

SPECIAL REPORT

Building Sustainable Solutions to Water Conflicts in the United States and China

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In the Missouri River Basin, 9 federal agencies, 8 states, 28 Native American tribes, as well as numerous municipal governments, representatives of a wide range of stakeholders, and nongovernmental organizations (NGOs) are preparing to sit down together to begin crafting collaborative solutions for managing the longest river in the United States. This collaborative process aims to reestablish a healthy, self-sustaining ecosystem for three threatened and endangered bird and fish species, while continuing to also meet the multiple needs of river users and basin residents.

In the state of Florida, a 28-person Advisory Team composed of stakeholder representatives for local residents, recreation interests, the environment, and agriculture, along with representatives of federal, state, local, and tribal entities, has been working together since 2003, to provide informed consensus-based recommendations to an interagency technical project development team. The interagency team is developing a mutually agreed upon plan for the operation of two critical Everglades restoration projects: (1) to restore natural water flows to Everglades National Park and protect endangered species reliant on its ecosystem; and (2) to sustain coastal ecosystems and protect them from polluted stormwater runoff, while also providing flood protection for adjacent agricultural and urban areas.

In the western United States, a Platte River Governance Committee was established in 1997, with representation from three states, water users, environmental groups, and federal agencies, to jointly pursue a basin-wide effort to improve and maintain Platte River habitats for four threatened and endangered bird and fish species. In early 2005, the committee completed development of a comprehensive

Platte River Recovery Implementation Program, which is currently being considered for formal approval and adoption by the state governors.

In recent years, such anecdotes have come to represent more the rule than the exception; government entities and stakeholders in the United States are increasingly turning away from a primary focus on litigation strategies for protecting their interests, to instead devote their efforts on collaboratively addressing the challenges of meeting the multiple competing needs of water uses. Interestingly, China, which also faces increasingly contentious water conflicts, has begun to explore new options for preventing and resolving such disputes. Many new strategies involve greater centralization of decision-making over watersheds. (See Box 1).

As China is trying hard to build a market economy, the country is experimenting with the use of market forces to resolve water conflicts. At the same time, there is a growing recognition that using a market-based approach without also ensuring transparency and providing for public participation is neither an efficient nor effective way to resolve water conflicts. Thus, there are several government and nongovernmental initiatives in China promoting increased stakeholder involvement in the environmental policy sphere, which potentially provide a foundation for collaborative problem solving to prevent or resolve conflicts around water. (See Box 2). These policy pronouncements, along with the new legal requirements for more participatory environmental decision-making have resulted in a number of high profile cases in which stakeholders have emerged to vigorously advocate for the protection of their interests.

We first begin this paper with a discussion of the newly emerging collaborative approach to

BOX 1. Centralization Trends in Water Management in China—Tools for Conflict Resolution

- *Clarifying the authority of higher-level agencies to settle water conflicts.* While the original 1988 Water Law and the 1996 Water Pollution Prevention and Control Law gave central government agencies (i.e., the Ministry of Water Resources and its seven major river basin commissions) the power to “settle” or “coordinate” the solution of water disputes, the 2003 Water Law empowers these agencies to now also make final rulings over such disputes.
- *Strengthening the role of the central government in trans-province environmental law enforcement and in coordinating trans-province pollution conflict resolution.* The State Council’s February 2006 *Decision to Implement Scientific Way of Development and to Strengthen Environmental Protection* stated that the upstream provincial government is liable for compensation of losses caused by trans-province pollution, and the relevant governmental units and individuals shall be held responsible as well.
- *Establishing water affairs bureaus at the local level.* These bureaus integrate the water management functions of water supply, discharge and sewage treatment and have been established in the cities of Shanghai, Shenzhen, Beijing, and Hainan Province.
- *Strengthening river basin commissions.* The seven main river basin commissions and others established on the sub-watershed level are being granted more authority to conduct water regulation and allocation.

environmental problem solving in the United States, highlighting important tools for implementing collaboration. Second, we illustrate collaborative approaches to solving water management conflicts using the three U.S. cases mentioned above. The case studies give context for the following section that identifies the key institutional and legal incentives and disincentives in the United States that have encouraged this shift towards the use of collaborative approaches. Third, we explore the trends in China to resolve the growing contentious water disputes, examining possibilities to build the capacity and institutions to pursue more collaborative water conflict resolution strategies. Finally, we conclude by discussing the opportunities in both countries for creating additional incentives to pursue solutions collaboratively and the need to continue building capacity for effective collaboration strategies to solve costly water conflicts.

COLLABORATIVE APPROACHES TO ENVIRONMENTAL PROBLEM SOLVING IN THE UNITED STATES

During the last decade, government entities, private stakeholders, and NGOs in the United States have

increasingly been pursuing collaborative approaches to environmental problem solving, in general, and in water management challenges, in particular. Collaboration is a distinctly different approach to problem solving than litigation, which has traditionally been the favored approach to conflict resolution in the United States.

Collaboration generally means, “working together to achieve a shared goal.” Effective collaboration helps ensure the involvement of a more diverse range of perspectives than with traditional top-down unilateral government agency decision-making processes. The increased creativity and problem-solving capabilities unleashed through collaborative processes are particularly well suited for addressing complex environmental issues. The emphasis of collaborative approaches on engaging all potentially affected interests, including disadvantaged or underrepresented communities and those who care deeply about the issues being addressed, promotes stakeholder buy-in and public support for the eventual solution that is developed, while decreasing the likelihood of litigation. The process also helps develop shared responsibility and accountability for the implementation of negotiated solutions.

BOX 2. Legal Changes Promoting Greater Stakeholder Involvement in Water Management

- The State Council's 2004 *Guidelines on the Comprehensive Implementation of Administration By Law* stressed the importance of promoting the transparency of government information and of making administrative decisions according to the law. The guidelines provided the policy basis for a more transparent and participatory decision-making process. Various government agencies have been ordered to revise their rules and regulations to comply with the principles set forth in the guidelines.
- The 2004 Administrative License Law gives stakeholders affected by some administrative decision the right to access information from the government regarding the decision and the right to demand a hearing.
- The 2003 Environmental Impact Assessment (EIA) Law clearly states, "The nation encourages relevant units, experts and the public to participate in the EIA process in appropriate ways." This requirement for all construction projects to go through EIA process provides a legal basis for stakeholder involvement in any new controversial water projects.
- On 10 August 2004, the State Environmental Protection Administration (SEPA) issued the *Temporary Measures for Environmental Protection Administration Permission*, which states that public hearings should be conducted for two categories of construction projects and ten categories of project planning. The two categories of construction projects include large and medium construction projects that may cause serious environmental impacts and therefore require an EIA report.
- On 18 March 2006, the *Provisional Measures on Public Participation* in the EIA process became effective. The measures established detailed requirements on environmental information disclosure of proposed projects, including water projects that may lead to conflict.

The sharing of resources and technical expertise among participating agencies is another advantage of collaboration, allowing for more efficient use of available assets. Parties working together collaboratively to address an environmental problem can identify relevant available information early in the analytical process and resolve differences in assumptions or interpretations as they arise. Pursuing collaborative approaches also encourages integrating, coordinating, and streamlining the multiple reviews and analyses associated with different legal and permitting requirements. Furthermore, collaboration can help improve mutual understanding between participating government agencies and among stakeholders regarding each agency's different missions, policy mandates, and legal requirements, as well as their resource constraints and capabilities.

TOOLS FOR IMPLEMENTING COLLABORATIVE ENVIRONMENTAL PROBLEM SOLVING

A number of important tools are frequently used when implementing a collaborative approach to environmental problem solving—independent institutional conveners, third party mediators, information sharing, collaborative learning, adaptive management, and collaborative skills building. Collaboration tools continue to evolve in response to new applications tailored for different situations, each having a unique combination of participants, history, dynamics, and constraints.

Independent Institutional Conveners and Forum Neutrality

Because all the entities involved in water management conflicts have a direct stake in the outcome, an independent institution is often required to bring

the parties together and provide a neutral forum for collaborative problem solving. The use of an independent institution helps ensure the overall integrity and impartiality of the process. Without the availability of a trusted independent institution, parties in conflict may not be able to proceed productively with collaborative problem solving. The U.S.

Institute for Environmental Conflict Resolution (see Box 3) is a recently established independent federal agency that has been able to serve this need. Two of the three cases described later in this paper, relied on the Institute to play this important role in helping to convene the problem-solving efforts and ensure the neutrality of the process.

BOX 3. U.S. Institute for Environmental Conflict Resolution

The U.S. Institute for Environmental Conflict Resolution was created by the 1998 Environmental Policy and Conflict Resolution Act (Public Law 105-156). Its mission is to assist all parties in resolving environmental conflicts involving federal agencies. The Institute provides a neutral place inside the federal government where public and private interests can reach common ground. Its primary objectives are to: (1) resolve federal environmental, natural resources, and public lands disputes through assisted negotiation and mediation; (2) increase the appropriate use of environmental conflict resolution and improve the ability of federal agencies to use the approach effectively; and (3) promote collaborative problem solving and consensus building in federal environmental policy design and implementation. For additional information about the U.S. Institute for Environmental Conflict Resolution see: www.ecr.gov.

Third Party Mediators

The use of independent third party neutral mediators or facilitators for designing, convening, and managing the resolution process is a characteristic feature of successful efforts to address environmental problem solving collaboratively. In the United States today, most environmental issues, and especially water-related disputes, are highly contentious and frequently very polarizing. Public trust in governmental institutions is considered to be at an all-time low. Resentment towards the federal government, especially those federal agencies with natural resource management and environmental protection responsibilities, runs high particularly among some segments of the population and in certain areas of the country. Mistrust between agencies is also common.

Although collaboration *per se* does not necessitate the use of independent mediators, they are likely to be required in situations of low trust typical of major environmental conflicts. Use of an independent mediator, accountable to all the participants, who has no decision-making authority and no stake in the substantive outcome of the process, can help build confidence in the fairness and integrity of the process, while also improving communication among participants. Professional practitioners

of environmental mediation, in addition to having conflict resolution expertise, also are typically familiar with organizational missions and cultures of the participating agencies and with government decision-making procedures and requirements.

As the field of environmental and public policy mediation has developed, professional practitioner associations have articulated recommended “best practices”¹ regarding how to conduct collaborative processes. Combining conflict resolution theory with lessons learned from 25 years of case experience, these “best practices” provide practical guidance to government agencies considering collaborative agreement approaches to environmental problem solving. By following these “best practices,” agencies can enhance the likelihood that collaborative efforts will successfully result in agreed upon implementable solutions.² More recently, Policy Consensus Initiative, an NGO dedicated to building the collaborative problem-solving capacity of states, has formulated “Public Solutions: A System for Collaborative Governance.”³

Information Sharing

Another consistent feature of collaborative approaches to environmental problem solving is the necessity to share available information and to learn

together. A number of tools are utilized to address these needs. Developing a common Geographic Information Systems (GIS) database for a project provides a convenient means of sharing and analyzing information together. Furthermore, the negotiation of information sharing protocols and jointly designing the database framework helps build mutual trust, more effective working relationships, a foundation of procedural agreements, and a sense of teamwork and shared purpose. GIS can also be integrated with Decision Support System tools that incorporate explicitly articulated best professional judgments in conducting analyses of geographic-based alternatives, such as determining the most appropriate locations for habitat restoration projects.

Collaborative Learning

Collaborative problem solving also requires collaborative learning. Oftentimes participants have inadequate knowledge to develop informed solutions. In these circumstances, they can choose to jointly commission and select a team to conduct a “comprehensive study”⁴ to gather all available information and make it commonly available, while at the same time creating a shared baseline of knowledge and understanding. If certain critical factual information is contested, participants can engage in a joint fact-finding effort whereby they work together to articulate the questions that need to be answered, gather relevant data, analyze information, and clarify assumptions before deliberating on solutions.

Jointly developing analytical models is also a characteristic of successful collaborative problem solving. With water management conflicts these might include a wide range of potential modeling efforts, such as: predictive hydrologic models, historical hydrologic models, hydropower demand models, electric cost analysis models, water supply models, ground water models, flood prediction models, a variety of biological and aquatic ecosystem response models, and simulation models to predict impacts on different interests. Developing models collaboratively has many benefits. It requires developing a shared articulation of assumptions and provides a forum for shared thinking about key variables and their interactions. By developing models together and then jointly analyzing the results, collaborating parties avoid the kinds of disputes over the validity of interpretations that commonly occur with unilateral or proprietary modeling efforts. Instead of arguing over the validity or meaning of

the data, parties can focus on crafting and evaluating potential integrative solutions for addressing their multiple needs.

