from the Yellow River to the Hai River Basin, particularly emergency supplies for Tianjin, and the importation of Colorado River water into the Rio Grande for the San Juan-Chama transfer project for municipal and agricultural supply in New Mexico, principally for Albuquerque. Clearly, differing political and legal regimes in the United States and China have led to the creation of distinctive approaches to interbasin water transfers. As a result of the transfers to Tianjin and Albuquerque, initial conflicts over shortages were resolved. But each sparked new conflicts in the basin of origin (Yellow River Basin) or the receiving basin (Rio Grande Basin).

The driving force behind interbasin transfers in both countries has been the need to resolve conflicts arising from water shortage, usually resulting from municipal requirements. Tianjin is the third largest city in China and has suffered from serious water shortages for over a decade. Transfers from the Yellow River have rescued Tianjin from severe drought periods. In the case of Albuquerque, the use of interbasin San Juan-Chama water is essential for stabilizing a conjunctively managed system of ground and surface water to supply the city and to ensure important conservation and environmental benefits. In both countries the inter-provincial or interstate nature of the transfers has required the ongoing involvement of the national government. The U.S. Congress was involved in the enactment of interstate compacts setting up the San Juan-Chama transfer project. The Chinese Ministry of Water Resources adjusts transfer allocations every year, making the interbasin transfer very flexible to changing needs in the receiving basin. The United States, on the other hand, has emphasized long-term planning in designing interbasin transfers at the expense of flexibility, with mixed results as subsequent legislation—most notably the Endangered Species Act—can upset settled allocations under a compact.

The American system has been more adept at addressing issues and conflicts that have emerged in the implementation of interbasin transfers through the judicial and related settlement processes. In China, because the central government makes allocations for transfers, direct involvement by stakeholders has been limited. While the Chinese transfers have permitted great flexibility in addressing conflict and water shortage on a yearly basis, this flexibility can create inequities—with certain cities receiving more water or ecological flows being neglected in the basin of origin.

China lacks both an Endangered Species Act to check any species threatened by a transfer project and a sufficiently strong environmental impact assessment system to empower stakeholders in the basin of origin. Moreover, in China there are no formal mechanisms for parties hurt by transfers to demand compensation or changes in such infrastructure projects. While U.S. water transfer compacts intend to promote permanency, they do not eliminate conflict from subsequent competition for limited water supplies. However, the American system does provide a mechanism for resolving the conflict in the courts or through related settlement processes. The adoption of a similar legal process in China would help in managing conflicts as they arise in interbasin water transfers.

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