Adaptive Management

Adaptive management, which is a formal and systematic approach to learning from the outcomes of management actions and applying that learning to future management decisions, is another highly useful approach that is frequently used when addressing environmental problems collaboratively. Because of their complexity and our incomplete understanding of natural systems’ dynamic responses to anthropogenic manipulations, the development of conclusive solutions to water management conflicts is often constrained by high levels of scientific uncertainty. Such uncertainties create the need for assurances on the part of participants that management decisions are not necessarily final if they do not result in the anticipated outcomes. With an adaptive management approach, management actions are treated as experiments rather than as final solutions. Through collaborative monitoring and evaluation, information is generated to guide future adjustments to management actions based on ecosystem responses and desired outcomes, as well as to ensure early identification of unintended and undesirable impacts.

Collaboration Skills

Another important feature of successful approaches to collaborative environmental problem solving is providing participants with opportunities to build their collaboration skills. Through shared training and integrating learning exercises into deliberations, participants can improve their communication skills, along with their effectiveness in negotiating and joint problem solving. Very few scientists, technical staff, or stakeholder representatives have been previously exposed to collaboration skills development. And yet, such skills are essential in working through difficult issues to craft joint solutions with others who have strongly held different points of view.

CASE STUDIES OF COLLABORATIVE WATER MANAGEMENT EFFORTS

During the last decade in the United States, many of the major water disputes have involved conflicts between meeting the various domestic, municipal, and economic needs of different states, while also addressing federal requirements to protect

threatened and endangered species and maintain the critical habitat and riparian ecosystems upon which they depend. Balancing these oftentimes competing needs has become particularly challenging during the current prolonged drought affecting significant portions of the country.

The following three case studies, which focus on water management rather than “water rights,”⁵ help illustrate many of the characteristics and tools associated with a collaborative approach to addressing water management and endangered species challenges.

CASE 1: Missouri River Recovery Implementation Program

The U.S. Army Corps of Engineers (the Corps) operates six large dams and reservoirs on the Missouri River which together constitute the largest water storage system in the United States, with a capacity of 73 million acre feet.⁶ The mid-1940s enabling legislation for these structures authorized



Barge on the Missouri River. © Missouri Attorney General's Office

them to be operated for the purposes of flood control, navigation, irrigation, hydropower, water supply, water quality, recreation, and fish and wildlife. More than 500,000 acres of cropland have been developed for irrigation. Hydropower plants have a combined generation capacity of 10.9 billion kilowatt hours. It is estimated that more than \$3 billion in potential flood damages have been avoided. Up to 3 million tons per year of bulk cargo has been transported by barge on the river as a result of controlled water flows.

While many of the intended benefits have been accomplished, these water management structures and their operations have also fundamentally changed the pre-dam yearly cycles of water flow. Currently, 35 percent of the main stem of the Missouri River is impounded and 32 percent has been channelized. The altered flow regime has significantly impacted the Missouri River ecosystem. Two bird species dependent on the river's habitat are listed as endangered, and 51 of the river's 67 native fish species are listed as rare, uncommon, or decreasing in numbers—one is formally listed as an endangered species.⁷

Similar to resettlement challenges in China, the dams on the Missouri River also have had significant social consequences. Thousands of Native American Indians living on reservations in the basin were displaced and relocated to less habitable areas that were often more arid and less fertile than their home sites along the river's floodplain. Some tribes lost many thousands of acres of their reservation land to inundation. Important sacred sites to Native Americans were flooded, including ancestral burial grounds. These displacements and loss of lands have had powerful social and psychological impacts on tribes in the basin that continue to have ramifications today.

To help provide guidance in operating the dams according to an established schedule of water withdrawals to meet multiple competing needs, the Corps created the *Missouri River Master Operating Manual (Master Manual)* in the 1960s. However, in the late 1980s, in response to the first major drought in the basin since the reservoir system became operational, the provisions in the *Master Manual* came under intense public scrutiny and political pressures. In response, the Corps began an effort to revise the *Master Manual* to address the contemporary needs of the basin. However, due to prolonged litigation and ongoing disputes among various stakeholder interests, it took the Corps 16 years to finally complete the revision of the *Master Manual*. By this time, however, the Corps was required to also comply with the Endangered Species Act (ESA), which became law in 1973.

The U.S. Fish and Wildlife Service (FWS), charged with enforcing the ESA through formal consultation procedures in the case of proposed actions by other federal agencies, placed certain

requirements on the Corps and constraints on its operation of the Missouri River dams, in order to avoid jeopardizing the continued existence of the two species of birds (piping plover and least tern) and one fish (pallid sturgeon) in the basin that are formally listed as threatened or endangered. In making its final decision adopting the revised *Master Manual*, the Corps committed to take a number of actions to address endangered species concerns, including: flow enhancements, habitat restoration, monitoring and evaluation, adaptive management, and population propagation. Furthermore, the Corps agreed to develop a comprehensive Missouri River Recovery Implementation Program⁸ and to establish a broadly representative advisory committee composed of federal, state, and tribal entities, along with representatives of the full range of stakeholder interests in the basin, to serve as a forum for collaboration in implementing species recovery and ecosystem restoration actions. The Corps and FWS have now partnered with seven other federal agencies with programs in the basin to convene the Missouri River Recovery Implementation Committee. Because of the long history of conflict over water management issues in the basin and the challenge of bringing together competing interests to collaborate on ecosystem restoration, the U.S. Institute for Environmental Conflict Resolution, an independent federal agency, has been asked to assist by providing independent and impartial process design, facilitation, and mediation expertise.⁹

CASE 2: Everglades Ecosystem Restoration

In 2001, despite a broad consensus that had been building gradually among citizens, the state of Florida, and the federal government to restore the Everglades ecosystem,¹⁰ a vehement and still unresolved interagency conflict dating back to the 1960s over the implementation of two long-delayed water management projects was threatening to sabotage progress and momentum. One project was meant to provide flood protection to agricultural lands and to discharge floodwaters into adjacent coastal waters. The other project was meant to restore natural hydrologic conditions to Everglades National Park, whose habitat was being impacted by altered water flows due to upstream flood control measures.

The interagency conflict came to a head when the FWS, exercising its authority and responsibilities

under the Endangered Species Act (ESA), issued the Corps an advisory letter indicating that its planned annual operation of the Central and Southern Florida Water Project would result in jeopardizing the continued survival of an endangered bird, the Cape Sable seaside sparrow. The endangered sparrow's primary remaining habitat was located in Everglades National Park. The South Florida Water Management District, a state agency charged with conducting the day-to-day operations of the water management structures in accordance with the Corps' annual operating plan, was also implicated because it could potentially be held legally liable for violating the ESA. Around the same time, the Council on Environmental Quality¹¹ (CEQ), which coordinates federal environmental policy on



Non-point pollution from agriculture has become a major source of water degradation within the Everglades. © South Florida Water Management District

behalf of the President and which is responsible for overseeing federal agencies' compliance with the National Environmental Policy Act (NEPA), advised the Corps that it could no longer continue to indefinitely operate the Central and Southern Florida Water Project on an experimental basis, as it had since 1983, to determine how to restore flows to Everglades National Park. CEQ gave the Corps a deadline to complete an Environmental Impact Statement (EIS), as stipulated by NEPA.

It became clear that none of the agencies could act unilaterally to solely pursue its own objectives, without also accommodating the needs and concerns of the other agencies, which also shared authority and jurisdiction over the issues that had to be resolved. Attempts were made by high-level

officials from the different agencies to negotiate a solution. The agency officials were stymied, however, because their technical staffs provided them with competing interpretations of the highly technical results of the hydrologic modeling. The officials had no dependable objective basis to use when evaluating the impacts of various alternatives for negotiating an acceptable compromise. On the recommendation of CEQ, the agencies requested impartial mediation assistance from the U.S. Institute for Environmental Conflict Resolution in an attempt to sufficiently resolve their differences to allow the projects to proceed.

Over a ten-month period, the four agencies succeeded in reaching agreement on an Interim Operating Plan for the Central and Southern Florida Water Project, which then became the “preferred alternative” in the formal NEPA review process. Because of the progress made in resolving long-standing issues and their improved working relations, as well as the shared recognition of their mutual interdependence, the four agencies agreed to undertake a collaborative NEPA process¹² to jointly develop a long-term solution that would address all the endangered species, flood protection, water flow, water quality, and funding issues. All of these issues needed to be resolved for the two water management projects to be implemented. With the assistance of a team of mediators working under the auspices of the U.S. Institute, these four agencies have gone on to engage other federal, tribal, state, and local government entities in jointly creating and improving analytic models, developing alternatives, analyzing their impacts, and negotiating a preferred alternative to recommend to the Corps, which is the final decision-making agency. In addition to this interagency team, an advisory body¹³ that included nongovernmental representatives of various stakeholder interests was also established to provide input and informed advice on draft proposals generated by the interagency team. In the fall of 2006, this effort is entering into the final stages of the NEPA process. The final decision is expected to enjoy widespread interagency and public support. The interagency team will continue to jointly monitor implementation using an adaptive management approach to ensure that adjustments are made to achieve the projects’ objectives.

CASE 3: Platte River Recovery Implementation Program

The Platte River originates from snowmelt in the Rocky Mountains in the western United States, and

flows through the states of Colorado, Wyoming, and Nebraska. Water projects in the basin store over 7.1 million acre-feet of water in 190 storage facilities, irrigating 1.9 million acres of farmland, generating power, and providing municipal water supplies and recreation. These water projects also have had impacts on the Platte River’s riparian ecosystem.

With the existence of four threatened or endangered species in the basin (the whooping crane, piping plover, least tern, and pallid sturgeon), concerns were raised in the 1990s about the continuing impacts of the water projects on the habitat of these species, as well as the likely prospect of regulatory requirements restricting the operating conditions of these water management projects in order to comply with the ESA. These concerns created strong incentives for water users, conservation groups, the three states, and the federal government to work together in seeking potential solutions for complying with the ESA, while also providing a level of certainty regarding long-term water availability for water users.

In 1997, after three years of discussion and negotiation, a Cooperative Agreement was signed by the governors of the states of Colorado, Wyoming, and Nebraska, and the Secretary of the Interior (who oversees the FWS and who is ultimately responsible for implementation of the ESA) indicating their joint commitment to establish a basin-wide endangered species recovery program for the Platte River. The proposed program would allow existing water projects to collectively comply with ESA requirements and avoid the need to fully consult with FWS on an individual project basis.¹⁴ The proposed program was also envisioned as a way to proactively avoid future listings of other endangered species and to ensure mitigation of potential impacts of any new water projects in the basin, without unduly affecting existing water users. The program would pursue an “adaptive management” approach to factor in new information as it was developed. Differences would be resolved through learning together from the successes and failures of experimental manipulations and implemented recovery actions. Outside independent scientists would peer review all scientific studies developed by the program.

The Cooperative Agreement established a Governance Committee composed of ten members that included representatives of two federal agencies, the three states, two conservation organizations, and three water users. Their role was to establish policies, review, direct, and develop the proposed Platte River Basin-wide Recovery Program. They

also hired an executive director to provide staffing support and help coordinate the functioning of the committee in developing the recovery program. The Governance Committee operates on a consensus basis. They have, on occasion, sought the assistance of a mutually selected independent mediator, to help them reach agreement on key policy issues.

It has taken the Governance Committee nine years of intense negotiations to formulate and reach agreement on a proposed Platte River Recovery Implementation Program. During the summer of 2006, the proposed Program underwent final formal public review and comment at the federal level under the provisions of NEPA. Each state also will be taking public comments and holding public hearings on the proposed program, before making their individual final approval decisions. If approved, as expected, the program would be formally initiated in October 2006.

INCENTIVES AND DISINCENTIVES FOR COLLABORATIVE PROBLEM SOLVING IN THE UNITED STATES

In the United States, the newly emerging collaborative approaches and tools for water conflict resolution reflect the incentives and disincentives created by a series of key environmental laws passed in the 1970s. These and later key laws, implementing regulations, executive orders, and policy directives are discussed below.

National Environmental Policy Act

Originally passed in 1969, the National Environmental Policy Act (NEPA)¹⁵ established and defined the fundamental environmental policy of the United States by declaring that the federal government is to create and maintain conditions under which humans and nature can exist in productive harmony. Its scope is far-reaching in requiring all federal agencies to identify, analyze, and thoughtfully consider the environmental impacts of any major proposed actions. NEPA also requires federal agencies to involve the public, provide for the public review of an environmental impact statement on proposed and alternative actions, and to solicit and respond to public concerns that are raised.

Since its passage and especially more recently, Council on Environmental Quality (CEQ), which oversees the implementation of NEPA, has encouraged federal agencies to utilize more collaborative approaches to complying with NEPA. Increased

emphasis has been given to engaging other federal agencies and governmental entities as cooperating agencies¹⁶ in preparing and documenting environmental impact analyses.¹⁷ CEQ has encouraged federal agencies to approach NEPA requirements as an opportunity and flexible procedural framework for intergovernmental collaboration and conflict resolution at both the programmatic policy and specific project levels.

Various interests who oppose the proposed actions of federal agencies frequently use the courts to challenge the administrative process followed by agencies in preparing environmental impact statements used in formulating their final decisions. Approximately 325 NEPA cases were adjudicated between January 2001 and June 2004.¹⁸ The time-consuming and costly court cases have served to create important incentives for all parties to pursue more collaborative approaches to conducting NEPA analyses. Federal agencies can potentially avoid lengthy delays in implementing proposed actions due to litigation; and other agencies, as well as interested or affected parties, can have a more significant role in influencing the substantive aspects of decisions made by the lead federal agency.

While collaborative NEPA processes can take more time up front to complete than traditional NEPA processes, the greater involvement of other governmental entities and nongovernmental stakeholders can build greater buy-in to the eventual decision, resulting in smoother implementation and a reduced likelihood of extended delays due to litigation or public opposition. In situations where multiple agencies share jurisdiction over an issue the use of collaborative approaches provides the opportunity to resolve interagency differences during the course of conducting NEPA analyses. This helps avoid major conflicts that can result when federal agencies make unilateral decisions.

Endangered Species Act

Originally passed in 1973, the Endangered Species Act (ESA) is one of the most comprehensive, powerful, and far-reaching of all the environmental laws in the United States.¹⁹ It applies wherever any species is threatened with extinction, whatever the source of that threat. Its enactment reflected a broad consensus at the time that existing federal laws were inadequate to preserve at-risk species. The law and its implementing regulations require all federal agencies to ensure that their actions do not jeopardize the continued existence of threatened or endangered species.

It prohibits all persons from killing or harming an endangered species, or significantly modifying its critical habitat. The law's implementing agency, the U.S. Fish and Wildlife Service (FWS) within the U.S. Department of the Interior, has significant authority to prevent or constrain federal actions, including state or local actions receiving federal funds or requiring federal permits, until concerns related to endangered species are adequately addressed.

A key provision in the law allows any citizen to petition FWS to formally designate a species as threatened or endangered. FWS must comply with statutory deadlines in responding to these citizen petitions. Decisions made by FWS can also be challenged through litigation. This ability to delay and alter proposed projects or actions by any interested or affected party results in considerable uncertainty for other federal agencies, as well as developers whose projects require federal permits. This uncertainty, in turn, creates significant motivation to pursue negotiated solutions. While highly prohibitive in its original version, the law and its implementing regulations have increasingly allowed for more flexibility in complying with its requirements. This is accomplished through a variety of mechanisms that allow and encourage the development of negotiated agreements between FWS and other federal agencies, states, private parties, and NGOs regarding how compliance with the Endangered Species Act will be accomplished.²⁰

Clean Water Act

The Clean Water Act, which was passed in its original form in 1972, is the primary federal law governing water pollution. Its goals are to eliminate releases of pollutants to waters in toxic amounts and to achieve water quality standards sufficient to allow for safe recreational swimming and fishing. The law requires a permit issued by the Corps to discharge dredge or fill materials into U.S. waters, including wetlands. This federal action also requires review by FWS in meeting its responsibilities under the ESA.

All discharges of pollutants directly into U.S. waters also require a permit, whose issuance is frequently delegated by the U.S. Environmental Protection Agency (EPA) to the environmental protection agencies of individual states. These National Pollutant Discharge Elimination System (NPDES) permits are subject to third-party legal challenges under the ESA if they threaten the continued existence of endangered species.

If states are unable to meet their water quality standards, they are required to take more drastic action by establishing Total Maximum Daily Loads (TMDL) of pollutants from all sources. These TMDLs must be approved by EPA, whose decision is also subject to review under the ESA. The development of TMDLs, because they implicate pollution from all sources in a watershed, has been approached collaboratively by some states. In these situations, all contributors of pollutants in a watershed and the public are engaged to negotiate and implement a joint solution developed by all the parties.

Administrative Procedure Act

Originally passed in 1946 during a period of significant expansion of federal agency authorities, the Administrative Procedure Act (APA) provides the fundamental legal basis for initiating most lawsuits by affected interests and NGOs that challenge the regulatory decisions made by federal agencies. For example, it is through the provisions of the APA that parties are able to challenge in federal court the adequacy of the way by which agencies have met the procedural requirements of NEPA and ESA. Without the Administrative Procedure Act, there would be no legal basis for challenging federal agency decisions. The provisions of the APA have served to create powerful disincentives for federal agencies to make unsubstantiated "arbitrary and capricious" decisions, at the same time creating incentives to seek collaborative solutions in order to avoid extensive delays in implementing actions due to litigation.

Negotiated Rulemaking Act

Negotiated rulemaking ("Reg-Neg") is a process in which a regulatory agency establishes an Advisory Committee composed of representatives from a broad range of interests to negotiate the terms of an administrative rule and propose it to the agency for consideration. If the Advisory Committee can reach consensus on a recommendation, the agency commits to publish it as its "proposed rule" and then follows the normal procedures for soliciting and evaluating public comments before issuing a "final rule."

Experimentation with the use of negotiated rulemaking began in the 1980s by the EPA and the Department of the Treasury in response to concerns that traditional rulemaking by federal agencies had become too adversarial, making subsequent enforcement problematic. Its use did not become

more widespread among other agencies, however, until the U.S. Congress passed the Negotiated Rulemaking Act in 1990, formally legalizing the approach. Agencies were encouraged to use a negotiated approach to rulemaking when appropriate. Negotiated rulemaking was not required but rather could be pursued at the discretion of the agency. An agency decision to use, or not use, negotiated rulemaking procedures was not subject to judicial review. The Negotiated Rulemaking Act was permanently reauthorized in 1996 and incorporated into the Administrative Procedure Act described above. Provisions of the act allow for the use of an independent convener and facilitator approved by the Advisory Committee to assist it in negotiating agreement on a recommended proposed rule.

Administrative Dispute Resolution Act (ADRA)

At the same time that the U.S. Congress permanently reauthorized the Negotiated Rulemaking Act, it also passed The Administrative Dispute Resolution Act (ADRA) of 1996. The ADRA requires all federal agencies to establish policies and internal capacity for using alternative dispute resolution (ADR) techniques as an alternative to litigation in the federal courts. The act was passed in response to the recognition that court-based resolution of disputes over a variety of administrative proceedings of federal agencies was becoming increasingly costly and time consuming, while at the same time reducing the likelihood for achieving consensual resolution of disputes because of its adversarial nature. Congress also recognized that oftentimes more creative, efficient, and sensible solutions could be achieved through alternative means than the court system. ADRA allowed federal agencies to use the services of a neutral mediator or facilitator selected by the participating parties to help them address disputes related to rulemakings, enforcement actions, issuing and revoking of licenses or permits, contracts, litigation against agencies, as well as other agency actions.²¹

Federal Advisory Committee Act

The Federal Advisory Committee Act (FACA), originally passed in 1972, governs the behavior of advisory committees to the federal government that include nongovernmental participants. FACA was an attempt by Congress to ensure transparency and balance of viewpoints when federal agencies solicited advice from outside entities in making their administrative decisions. Federal advisory committees must represent a balanced membership that is

thoroughly vetted before appointment through a public review process. Opportunities also are provided for the public to provide written or oral comments on the matters being considered. All meetings of advisory committees are open to the public and the public is provided access to all committee-generated informational materials. FACA does not apply to advisory bodies composed solely of other governmental participants, which could include representatives of other federal agencies and tribal, state, or local government entities. For example, an advisory group composed of cooperating agencies involved in a NEPA process, would not be subject to FACA, because only governmental entities can be designated as cooperating agencies. While certainly laudable in its intent, FACA requirements have become an impediment to collaboration in the view of many federal agencies due to the perceived administrative burdens and costs associated with establishing and maintaining a formally established advisory committee.

RECENT POLICY DIRECTIVES ON ENVIRONMENTAL COLLABORATIVE PROBLEM SOLVING

A number of more recent policy directives have continued to encourage the use of collaborative approaches to addressing environmental problems and resolving environmental disputes. Some of the more notable developments are highlighted below.

U.S. Institute for Environmental Conflict Resolution

The work of the U.S. Institute for Environmental Conflict Resolution (USIECR), introduced in Box 3, has gone well beyond assisting parties with collaborative problem solving. For example, in response to its NEPA-related mission, USIECR convened a National Environmental Conflict Resolution Advisory Committee²² that represented a balanced cross section of viewpoints concerning environmental issues and the field of environmental conflict resolution. The committee conducted numerous analyses including detailed case studies of NEPA projects, court rulings, and conflict resolution methodologies. The committee concluded that effective forms of environmental conflict resolution can produce agency decisions that manifest the national environmental policies embodied in NEPA and that NEPA's policies

and environmental conflict resolution techniques can serve as mutually reinforcing tools to help the federal government make more informed and sustainable decisions. The committee found a striking similarity between the policies set forth in NEPA and the principles and practices that characterize effective environmental conflict resolution.²³ In sum, the committee concluded that well-designed and executed environmental conflict resolution processes are capable of producing federal agency decisions that reflect NEPA's core principles.

Joint Memorandum on Environmental Conflict Resolution and Collaborative Problem Solving

In November 2005, the Office of Budget & Management and CEQ issued a joint memorandum to the heads of all federal agencies directing them to increase their effective use of environmental conflict resolution and to build their institutional capacity for collaborative problem solving.²⁴ The memorandum acknowledged the challenge of balancing competing public interests and federal agency responsibilities when striving to accomplish national environmental protection and management goals. It also recognized how unresolved environmental conflicts have resulted in: (1) protracted and costly environmental litigation; (2) unnecessarily lengthy project and resource planning processes; (3) costly delays in implementing needed environmental protection measures; (4) foregone public and private investments when court decisions are not timely or are appealed; (5) lower quality outcomes and lost opportunities when environmental plans and decisions are not informed by all available information and perspectives; and (6) deep-seated antagonism and hostility repeatedly reinforced between stakeholders and federal agencies. The memorandum also set forth basic principles for engaging federal agencies in environmental conflict resolution and collaborative problem solving. Furthermore, the memorandum encouraged federal agencies to consider assisted negotiations when addressing environmental conflicts and to draw upon the independent services of the USIECR and other internal and external alternative dispute resolutions programs.

Executive Order on Cooperative Conservation

In 2004, President Bush issued an executive order to the heads of the departments of the Interior, Agriculture, Commerce, and Defense and EPA to implement laws relating to the environment

and natural resources in a manner that promotes cooperative conservation, with an emphasis on appropriate inclusion of local participation in federal decision-making, in accordance with their respective agency missions, policies, and regulations.²⁵ The executive order defined "cooperative conservation" as actions that relate to the use, enhancement, and enjoyment of natural resources, protection of the environment and that involve collaborative activity among federal, state, local, and tribal governments, private for-profit and nonprofit institutions, other nongovernmental entities and individuals. Since its issuance, a number of administrative actions have been taken to implement the executive order, including the development of agencies' internal policies on hiring, training, and rewarding employees based on their collaboration skills. In addition, the President is preparing a package of legislation designed to achieve his administration's natural resource and environmental policy goals through a cooperative conservation approach.

National Park Service Director's Order 75A: Civic Engagement and Public Involvement

This internal policy directive to employees of the National Park Service (NPS) issued by its director in 2004 provides an example of how the broad federal policy of using more collaborative approaches is being implemented at the individual agency level.²⁶ The purpose of this director's order is to articulate the NPS's commitment to civic engagement, and to ensure that all units and offices embrace civic engagement as the essential foundation and framework for creating its plans and developing its programs. Civic engagement is viewed as a continuous, dynamic conversation with the public on many levels that helps reinforce the public's commitment to the preservation of national park resources.

Additional Incentives and Disincentives Created by American System of Governance

When any particular interest believes it has the ability to unilaterally achieve its objectives without having to consider the needs or interests of others, then little incentive exists to seek collaborative solutions. The American form of governance, which is based on a system of checks and balances among three co-equal branches of government and two main political parties, generally prevents any single particular interest from being able to garner sufficient power to make unilateral decisions.²⁷ The need to

build consensus to move forward on issues and to collaborate to solve common problems is a virtually necessity under the U.S. system. Other key components in the American system of governance that create the incentives and capacity for collaborative problem solving include the transparency of decision-making procedures, an assertive free press, public access to information, opportunities for public involvement, and an engaged citizenry.

THE CHINESE CHALLENGE OF WATER CONFLICT RESOLUTION

China faces similar water conflicts as the United States, as well as the same challenge of overlapping pollution control and natural resource protection laws that create conflicting missions among government agencies. Despite these similarities, China is handling its water conflicts in a much different way, reflective of a significantly different political system. So far, the government, especially the executive branch, still largely dominates water conflict resolution efforts. However, there are laws and institutions that are starting to form the foundation for more collaborative problem-solving mechanisms to resolve the country's increasingly severe water conflicts.

In China, government agencies have the responsibility to resolve interagency and inter-jurisdictional water conflicts. China's first Water Law, which took effect in 1988, stipulated that interregional water quantity disputes should be resolved through negotiation and/or "settled by the next higher level government agencies."

China's National Water Pollution Prevention and Control Law (adopted in 1984 and updated in 1996), stipulates that disputes over water pollution involving two or more administrative regions shall be settled through negotiation by the local governments concerned, or through coordination by their common superior government. These two laws provided the legal basis for the resolution of water quantity and quality conflicts to be dominated by the executive branch. The laws do not allow for judicial resolution of interregional water conflicts. However, a number of laws exist that enable Chinese citizens victimized by pollution to take industries to court.

In fact, the dominance of the executive branch in water conflict resolution has been steadily strengthened, at least on paper. While the original 1988 Water Law and the 1996 Water Pollution Prevention and Control Law gave superior government agencies the power to "settle" or "coordinate"

the solution of water disputes, the 2003 Water Law empowers the superior agencies to make final rulings over such disputes.

This strong trend of prioritizing top-down resolution of water conflicts is paralleled by another quieter trend of addressing water disputes through a more collaborative approach, reflected in increasing transparency and public participation. China's top environmental agency and domestic environmental groups have been the strongest advocates of this new trend. A key law enabling this push for openness is the country's first Environmental Impact Assessment (EIA) Law that requires EIAs on every construction project. This more transparent and participatory environmental assessment process could eventually reshape China's traditional way of addressing water conflict resolution.

Centralized Water Management System and Its Constraints

In China, many water officials and experts view the problems of the nation's water management system as a result of insufficient centralized regulation. Many believe that horizontal governance structures and redundancy of agencies at each level of government bring too many agencies—water resources, construction, environment, agricultural, land and resources, oceanography and transportation departments—into the business of water management, thus preventing efficient and effective resolution of water conflicts. Vertically, the governance structure perhaps gives provincial and sub-provincial governments excessive power over water management, thus undermining watershed-based management efforts.

Since late 1990s, the trend is towards strengthening centralized management both horizontally and vertically. Horizontally speaking, some local governments (e.g., Shanghai, Shenzhen, Hainan Province, and Beijing) have created water affairs bureaus, which integrate the water management functions of water supply, discharge and sewage treatment. Vertically speaking, river basin commissions on the watershed and sub-watershed level are being granted more authority to conduct water regulation and allocation, most notably with the new requirement to take ecological flows into account.

Using Centralized Power to Repair Drying Rivers

To its advocates, the biggest success of this more centralized management system is the resumption of perennial flow in the Yellow River. The Yellow River suffered its first dry-up in history in 1972,

SPOTLIGHT ON NGO ACTIVISM IN CHINA

Perspectives on the 4th NGO Forum for International Environmental Cooperation

By Kristen McDonald

As one who is easily bored by conferences, I found myself unusually motivated to attend as much as possible of the 4th NGO Forum for International Environmental Cooperation, which took place 7-12 November 2005 in Kunming. The forum provided a welcome break from field research, a chance to talk through initial findings, see old friends and make new ones, and hear campaign news and candid perspectives from new and veteran environmental leaders. Sponsored by the International Fund for China's Environment, Renmin University, Green Earth Volunteers, Kunming Institute of Science and Technology, and Green Watershed, the forum included two days of NGO development training and two days of presentations and discussion. Sessions focused on campaign strategies, biodiversity conservation, and water resource protection. Participants included students from over a dozen Chinese universities, representatives from various Chinese and international NGOs, as well as a handful of academics such as myself.

BLACK CATS, WHITE CATS

During the forum's training session, NGO leaders offered a wealth of advice aimed at breaking down the complexities of NGO work into easily digestible parts. Li Zhinan of the Center for Biological Diversity and Indigenous Knowledge opened the first day of the capacity building training with a presentation on the project cycle; Michele Perrault, from the Sierra Club, presented the Chinese language version of the Club's "Winning Victories for the Environment" training manual; Elaine Zuckerman of Gender Action introduced a nine-point program for creating an NGO; and Dorit Lehrick of the China Association for NGOs discussed three good governance principals in fundraising, "accountability, transparency, and legitimacy."

In the hands-on portion of the training, Professor Jie Zhao and Ms. Jie Qian of the Yunnan Academy of Social Sciences led participants through a strategic planning exercise, which began with brainstorming

participants' chief environmental concerns. Work groups were then formed around (intriguingly) the dominant interests of car emissions, college students' mental health, soil conservation, ecological conservation, water resource scarcity, environmental education, and protection of fish and bird species.

Many at the forum expressed concern with the level of cooperation within and among Chinese NGOs. Elaine Zuckerman stressed in her training that Chinese environmental advocates do not engage in enough teamwork to survive. Dr. Katherine Morton of Australian Northern University suggested that Chinese environmental NGOs (ENGOS) build partnerships with not just other ENGOS, but also poverty alleviation NGOs, corporations, and transboundary colleagues. I have often wondered what stands in the way of Chinese NGOs working more closely together. My impression is that in part, many ENGOS in China are still searching for an identity and position amidst an often bewildering array of shifting ground rules. Walking this balance beam arm in arm with another fledgling NGO is not necessarily more stable than walking it alone. One problem is the lack of models within China for the kind of specific tactics Chinese NGOs can safely and successfully employ to combine efforts. The forum provided NGOs with the opportunity to share experiences and develop a sense of collective identity—an important foundation for cooperation. Some attendees commented that one major benefit of the conference was that it provided a model they could learn from, to go out and run their own NGO trainings and workshops. I hope they do just that.

AN ANT CAN DESTROY A WHOLE DAM

Indeed, the kinds of successes Chinese environmental organizations are experiencing are unbelievable given the constraints and obstacles they face. Wu Dengming of Green Volunteers League of Chongqing reported on the group's success in making environmental education compulsory in

the municipality's elementary schools and an available option in its middle schools. Fan Liangzhen described Wuhan Green Environmental Protection Center's publication on environmentally friendly companies and its pioneering efforts to link river conservation with recreation by organizing a "Swimming Across the Yangtze" event. May Ng of Friends of the Earth Hong Kong discussed the Greenpeace China campaign to confront the illegal logging practices of Asian Paper and Pulp Corporation in Yunnan Province, which sparked a lawsuit as well as boycotts across China.

I eagerly ate up every word of the final day's presentations on freshwater resource issues, as they related most specifically to my own research on the Nu River Basin. Samuel Sage, IFCE vice president, started the session with a warning against water privatization, and moderator Liang Congjie provocatively noted that many watersheds in China are now monopolized by giant hydroelectric power companies; although this is not officially announced as privatization, it is actually privatization.

Kevin Li of International Rivers Network reported on his research into the potential downstream impacts of Mekong River dams in Yunnan. Zhu Hua of the Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences followed with a detailed and visually stunning presentation on the vegetation of the Mekong Valley in China. For an area that is so little understood and so rapidly changing, it was encouraging to hear that the institute is attempting to record the region's rich biological and ecological diversity. Regarding a query on the major environmental threats to his study region, Dr. Zhu noted that it was difficult to predict the ecological impact of the planned six hydropower plants, for no one, not even he, had done research on this development. Audience members pushed Dr. Zhu to be more specific, but I was already impressed that an Academy scientist would publicly admit to the lack of an adequate impact assessment on the Mekong dams. It served as testimony both to the limitations of China's Environmental Impact Assessment (EIA) Law and the potential to correct these limitations through public involvement.

Tong Huan Ji of Sichuan University's Environmental Protection Volunteer Association gave a fascinating report on the trials of the Three River Confluence Nature Reserve, designated in 2004 in a last-ditch effort to protect the Yangtze River's fish habitat. I was amazed to learn about what appeared to be the first riverine nature reserve

in China. Tong told of the conflict between the Xiaodu Dam and the nature reserve, which resulted in a decision to shrink the reserve boundaries to accommodate the dam. Tong noted, infrastructure for production purposes is not allowed in nature reserves. Thus, in order to build the dam, they redrew the boundary, and it was approved, a clear abuse of the EIA legislation. Adding that construction of the plant continued despite its appearance on SEPA's "dirty thirty" list last year.

IF YOU DON'T ENTER THE TIGER'S LAIR, YOU CANNOT CATCH ANY CUBS

In the closing panel, Yu Xiaogang, director of Green Watershed, gave his only address at the conference (translated by former WWF Director Jim Harkness, also the star of the previous evening's banquet sing-along). In recent months, Dr. Yu had been under intense pressure from authorities. Initially he was not allowed to present at the forum, despite all he did to help organize it. And yet, there he was, in the grandest conference room of a government hotel, congratulating his NGO comrades on their ability to learn from one another. Dr. Yu noted that among other accomplishments, the forum "added gas to our engines." His remarks served as a simple and poignant reminder of how China's ENGOs are leading the way in advancing environmental protection, and in boldly and sometimes riskily creating new spaces for citizens to participate in political processes. The student group representatives who attended should be lauded for making use of the networking opportunity to produce an inspirational statement on the need for and role of student environmental groups in China. The statement was delivered during the closing panel and made available for attendees to sign.

Organizing conferences to meet the needs of all attendees is always challenging, yet the organizers did a good job of distributing and collecting post-forum surveys, and Dr. Yu reported that a large majority were satisfied with the event. I certainly felt satisfied—I picked up some new information and research contacts, and made some new friends; my engine is still running, thank you!

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and the length of dry-up kept increasing until 1997 when the river was dry for 226 days. Since then, the government imposed a more centralized regulation to limit water allocations to the provinces to make sure that there is always a flow, no matter how limited, into the Yellow River estuary.

Another oft-cited story is on the Hei River Basin, the second largest (after the Tarim) inland river basin in China. Replenished by glaciers on the edge of Qinghai-Tibet Plateau, the Hei River used to flow into twin lakes in the center of the Gobi Desert in western Inner Mongolia near the ancient city of Etsina. The development of farming and industry in the middle reach of the river since the late 1950s has greatly reduced the water supply in the downstream region. In the 1970s, the lakes began to dry up and local Mongolian herdsman were severely impacted by the desertification. In the late 1990s, when more than 20,000 local Mongolians lost their source of drinking water and became “eco-refugees,” the Inner Mongolian government lodged a strongly worded petition to the central government.²⁸ This demand for help aroused the attention of the leadership, who ordered the drafting of a fairer water allocation plan and a special Hei River Commission was established to enforce it. Through centralized regulation, water flows have reached the previously dried twin lakes near Etsina for the past three years.

While in the United States a dissatisfied party can potentially hold up and prevent the implementation of certain kinds of executive branch decisions for many years through litigation, in China, the rulings made by the superior government agency are final. The marathon type of lawsuit over water disputes that occurs in America cannot happen in China. Thus, Chinese government agencies are able to settle water conflicts more quickly and efficiently, so as to prevent them from growing further out of control. This approach is viewed as a crucial tool to maintain social stability. Such a top-down approach has enabled China to address highly contentious water situations much more quickly—most notably is the South to North Water Diversion Project.

South to North Water Diversion Project

The South to North Water Diversion Project (SNWDP) is a gigantic water scheme intended to divert water from the Yangtze River and its tributaries to the water-starved north. The diversion will be conducted through three routes: (1) the eastern route will pump water up the coastal region to the north through a 1,200-kilometer long canal

from the lower Yangtze; (2) the middle route will be accomplished by building another equally long canal to tap the water resources from Hanjiang, the longest tributary of Yangtze; and (3) the western route will divert water from the upper reaches of the Yangtze and a few tributaries, namely the Tongtian, Yalong and Dadu rivers, to boost the supply of the parched Yellow River Basin.

Despite their environmental and social impacts, construction of the eastern and middle routes was initiated in 2002 and 2003, respectively. Among these impacts, one of the most challenging is to relocate around 300,000 rural residents displaced by the enlargement of the middle route source reservoir in Henan and Hubei provinces, both of which are densely populated and finding additional farmland for the resettlement will be extremely difficult. It is fair to say that the projects will result in the redistribution of an enormous amount of resources dramatically affecting the interests of different regions and millions of people. The central government had the final say and decided to proceed with the project. The fact that such projects could be implemented without undergoing much public discussion shows that the traditional top-down approach to water conflict resolution still functions—at least temporarily. Government officials hailed the project as another example of the advantage of socialism, which allows for the pooling of collective strength to do something big.

However, it is becoming increasingly difficult to push through projects like SNWDP. With the rising sense of individual and regional rights in Chinese society, the dominance of powerful political and economic interests has been increasingly challenged in recent years. In fact, the western route is facing mounting public scrutiny, despite extensive preparations already underway—most opposition is from Sichuan Province, from where the water will be taken.

Emerging Challenge to Central Authority (and the Western Route)

According to the current plan, construction of the western route is to begin by 2010. It is expected to take 40 years to complete the three phases of the project. By 2050, as much as 17 billion cubic meters of water (equivalent to 40 percent of Lake Erie's water) on an annual basis will flow from the Yangtze and its tributaries into the Yellow River. The total cost, based on year 2000 estimates, would reach 30.4 billion Yuan, or 60 percent of the cost of the whole SNWDP.

In July 2006, a group of experts in Sichuan—including sociologists, geologists, hydropower engineers, biologists, and professors from universities and officials from local government agencies—made public a *Memorandum on the Western Route Project of the SNWDP*, which they had jointly researched and drafted. According to a news media report, while the planning for Phase I of the Western Route Project (drafted by a subsidiary of the Yellow River Commission under MWR) had been studied and approved by a committee of central-level experts in 2001, local scholars and officials had no access to the planning document until 2005.²⁹

According to the report, the drafters of the memorandum dismissed the claim that the start of the eastern and middle route signaled approval to also start the western route. Instead, the group wanted a broad range of issues to be addressed first, including the: (1) retreat of glaciers on the Qinghai Tibetan Plateau and subsequent impact on water availability; (2) potential damage to the ecosystem of the Qinghai Tibetan Plateau; (3) impact on the hydropower generation of Yangtze Basin dams due to the losses of water; (4) compensation to the local residents; and (5) mitigation of environmental impact.

One of the reasons for increased social concern is the rising awareness of growing water scarcity. According to statistics compiled by China's water authorities, two-thirds of China's cities are water short (*Editor's Note: See Nickum and Lee commentary in this volume*). The media report sparked an uproar among the public—especially in Internet chat rooms and bulletin boards—in great part because the memorandum was released at same time that Chongqing and parts of Sichuan were experiencing their worst drought in decades.

This is but one example of the rising awareness of the protection of local and personal interests in a country that is facing scarcity of resources. In fact, the water scarcity in parts of China has become a matter of survival for certain disadvantaged groups and forces them to challenge the established powerful interests—an ongoing intergovernmental dispute between the capital Beijing and Hebei Province illustrates such a case.

CASE 1: Disputes between Thirsty Beijing and Hebei over the Juma River

China's capital city Beijing is surrounded by Hebei Province, from which originates most of the rivers

flowing across Beijing's jurisdiction. As the population of Beijing has risen sharply from 8 to 14 million over the past two decades, the city has intercepted and cut off most of the rivers flowing across its territory, with the Juma River being the only exception. The Juma River is a tributary of the Hai River that flows across the middle of Hebei Province with slightly more than 30 kilometers flowing through Beijing.

Beijing and Hebei each built a major water diversion project on the Juma River. Beijing, however, complained that it could not divert enough water to meet its demand because of Hebei's upstream diversion. Beijing had intended to build a reservoir to capture and store water from the Juma River, but its plan has been held up because of the strong opposition by Hebei Province.

Beijing suffered its fifth consecutive year of drought in 2003. The situation turned so bad in September 2003, that the city decided that it must tap its emergency reserve, including the Juma River, as well as the aquifer under its riverbed. Beijing developed a plan to raise the dam on the Juma River to hold more surface water within its territory. It also was moving forward to drill a cluster of more than forty wells to tap the subterranean flow of the Juma River. The water would be transferred through pipelines to Beijing's Yanshan Petrochemical Plant, the largest industrial water user of the city.

The Hebei government, however, had not been informed of Beijing's intentions and only learned about the projects by chance when a provincial water bureau official saw an online invitation soliciting bids for construction of the well drilling project. Beijing's water diversion project aroused great concern for the province, because Hebei was also suffering from its fifth consecutive year of drought. The Juma River, which was the only perennially flowing river in Hebei Province 10 years ago, is now dry most of the time. The drying up of the river in recent years has forced downstream residents in Hebei to tap the subterranean flow. Hebei believes that Beijing's water diversion project will cut off the water supply to the nine cities and counties downstream and severely affect the livelihood of nearly three million people in Hebei Province. Hebei also has voiced concerns that the diversion will exacerbate the desertification of croplands and threaten the ecology of the largest freshwater lake in north China, into which the Juma River flows.

The top leaders of Hebei Province became involved, sending a letter written in an unusually harsh tone to Beijing's water authority. Meanwhile,

a petition letter, signed by the villagers in Hebei's Laishui county, was delivered to Wu Bangguo, head of the National People's Congress, on 28 November 2003, appealing for the central government leaders to stop the "illegal" diversion project that would threaten the survival of 269,000 people.³⁰

Wu Bangguo provided his opinions in a report that directed MWR to coordinate and resolve the issue. The MWR minister, in turn, directed his staff and the Hai River Water Resources Commission to develop a solution.

The Hai River Commission proposed several stipulations in formulating a solution to the issue, including that the status quo on use of water from the Juma River should be maintained, which meant a mandatory suspension of Beijing's water diversion expansion project. And furthermore, Hebei Province was ordered to take measures to provide water to the Yanshan Petrochemical Plant, because it is the major provider of gas and heat to Beijing.

Guided by these stipulations, the two sides began negotiations that resulted in bitter quarrels and sharply conflicting opinions. While Hebei is considering selling some water to the capital, Beijing wants to ensure it gets its share of Juma River water for free. Beijing was forced to give up on its plans to grab most of the surface and groundwater from the Juma River. Nonetheless, by June 2004, it had completed a canal designed to divert much of the surface water and part of the groundwater to its Yanshan Petrochemical Plant.

Hebei's demands to resolve the conflict did prompt the upper levels to mandate some resolution, but lacking a true collaborative problem-solving process, the conflict has not been completely solved and will probably reemerge again in the near future.

Growing Challenge of Pollution Conflicts

Beside conflict over water distribution, the number of conflicts caused by water pollution is also increasing. The Songhua River toxic spill, which took place in November 2005, shut down the water supply of a city with over three million people and highlighted the seriousness of the problem. However, this spill is only the tip of the iceberg. According to the statistics provided by SEPA, by September 2006 another 130 water pollution incidents had occurred since the Songhua River toxic spill.³¹ A number of these incidents resulted in the shutting down of local water supplies.

China's top-down approach is being challenged by increasing difficulties in solving conflicts caused by water pollution—both accidents and the every day toxic pollution that cities and factories pump untreated into rivers, lakes, and streams. China's National Water Pollution Prevention and Control Law (adopted in 1984 and updated in 1996), stipulates that disputes over water pollution involving two or more administrative regions shall be settled through negotiation by the local governments concerned, or through coordination by their common superior government. But in reality, the superior agencies often feel powerless to handle highly contentious water pollution conflicts.

The dominating executive branch approach does enable government agencies to respond quickly to water conflict emergencies. With political and social stability upheld as the top priority of the ruling Communist Party, this approach is instinctively favored. However, emergency solutions are rarely able to effectively address the root causes of the problems, leaving many unresolved issues that often blow up again later as even more destructive social conflicts. The following case illustrates the inadequacies of China's top-down administrative approach to overcome local protectionism and how this failure serves to create additional problems.

CASE 2: Maxigang River—A Major Inter-provincial Water Pollution Conflict

Maxigang is a 13-kilometer river that flows from Shengze town in Suzhou city (Jiangsu Province) to Xiuzhou district in Jiaxing city (Zhejiang Province). With numerous lakes and ponds and a dense network of wetlands, the region is China's fish and rice basket.

Shengze town experienced a rapid expansion of the printing and dyeing industry in the 1990s, dramatically increasing wastewater. Statistics from Jiaxing city show that in the worst year, 90 million tons of "soy sauce" colored wastewater was dumped into the small river. The wastewater killed fish and crayfish downstream in Jiaxing. One pearl farm alone lost 20 million Yuan in a pollution spill in 2001.³²

Besides economic losses, which reached 56 million Yuan in 2001, the wastewater also threatened people's health and safety. From 1999 to 2000, northern Jiaxing reported several outbreaks of intestinal and diarrhea epidemics. In 2000, not a single young man in 12 villages in northern Jiaxing could

pass the physical examination for military service. Overall cancer rates in 8 towns in northern Jiaxing rose 28.2 percent from 1996 to 2001; the rate of alimentary tract cancer rose by 58 percent.³³

In 1995, several hundred angry Jiaxing fishermen and their family members dumped loads of smelly dead fish in the courtyard of the Shengze town government headquarters. This incident—considered an emergency—was reported to Zhejiang’s environmental bureau as well as the Environment and Resource Committee under of the People’s Congress, but they could not work out an effective solution. Thus, major pollution spills kept occurring every year.³⁴

This inter-provincial dispute was turned over to the State Environmental Protection Administration (SEPA), the highest environmental authority in China. Under the coordination of SEPA, a memorandum was signed in 2000, stipulating that Suzhou city provide Jiaxing city one million Yuan in compensation and that Suzhou officials guarantee that water flowing out of their jurisdiction meet discharge standards by the end of 2003.

The water pollution continued, however, and on 22 November 2001, angry fishermen in Jiaxing raised one million Yuan to take actions on their own. The fishermen used eight bulldozers to deposit several thousand sandbags and sink 28 boats loaded with cement to block the 50-meter wide Maxiang River.

News of the river blockage was sent to MWR early that morning and was then passed on to central government leaders. Premier Zhu Rongji and other cabinet members offered to intervene, prompting MWR and SEPA to send a joint taskforce team to the site. After meetings with the vice governors from Jiangsu and Zhejiang provinces, a new memorandum was signed, which stipulated that Jiangsu take urgent actions to shut down polluting factories and that Zhejiang remove the impromptu dam immediately.

The people in Jiaxing, however, would not allow the government officials and workers to get to the site because they did not trust the promises made by their polluting neighbor. On 8 December 2001, a vice-governor of Zhejiang Province went to the site of the confrontation and talked to hundreds of local people. He then met with local village chiefs and 20 representatives of local farmers and fishermen. That evening, local police ordered people away from the dam site and six days later the sandbags and boats were removed.

A joint monitoring scheme has been set up between Jiaxing city and Suzhou city and an

automatic monitoring station was installed on Maxigang River. However, Jiaxing side reported that Shengze began discharging pollution on weekends or rainy days, making it harder to collect evidence. Additionally, Shengze town began discharging through pipelines to another region in Jiaxing.³⁵

While the conflict between Zhejiang and Jiangsu has abated, the problems were solved in an *ad hoc* manner only after the situation became quite violent. None of the stakeholders were subsequently equipped with skills to address future water conflicts. However, this and other similarly violent water disputes have prompted government agencies, researchers, and NGOs to work on creating new tools and approaches for conflict prevention and resolution—ranging from market mechanisms, increased stakeholder involvement, and class action lawsuits.

Market-based Tools: Effective Use Requires Good Governance

From the late 1990s, Chinese water officials and researchers have been advocating market-based solutions to water quantity disputes. The first water deal took place in February 2001 between Yiwu and Dongyang cities in Zhejiang Province. Yiwu bought the permanent use rights for 50 million cubic meters of water annually from the neighboring Dongyang city at a cost of 200 million Yuan. Despite vocal support by senior water officials, this case caused a big controversy, for in China water is a public, not private, resource. Additionally, below the diversion the downstream city of Shengzhou complained that the water rights deal was made at Shengzhou’s expense.³⁶ Water officials and academic experts are examining this and other *ad hoc* trades to help design an acceptable tradable water rights system for China. One illustrative experiment with a market-based approach was used to resolve the conflicts involving the Zhang River—one of the most violent and prolonged water conflicts in modern China.

CASE 3: Violent Conflict on the Zhang River and the Trial of Market-Based Solutions

The Zhang River—within the Hai River Basin—originates in Shanxi Province and flows through Henan and Hebei provinces. Hebei’s Shexian and Cixian counties, which are located on the northern side of the river, share the water source with Henan’s Linzhou city and Anyang county on the southern

side. For centuries the villagers on both sides of the river had friendly relations and many became relatives through marriage.

However, the friendly relations were marred in the late 1950s, when the demands for water rose sharply. Under directives of the Great Leap Forward, local communities raced to build large and small water facilities to expand farming. One of the projects, the Red Flag Canal, which was dug through solid rock mountains, became a national model when it was completed in the early 1960s. People from all over China went to learn from the experience of Linxian county for creating a “milky way on earth” with their bare hands. The other side of the story, which was not publicly reported, reveals a less than rosy picture. The Red Flag Canal and other projects enabled excessive water withdrawals in the river and created severe water shortages. Thus, instead of bringing water, these projects brought decades of fighting and bloodshed. By the 1970s villages on both sides of the river even mobilized their own militias to help protect water for their farming.

In 1976, a local militia chief from Linzhou was shot to death in a violent clash between Shexian's Hezhang village and Linzhou's Gucheng village over the damming of Zhang River. In December 1991, Huanglongkou village of Shexian county and Qianyu village of Linzhou city mortared each other because of conflict over a water diversion facility, which resulted in a number of injuries.³⁷

In August 1992, bombs were set off along the Red Flag Canal. A section of the canal collapsed, inundating local villages and causing direct economic losses of nearly 10 million Yuan. That year, a special Zhang River Subcommittee was set up under the Hai River Commission to address the violent situation. The initial weakness in the committee was apparent in that conflicts continued into the late 1990s culminating in three major violent incidents:³⁸

- In March 1997, several hundred villagers from Baishan village (Shexian county) and Qianyu village (Linzhou city) were desperate to get water for their crops, which led to a violent clash leaving several dozen villagers injured.
- In 1998, Water shortages were so intense that villages in Henan and Hebei fired mortars and destroyed each other's water diversion facilities.
- On Chinese New Year in 1999, villagers from Shexian's Huanglongkou village and Linzhou's Gucheng village used bombs against each other,

injuring nearly 100 villagers and causing one million US. Dollars of damage to houses and water facilities.

In the spring of 2001, northern China was hit by another drought and the flow in the upper reaches of the Zhang River dropped to three cubic meters per second, creating a water shortage that threatened to spark yet another bloody conflict. However, the Zhang River Subcommittee—which had been working hard to build communication among stakeholders throughout the basin—brokered a deal in which Shanxi Province agreed to sell extra reservoir water it held in the upper reaches of the river to the drought stricken Hebei and Henan provinces. The first deal was made in April 2001 when 15 million cubic meters of water was released by the Zhangze Reservoir in Shanxi followed by a 30 million cubic meters release in June. In the spring of 2002 Hebei and Henan bought another 30 million cubic meters of water.³⁹

The case was praised as a win-win solution. Upstream dams in Shanxi Province received payments of 1.4 million Yuan, downstream Hebei and Henan provinces avoided agricultural losses of 50 million Yuan, and the downstream hydropower stations generated 1.2 million Yuan worth of power. Most critically, the sale succeeded in helping to prevent further violence over water shortages that had troubled the region since the 1970s.

By attempting to clarify tradable water rights, Chinese officials and academic experts hope to reduce the conflicts caused by the confusion over who has legal access to limited water resources and to promote the fair transfer of limited resources from lower to higher profit margin uses. Theoretically, a market-based approach seems promising; however, it will be a tremendous challenge to determine a fair distribution of initial water rights in China. The determination process itself can be expected to be controversial and cause additional conflicts. Furthermore, the trading of water rights provides fewer options and flexibility in times of continuous drought. After buying water from Shanxi for two years, for example, Henan residents in the Zhang River valley have now begun to construct a large reservoir on a major tributary of Zhang River to address their continuing and unresolved water supply needs. Without market mechanisms or collaborative problem-solving processes to encourage conservation, this new dam could fuel future conflicts.

Reflections on Free Market Solutions to Water Conflict

The perceived success of free market reforms in bringing millions out of poverty in the 1980s led many progressively minded Chinese experts and the majority of the public to believe that the invisible hand of the market can sort out social problems and bring China a more efficient and fairer society. However, by the 1990s it became clear that market-based reforms also have created growing social problems such as a widening of the income gap, rising education costs, and a deteriorating medical care system. Such problems have prompted many Chinese to rethink such a strong reliance on a market-based approach to scarce resource issues. Specifically, it has become clear to many that a market-based economy that does not give the public access to information or permit stakeholder involvement cannot produce a stable society and sound economy. Thus, in terms of water problems, the effective use of market-based tools—such as pricing schemes and defining water rights—cannot rely fully on a centralized approach to water management; rather, what is called for is the utilization of more bottom-up, transparent and participatory processes.

CREATING A FOUNDATION FOR COLLABORATIVE PROBLEM SOLVING IN CHINA: TOP-DOWN LAWS PROMOTING STAKEHOLDER INVOLVEMENT IN WATER MANAGEMENT

While China's water management seems to be leaning toward a more centralized model, the country's environmental management is undergoing major changes. Ever since 2003, there has been an increasing focus on public participation, corresponding with progressive changes in China's environmental laws.

Just like NEPA triggered public participation in environmental affairs in the United States, Chinese participation in the environmental sphere also began with a procedural law, namely the Environmental Impact Assessment (EIA) Law, the first Chinese law that requires public participation in government decision-making processes. This law is highly relevant to water conflict resolution because all construction projects—many of which could produce water conflicts—are legally required to undertake an EIA. Thus, if the law is followed, the Chinese public will have a say in the decision-making process for those projects.

Like many other laws in China, the EIA Law is merely a guideline and the requirement for public participation is very briefly stated. Still, it has provided the initial legal cornerstone for ensuring public participation in governmental decision-making processes. Since its passage, additional laws, regulations and policies have been established following the same principles. Together, they have laid a legal foundation for a new way of water management by opening the door to collaborative decision-making processes.

The Environmental Impact Assessment Law

The EIA Law, which became effective on 1 September 2003, clearly states, "The nation encourages relevant units, experts and the public to participate in the EIA process in appropriate ways." According to the law, for projects that may cause negative environmental impacts and directly involve public environmental interests, the institutions of project planning should seek opinions from the relevant units, experts and public over the draft EIA report, by holding evaluation meetings and hearings...before the draft is submitted." In addition, "the institutions should seriously consider the opinions of the relevant units, experts and the public over the draft EIA law, and should attach explanations for adopting or not adopting the opinions when submitting the EIA report."

The State Council's Guidelines on the Comprehensive Implementation of Administration By Law

These guidelines, which were issued on 22 March 2004, stressed major internationally accepted good governance principles such as transparency, participation, and the rule of law. According to the guidelines, apart from national and business secrets and private matters, Chinese administrative institutions should disclose and allow the public to review governmental information. When discussing how to build more democratic decision-making processes, the guidelines require the government "to clearly define the administrative decision-making power of all levels of governments...and improve the regulations for internal decision-making," as well as establish a more transparent administrative decision-making process that brings in public participation and outside expert review.

Specifically, the guidelines require that information on government agency decision-making for projects or plans be disclosed and accessible to the

public through seminars, hearings, and evaluation meetings, all of which should collect opinions on the projects or plans. The guidelines establish the policy basis for a more transparent and participatory decision-making process. Various government agencies have been ordered to revise their rules and regulations in accordance with the principles set forth by the guidelines. SEPA was one of the first agencies to issue their own implementation documents supporting these guidelines.

The Administrative License Law

Enacted on 1 July 2004, the Administrative License Law (ALL) requires that administrative institutions reviewing applications for permission or licences for new projects or plans must inform and solicit input from any third party that has a major interest in (or will be impacted by) the projects or plans (e.g., citizens living in farmlands that will be inundated by a new dam being proposed). The law requires administrative institutions to inform the applicants and stakeholders about their rights to demand a hearing. Applicants and stakeholders must submit an application for a hearing within five days of being informed of their rights, and the administrative institutions are required to organize a hearing within 20 days of receiving the application.

Bottom-Up Movement to Increase Stakeholder Involvement in Water Management

These new policy and regulatory tools still need to be tested, in terms of actual application to promote collective problem solving in water conflicts. Fortunately, social conditions in China appear conducive to these new opportunities:

- There is growing public awareness regarding pollution and ecological degradation, along with their impacts on public health and living standards.
- Top party leaders are promoting a new view of more balanced and sustainable development, publicly committing themselves to the establishment of a “harmonious society,” with harmony between humans and nature being one of the key themes.
- The Internet, with more than 100 million users in China, has dramatically enhanced transparency on environmental and social issues—a much needed first step in improving environmental decision-making processes.

- Since the country’s first environmental NGO was registered in 1994, Chinese green groups have established their reputation and developed their capacity to begin addressing even environmental transparency issues.⁴⁰
- Some Chinese NGOs and private lawyers have been helping water pollution victims navigate their way through the courts to punish polluting industries and to receive compensation.

First Major Grassroots Campaigns on Water Management

Public participation in water management projects began with a few large hydropower projects. China is facing serious shortages of both water and energy as its rapid economic expansion further strains its limited natural resources. This has prompted a new round of hydropower development proposals in a country that with 86,000 dams is already the most dammed in the world. China’s installed hydropower capacity reached 100,000 megawatts in 2004, making it the biggest hydropower user in the world. According to plans drafted by China’s central planners, the country is looking to nearly triple its hydropower capacity by 2020.

Such massive river development is unprecedented; it dwarfs the rest of the world’s hydro schemes. Local NGOs and environmentalists worry that the current hydropower “craze” will severely overexploit China’s rivers and result in serious environmental and social harm. They argue that tripling China’s hydropower capacity would mean virtually the end of pristine rivers in China, the fragmentation of ecosystems within China and in downstream neighboring states, and the



Walking along the beautiful Nu River (Nujiang), a wild river that flows through China, Burma, and Thailand. Plans by the Yunnan provincial government to build a cascade of 13 dams on the Nujiang have sparked strong opposition from grassroots groups, which stress the marked lack of transparency in the dam decision-making process. © Wang Yongchen

impoverishment of biodiversity. Environmental activists and researchers predict that hydro expansion is highly likely to displace more than one million people from their ancestral homeland in the deep valleys of China's hilly southwest.

Such is the backdrop against which the "rising rivers movement" in China has emerged. Since 2003, many Chinese NGOs follow dam issues, even making high-profile challenges against a series of dams that they believe will be the most damaging:

- NGOs informed the public and media about how Yangliuhu Dam would harm the 2,220 year-old Dujiangyan irrigation system that is, amazingly, still serving millions of people today. This system was deemed a World Cultural Heritage site in 2001. Some 180 media reports combined with public dissent finally forced the developer to abandon the project in 2003.
- In 2004, Chinese NGOs turned their focus on a cascade development project on the Nujiang, one of the last two free-flowing rivers in China. Their efforts aroused national public attention on the fate of a remote river that was unknown to most Chinese until then. Again, widespread public concern and strong attention focused on the project by the news media finally led the Premier Wen Jiabao to halt the project pending a more comprehensive EIA.
- Since July 2004, environmentalists have been working to preserve the Tiger Leaping Gorge, creating a campaign to shed light on a massive dam project that will devastate this spectacular landscape and the rich cultural diversity, which has provided a stable economic life for 100,000 people.

Most of the local NGOs doing this work are not ideologically against dams, rather proponents of transparent decision-making. They understand that China needs power to support its rapid economic growth and to meet the rising demand from a more affluent society. What they cannot accept is the mentality still dominating the hydropower sector that views every existing gorge as a good dam site. These Chinese environmentalists are urging the agencies and developers before they take on the damming of any new gorges to review the hard lessons from the past 50 years: (1) failure to properly resettle millions of displaced residents, (2) destruction of ecological balance, (3) loss of biodiversity, (4) destruction of natural and cultural heritage sites, (5) severe sedimentation problems that have

made some of China's largest dams uneconomical, (6) exaggeration of potential benefits, and (7) cost and time overruns of past projects. Chinese NGOs are stressing that many of these shortcomings stem from the lack of a fair and transparent process to decide on dam issues.

These problems emerged in part by allowing decisions on large dams to be determined solely by government officials, developers and technical experts, who can make—often-profitable—agreements among themselves. NGOs and environmentalists assert that no interest groups or individuals should be permitted to make easy money by externalizing huge costs on displaced people, on society in general, on the national economy, and on the environment. They argue that best-practice planning for China's energy future requires an open and transparent decision-making process for dams and other energy-generating projects that provides for participation by stakeholders and ensures full access to information.

Trying out the New Public Participation Policy Tools

China's environmental authorities have wanted to integrate public participation into decision-making processes through the use of formal public hearings. However, cases like Nujiang are considered too sensitive to experiment with such new tools. When SEPA was looking for a suitable situation for conducting a public hearing, the dispute over installing plastic sheets to line the bottom of the lake at Yuanmingyuan, the Old Summer Palace, was selected as a safer opportunity for trying out new approaches to public involvement.

The Yuanmingyuan management authorities chose to line the bottom of the lake with plastic sheets to prevent the seepage of precious water resources. But many people were suspicious of the move, wondering whether it was for economic gains of the management, worrying that it may damage the cultural heritage site. SEPA managed to hold an environmental public hearing on the dispute in April 2003, the first of its kind in China on the national level. Seventy-three representatives from all walks of life participated and stated their views on the project.

Without a completed EIA report, this public hearing functioned more like a pre-hearing meeting designed to collect information and opinions. A following-up hearing after the EIA report was drafted should have been conducted, but one was

never held. Some were left to wonder whether the process was cut short due to political pressure. Nonetheless, the case did result in a significant milestone—the full draft EIA report was posted on the SEPA website, satisfactorily addressing the rights to know of concerned citizens. Most likely other relatively less sensitive cases will have to act as testing grounds for new laws and pushing forward public participation in water conflicts. The Yuanmingyuan case illustrated that in China public participation should and could start with environmental information access, where there is already a solid legal and policy basis.

CREATING ADDITIONAL INCENTIVES FOR COLLABORATIVE PROBLEM SOLVING

What can be done to create additional incentives for pursuing collaborative problem solving approaches to water management conflicts in the United States and China?

United States

In the United States while a number of policy directives have been issued by the current and previous administrations to encourage federal agencies to engage with other agencies and stakeholders on a more cooperative and collaborative basis, additional incentives are likely to be required to result in significant long-term improvements:

Improve Funding. Lack of available funding is one of the major obstacles to more extensive use of collaborative approaches to water conflict resolution. Because of the current pervasive mistrust of federal agencies among states, tribes, local governments, and NGO stakeholders, the use of independent impartial conveners, mediators, and facilitators is likely to be essential for the near term, to help ensure confidence in the integrity and fairness of agency-sponsored collaborative processes. Unfortunately, using such outside mediators is quite costly for federal agencies, creating substantial disincentives to use them.

The USIECR, for example, is an independent agency staffed by federal employees that could conceivably provide mediation services at little or no cost to collaborative processes sponsored by other federal agencies. However, in establishing the U.S. Institute, Congress expected it to supplement its modest operational funding by directly charging

other federal agencies for its services. Because of its small staff, the USIECR generally must subcontract with private sector mediators to respond to the demand for its services. The costs of these private sector mediators must then be passed along to the sponsoring federal agency. Because the cost of providing independent mediators is considerable under these current arrangements and because the annual budgets of federal agencies with natural resource management and environmental protection responsibilities are severely constrained, it is unlikely that the use of collaborative problem-solving approaches will increase significantly in the near term. To change this scenario, Congress would need to provide additional funding so that independent mediation assistance could be provided at little or no cost, or so that federal agencies could more easily afford to pay for these services. Neither option is very likely given the present federal budget deficit situation and the current political climate.

Revision of the Federal Advisory Committee Act. Revising this act to remove the obstacles it presents to federal agencies wanting to meaningfully engage nongovernmental stakeholders and the public in environmental problem solving would help eliminate a key disincentive to pursuing collaborative approaches. This would appear to be an achievable short-term goal.

Lack of high-level support. More prominent support by elected and appointed public officials for specific collaborative efforts could increase the incentives for parties to participate. Public officials could also take a more positive and proactive role in bringing together people with diverse perspectives to work on solving shared water and other environmental problems.

Maintain NEPA and Endangered Species Act (ESA). The need to build consensus to move forward on solving common environmental problems is a necessity under the U.S. political system. Nonetheless, there are occasions when one faction or another becomes emboldened to think it has the power to unilaterally pursue its own policy objectives without building bipartisan support to develop mutually acceptable compromise solutions. For example, lately, concerns have been raised about what appears to some to be unilateral partisan attempts to substantially change ESA and NEPA to ensure more favorable outcomes for the proponents' supporters. While there is broad

agreement that both laws could benefit from being updated to be more responsive to current conditions, significant reductions in their authorities and scope could result in reducing the incentives that their very clout creates for encouraging collaborative environmental problem solving.

China

The kind of collaborative environmental problem solving utilized in the United States could be adopted in China only when powerful interests are no longer able to dismiss the interests of the others. In the United States the real incentives for different interests groups to come to the negotiation table are powerful laws such as NEPA and ESA, as well as the uncertainties of prolonged and costly court process. While in the United States one challenge is how to maintain these incentives by keeping the authority and scope of these laws, in China the challenge is how to create such incentives by enforcing existing laws and by making new laws.

Enforce Existing Laws

Legal tools such as EIA laws and the Administrative License Law in theory should help promote collaborative environmental problem solving, because they set procedural requirements to involve stakeholders. However, their enforcement remains weak and in reality, stakeholders, especially the disadvantaged groups who will be most affected, are not informed and do not have a say in the decision-making process. And it remains difficult to seek court endorsement for these procedural rights. This is a serious disincentive for the powerful interests to consider negotiating with other interest groups.

Nevertheless, the cases of public participation that have delayed a few large infrastructure projects have sent a signal to many that the domination of decision-making process by a few power groups may come to an end some day. At the moment, the powerful interests are trying to maintain the old, top-down, unilateral way of dealing with water conflicts. Some local officials and bureaucrats from some agencies are also in favor of the old ways, as it is so much easier to handle than the participatory process. Now there is an intense tussle between the powerful interests and the environmental groups in China over public participation procedures, the result of which will determine how much collaboration there could be in environmental problem solving.

Create More Laws to Support Public Participation

China needs to revise existing laws and regulations and make more laws to support stakeholder involvement. The State Council Guidelines mentioned previously has ordered various government agencies to revise their rules and regulations in accordance with the principles set forth by the guidelines. SEPA was one of the first agencies to issue their own implementation documents supporting these guidelines. However, some other agencies, including the powerful water authorities, have not responded to the guidelines in a speedy way.

Furthermore, the challenge to create incentives for collaborative environmental problem solving may be bigger than expected in China than in countries like United States, where long before NEPA was enacted the Administrative Procedural Act and Freedom of Information Act laid foundations for transparency and participation. However, no similar national laws exist in China, meaning that the environmental legislation is burdened with the transformation of broad legal and administrative infrastructure. As a result, it is far more difficult to move forward on creating collaborative decision-making guarantees.

BUILDING INCREASED CAPACITY FOR COLLABORATIVE PROBLEM SOLVING

The commitment of time and effort required to develop collaborative solutions to controversial water management issues is typically substantial, particularly in China which is in the initial stages of creating the basic institutions and legislation. Participants and citizens in both countries cannot afford to spend valuable time and limited resources on ineffective or unsuccessful collaborative processes. Building institutional capacity at the agency and organizational level and improving the individual participants' skills necessary for productive collaboration are fundamental requirements for increasing the effective use of environmental conflict resolution and collaborative problem-solving approaches.

Capacity-Building Efforts in the United States

As mentioned above, in the United States a number of initiatives are currently underway at the federal agency level to build institutional capacity for more

SPOTLIGHT ON NGO ACTIVISM IN CHINA

Chinese River Defender Yu Xiaogang Wins 2006 Goldman Environmental Prize for Asia



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On 24 April 2006, Yu Xiaogang, the founder and director of the Chinese NGO Green Watershed, was awarded the prestigious 2006 Goldman Environmental Prize for his pioneering work in protecting rivers and watersheds in China. Mr. Yu has led a citizens' movement to protect China's rivers and people from the impacts of dams, and has been a key player in the movement

to protect the Nujiang, one of only two free-flowing major rivers in China. In 2004, Mr. Yu was a participant in the China Environment Forum's exchange and research project focused on promoting river basin governance in China. A webcast of his talk at the Woodrow Wilson Center on 28 April 2006 is available on the China Environment Forum website www.wilsoncenter.org/cef.



effective collaboration in solving environmental problems. Efforts are focusing, in part, on changing the culture of the federal government to better support and reward collaboration. Employee recruiting and hiring, performance standards, rewards and promotions are all being modified to enhance collaborative attitudes and skills within the federal workforce. Providing training to increase collaboration skills is also a key strategy for building capacity.

Some U.S. agencies have developed or are beginning to develop internal programs that provide in-house expertise, mediation assistance, and advice on collaborative approaches to resolving controversial environmental problems. Notable examples include:

- Conflict Prevention and Resolution Center within EPA;⁴¹
- Office of Collaborative Action and Dispute Resolution within the Department of the Interior;⁴²
- Bureau of Land Management's Alternative Dispute Resolution and Conflict Prevention Program;⁴³
- U.S. Forest Service's National Partnerships Office, which works to increase the agency's effectiveness in partnership and collaboration with citizens, communities, and NGOs.⁴⁴
- Dispute Resolution Service within the Federal Energy Regulatory Commission, which is an independent federal agency that regulates interstate transmission of natural gas, oil, and electricity, including the licensing of nonfederal hydroelectric dams;⁴⁵ and,
- Federal Highways Administration's Office of Planning, Environment, and Realty within the Department of Transportation, which has developed guidance and associated training workshops on dispute resolution and collaborative problem solving for use by the various federal and state agencies involved in the development of federal highway projects and related environmental reviews required under NEPA.⁴⁶

In the United States, NGOs also are beginning to develop their internal capacities to engage more productively in collaborative problem solving efforts—even those that have traditionally focused almost exclusively on litigation strategies to accomplish their objectives. The Center for Biological Diversity, for example, which has gained the reputation as one of the most litigious NGOs regarding endangered species issues, recently hosted several

training workshops on collaboration to which they invited federal agency staff and conservation allies, as well as traditional opponents.⁴⁷

In addition to building institutional capacity for conflict resolution, collaborative skills development is also commonly incorporated into the early stages of collaborative problem solving efforts. Building effective collaboration skills among participants is a critical aspect in determining whether or not a process will be successful. The numerous government participants involved in a water dispute report back to a wide range of bureaucratic organizations, each with different ways and procedures for making decisions. Notably, very few of these individual participants will have ever been exposed to collaboration skill development opportunities as part of their background, professional education or training. Yet managing and resolving conflicts and pursuing collaborative problem solving opportunities has often become a major focus of their work duties and official responsibilities.

Capacity Building for Collaborative Problem Solving in China

China has experienced a top-down way of governance for thousands of years. Terms referring to good governance principles—such as stakeholders, transparency or participation—only came into use a few years ago. Therefore the learning curve on collaborative problem solving could be long, which does not mean preparation for such processes should be delayed. In terms of EIAs, government agencies and construction companies must learn how to organize transparent and fair stakeholder meetings and carefully respond to the public's concerns. NGOs and the public need to develop their skills in effectively preparing their participation in such meetings. All participants will need to learn how to listen to other people's opinions carefully and to express their own opinions calmly and logically. One very promising sign of "preparation" for participatory rulemaking was the fact one NGO was present in helping government and EIA firms design the regulations for public participation in the EIA process. (*Editor's Note: See Buckley commentary in this issue.*)

NGOs in China have made great strides in increasing their impact on environmental policymaking and in becoming stakeholders to help push for greater transparency in water management and pollution cases. Even fairly confrontational methods such as assisting pollution victims in class action

suits is playing an important role in educating the public of their rights and power. Such awareness building is crucial for the creation of a stronger environmental governance system in China. In regards to NGO capacity, they do face obstacles due to restrictive registration regulations and their own limited internal capacity. Nevertheless, there has been a growing number of NGOs working to protect water issues in China, particularly around dam construction and water pollution. (*Editor's Note: See Birnbaum and Yu article in this special report*). Some local grassroots NGOs, such as Beijing-based Green Earth Volunteers, have held training workshops in a dozen cities on environmental information access and the organization of public hearings.

CLOSING THOUGHTS

In the United States, the use of collaborative approaches to addressing water management conflicts has established a strong foundation for increased application and improved methodologies. It appears that this is a direction to which the federal government is committed. The question remains, however, whether sufficient resources will be devoted to these efforts to ensure they can be truly effective in developing sustainable solutions. There are many lessons in the United States that could help promote collaborative problem solving for water conflicts in China. For example, third party mediators for water conflicts will eventually become a major asset to help solve water conflicts, but many new legal and political institutions would have to be built up first. The Institute for Environmental Conflict Resolution represents a promising model for China that Chinese government and nongovernmental stakeholders should begin studying now. In general, the topic of water conflict resolution could become a fruitful area for bilateral collaboration between the United States and China. The painful lessons learned in the United States might well make the Chinese experience with mitigating water conflict a faster, if not easier, process.

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NOTES

1. "Report and Recommendations of the SPIDR Environment/Public Disputes Sector Critical Issues Committee." Adopted by the Society of Professional In Dispute Resolution (SPIDR) Board, January 1997.
2. Authors of the SPIDR Report indicated that their focus was on government agencies and users in the United States and Canada and that, "While potentially applicable to other countries, the recommendations will likely need to be tailored to the political frameworks, institutions, and cultural norms in those societies."
3. The Public Solutions System is based on principles of: transparency and accountability, equity and inclusiveness, effectiveness and efficiency, responsiveness, forum neutrality, and consensus-based decision-making. For more information see: www.policyconsensus.org.
4. Agreement to use a "Comprehensive Study" framework was a key negotiation tool that allowed the southeastern states of Alabama, Florida, and Georgia to move forward in efforts to resolve their conflicts over water management of the Alabama-Coosa-Tallapoosa and the Apalachicola-Chattahoochee-Flint river basins, a situation commonly referred to as the "Tri-State Water

Wars.” Likewise, a key initial phase of efforts to determine exactly how to restore the Everglades ecosystem in southern Florida, was to collaboratively conduct a Comprehensive Review Study of a multi-purpose water management project originally authorized in 1948, to provide flood control, water control, water supply, along with other services that were now recognized to be significantly contributing to the decline of the south Florida ecosystem.

5. The United States has a complicated system of water rights related to priority access and use of surface and subsurface waters. These rights differ between the eastern and the western United States and among states. Resolution of disputes over “water rights” is generally formalized through the court system because of the legal verification it can provide. Allocation of water rights to some tribes have been negotiated and then formalized through an Act of Congress. Conflicts over the way available water is managed, especially during times of drought, are increasing in frequency. Solutions must often be negotiated because their complexity does not lend themselves to straightforward legal resolution. That said, court rulings may be helpful and sometimes necessary to establish a legal requirement or to establish parameters within which productive negotiation on collaborative solutions can then take place.

6. Acre-feet are commonly used to measure water for irrigation in the US. An acre-foot of water is the amount of water required to cover one acre of land one-foot deep. An acre-foot equals 325,851 gallons of water.

7. The Yangtze River in China is very similar in that dams, dikes, and land reclamation have exacerbated flooding problems, threatened fish species, and destroyed wetland ecosystems.

8. Information about the Missouri River Recovery Implementation Program can be found at: <http://www.nwd-mr.usace.army.mil/rcc/index.html>

9. For a copy of the *Situation Assessment Report on the Feasibility and Convening of a Missouri River Recovery Implementation Committee*, conducted by CDR Associates under contract to the U.S. Institute, see: <http://missouririver.ecr.gov>

10. For information about the Comprehensive Everglades Restoration Program, see: <http://www.evergladesplan.org/>

11. For information about the CEQ, see: <http://www.whitehouse.gov/ceq/>

12. For a copy of an “Assessment of Opportunities for Multi-Stakeholder Collaboration,” see: http://www.ecr.gov/pdf/everglades_final_report.pdf

13. For more information see: http://www.sfstore.org/issuetteams/csp_advisory_team/index_.html

14. For additional information about the Platte River Recovery Implementation Program, see: <http://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=12022>

15. Copy of NEPA is available at: <http://ceq.eh.doe.gov/nepa/regs/nepa/nepaeqia.htm>

16. NEPA allows other federal agencies and tribal, state, or local governments to request to be a “cooperating agency” with the lead federal agency, if they share jurisdiction over an issue or have special expertise with regards to any aspect of the environmental impacts of a proposed action.

17. “Cooperating Agencies in Implementing the Procedural Requirements of the National Environmental Policy Act,” guidance memorandum from CEQ Chair James Connaughton to the heads of all federal agencies, January 30, 2002. See: <http://ceq.eh.doe.gov/nepa/regs/cooperating/cooperatingagencies-memorandum.html>

18. U.S. courts generally give great deference to federal agency expertise regarding the substantive aspects of their decisions. Consequently, most litigation is based on alleged procedural violations. If plaintiffs prevail, the courts generally remand a decision back to the federal agency to rectify the procedural inadequacies of their decision-making process. Despite these limitations on the legal recourses available in challenging federal decisions, it does mean that opponents can significantly delay federal actions, especially if cases go through extended appeal processes.

19. The Endangered Species Act is so powerful that special elevation procedures to the Endangered Species Committee (the so-called “God Squad”), composed of seven Presidential Cabinet officials and a representative of the affected state that has the authority to overrule a FWS determination that a proposed action would result in “jeopardy” to an endangered species, has only been used on three occasions.

20. Mechanisms that allow for and encourage negotiated solutions include: comprehensive multi-species habitat conservation plans, candidate conservation agreements, safe harbor agreements, conservation banking, impact fees, tradable development rights, conservation easements, adaptive management approaches, and delegation of certain authorities to states.

21. ADRA’s requirement that agencies designate a senior official as a dispute resolution specialist provided the impetus for all federal agencies to begin building their capacity for dispute resolution. Subsequent executive orders and memoranda to the heads of federal agencies issued by the President have further reinforced this policy.

22. The April 2005 Final Report of the National Environmental Conflict Resolution Advisory Committee is available at: www.ecr.gov

23. For example, where NEPA calls for productive harmony, the protection of health and environmental quality, sustainability and general welfare, environmental conflict resolution practices call for balanced representation of affected interests and values. Where NEPA calls for social responsibility, intergenerational welfare,

sustainability and stewardship, environmental conflict resolution calls for full consideration of the short- and long-term implications of agreements and decisions, responsible and sustained engagement of all parties and wide access to the best available information.

24. A copy of the memorandum and the *Basic Principles for Environmental Conflict Resolution and Collaborative Problem Solving* is available at: www.ecr.gov

25. A copy of the *Executive Order on Cooperative Conservation* and additional information is available at: www.cooperativeconservation.gov

26. The National Park Service Director's Order 75A on Civic Engagement and Public Involvement is available at: <http://www.nps.gov/policy/DOrders/75A.htm>

27. Notably, each branch of the federal government has distinct and limited means and approaches for resolving conflicts that arise over environmental policy and governmental decision-making. While the legislative branch can establish general policies and authorize funding for specific governmental activities, the U.S. Congress has limited ability to actually resolve highly technical and complex environmental conflicts. This responsibility falls to the executive branch, which includes agencies with technical expertise and legislatively authorized management jurisdiction over different aspects of the environment, public lands, and natural resources. One of the significant challenges for the executive branch, however, is that Congress has established different missions for the different executive branch agencies, which often come into conflict when trying to address difficult environmental problems. Most complex environmental problems—and their potential solutions—cross the jurisdictional boundaries and authorities of different federal agencies, frequently resulting in interagency power struggles over which agency is the lead and ultimate decision-maker, as well as disagreements over which agency's decision-making procedures should be followed. Another feature of the American governance system is that U.S. law allows private citizens and NGOs to challenge certain executive branch decisions, primarily on procedural grounds (For example, citizen lawsuits can challenge whether an agency has followed the required procedures established by law and regulations for analyzing the environmental impacts associated with making a federal decision). If these challenges cannot be resolved through administrative hearing procedures within the executive branch, the case may enter into the federal judicial system for resolution. Judicial resolutions, however, usually focus on resolving narrow legal interpretations of alleged procedural violations. Rarely, are the federal courts able to issue a ruling that actually substantially solves complex environmental problems. The most common ruling is to remand a case back to the executive agency with jurisdiction to redo or rectify the procedural errors.

28. Du Fanghong & Huang Wanhao. (2005). "Approaches on ecological environmental problems in

Alashan area." *Inner Mongolia Environmental Protection*, 3 (Volume 17).

29. *21st Century Economic Report*. (24 August 2006).

30. *The Beijing News*. (25 February 2004). "Beijing and Hebei vie for the water rights of Juma River."

31. *Xinhua News Agency*. (10 September 2006). "A water dispute occurs in China every two to three days."

32. *Jiaxing Daily*. (24 November, 2001) "Conflict between Jiaxing and Shengze Escalated in Pollution Spill."

33. *The Bund*. (7 March, 2003). "A decade-long inter-provincial water pollution dispute between Jiangsu and Zhejiang."

34. *Jiaxing Daily*. (24 November, 2001). "The conflict between Jiangsu's Shengze and Zhejiang's Jiaxing escalated by wastewater spill."

35. *The Bund*. (7 March, 2003).

36. *China Youth Daily*. (19 April, 2001). "Shengzhou unhappy with Dongyang's water deal."

37. *China Water Resources Daily*. (19 March 2002). "True record of the upper Zhang River water conflict resolution by Henan."

38. *China Water Resources Daily*. (19 March 2002).

39. *China Water Resources Daily*. (19 March 2002). "Coordination, distribution and diversion."

40. To read about Chinese NGOs working on water issues see Part II in: *Reaching Across the Water: International Cooperation Promoting Sustainable River Basin Governance in China* at www.wilsoncenter.org/cef.

41. For information about EPA's Conflict Prevention and Resolution Center see: <http://www.epa.gov/adr/index.html>

42. For information about the Office of Collaborative Action and Dispute Resolution see: <http://www.doi.gov/cadr/>

43. For information about the Bureau of Land Management's Alternative Dispute Resolution and Conflict Prevention Program see: <http://www.blm.gov/adr/index.html>

44. For information about the Forest Service's National Partnerships Office see: <http://www.fs.fed.us/aboutus/partnership/index.shtml>

45. For information about the Dispute Resolution Service within the Federal Energy Regulatory Commission see: <http://www.ferc.gov/legal/adr.asp>

46. For a copy of *Collaborative Problem Solving: Better and Streamlined Outcomes for All – Guidance on Managing Conflict and Resolving Disputes Between State and Federal Agencies During the Transportation Project Development and Environmental Review Process*, see: <http://www.environment.fhwa.dot.gov/strmlng/adrguide/index.asp>

47. For a copy of the Press Release issued by the Center for Biological Diversity on the collaboration workshops see: <http://www.biologicaldiversity.org/swcbd/PRESS/collaboration>