

## River Basin Commissions as a Mechanism for Mitigating and Resolving Conflicts

By Irene B. Brooks and Liu Hongxia

The United States and China both face growing water conflicts over dams, water shortages, and pollution. In the Western U.S., states still rely primarily on compacts and, more often, litigation to resolve water conflicts. On the opposite side of the country, states have traditionally dealt with water disputes through the establishment of river basin commissions. These commissions—such as those in the Delaware and Susquehanna river basins—have proven particularly adept at the early identification of pressing issues and include a key role for public participation in the examination and resolution of watershed concerns. While these two commissions in the United States may be unique in the decentralized authority the Congress has granted them, their structure and abilities to resolve water quality, flood mitigation, allocation, and other water use conflicts offer valuable insights on ways to improve river basin management within and beyond the United States.

Although China boasts fewer institutional mechanisms to prevent and resolve water-based conflicts, the Chinese government has utilized highly centralized river basin commissions to oversee water management in its seven largest river basins (Yellow, Yangtze, Huai, Hui, Song, Liao, and Pearl). With the passage of an amended National Water Law, these commissions have been granted more authority to allocate water and deal with the explosion of water conflicts and problems plaguing the country's rivers. Only the Yellow River Conservancy Commission has undertaken some major reforms in its operations to enhance its ability to control the serious water shortage problems in the basin that have generated considerable conflicts.

This paper examines the organizational history, structure, and functions of the Delaware,

Susquehanna, and the Yellow River basin commissions, with an eye towards valuable lessons in how such commissions can resolve or prevent conflicts. In light of the growing transboundary water disputes facing China, we conclude the paper with a brief examination of the International Joint Commission, a highly effective model to prevent and resolve cross-boundary water problems.

### DOMESTIC RIVER BASIN COMMISSIONS

#### Delaware River Basin Commission

The main stem of the Delaware River is 330 miles long and forms political boundaries for New Jersey on the east, Pennsylvania on the west, touching the western edge of Delaware before reaching the Atlantic Ocean. Heavy use of the river by the basin's 15 million human inhabitants (e.g., boating, fishing, navigation, and fresh water supply) has burdened its ecosystem. By the mid 20<sup>th</sup> century, pollution in the river was so severe a portion of the water was devoid of any dissolved oxygen. While ecological degradation has caused great concern, it was the issue of water supply that ultimately changed how the four states share the river.

New York City (NYC), which lies outside of the basin, built a series of structures in the headwaters of the Delaware using a gravity fed mountain reservoir system to supplement their supply from the Hudson River. The city was taking up to 70 percent of the water from three tributaries located just within the New York State's border, effecting downstream cities like Philadelphia, Trenton and Wilmington that depend on the Delaware for their water supply.

As a result, in 1931 New Jersey and Pennsylvania sued New York State and NYC in the U.S. Supreme

Court for equitable apportionment of water from the Delaware River. While this litigation resolved the immediate dispute, it failed to establish a framework for long-range planning and management. New York City's desire for yet more water from the Delaware system became more pressing. In 1952 the city petitioned the Supreme Court to amend its 1931 ruling to allow a larger diversion. Other parties within the basin objected and after hearings before a Court-appointed Special Master, a proposed settlement was crafted allowing NYC to increase its diversion along with increased compensating releases to be made from the its three existing and proposed Delaware Basin reservoirs. Although the immediate dispute was once again resolved, the parties failed to establish a framework for long-range planning and management. In the end it was the disastrous result of a crisis in the form of hurricanes Connie and Diane and uncontrolled and very visible pollution that spurred the parties towards a new course of action. To more effectively deal with or even avert disaster, and avoid future litigation, the parties chose to adopt an interstate compact in 1961.

Compacts between states are somewhat like treaties between nations. They have the force and effect of statutory law and take precedence over conflicting state laws, regardless of when those laws are enacted. However, unlike treaties, compacts are not dependent solely upon the good will of the parties. Once enacted, compacts may not be unilaterally renounced by a member state, except as provided by the compacts themselves. Moreover, Congress and the courts can compel compliance with the terms of interstate compacts. That is why compacts are considered the most effective means of ensuring interstate cooperation.

The 1961 compact created a new institution, the Delaware River Basin Commission (DRBC), composed of the basin state governors and a presidential appointee. With few exceptions, a vote of the majority bound all. DRBC utilizes physical boundaries rather than political boundaries and has the ability to examine cumulative impacts within a watershed. The parties to the commission must plan and manage as a unit and share the burden of costs equally. The commission has the ability to consider all facets of water management in an integrated manner, recognizing the need to link surface water and ground water, quantity and quality, land-water and air-water relationships. The commission is further empowered to allocate water among the

signatory states, providing the allocation would not constitute a prior appropriation of water or confer any superiority of rights.

Public participation in basin planning and project development has moved from tangential involvement to more key roles in which the public is included in the entire process of planning–development and implementation. DRBC has an open and transparent process, and includes the public by offering a seat at the table to all sectors. Outreach programs are designed to educate the public about their environment. The commission assists local municipalities and watershed associations by helping them build capacity to manage local water resources in a way that supports basin-wide planning.

### Susquehanna River Basin Commission

DRBC's success provided the framework for the establishment of other basin commissions in the eastern United States, including the Susquehanna River Basin Commission (SRBC). The Susquehanna River stretches 444 miles, beginning in New York, flowing to Maryland, draining into the Chesapeake Bay and then to the Atlantic Ocean. The river basin borders the major population centers of the east coast, and although relatively undeveloped, has experienced problems of water pollution and over usage. The basin is one of the most flood prone areas in the United States, with major flooding occurring every 20 years. Home to 4.5 million people, the basin supports a variety of uses including: hydropower, agriculture, industry, manufacturing, fishing, recreational boating and tourism—all competing for this finite resource.

Because of the Susquehanna River's complexity and its penchant for flooding, there was a great need to coordinate the efforts of the three states and the agencies of the federal government, as well as a need to establish a management system to oversee the use of the water and related natural resources of the Susquehanna. These needs led to the drafting of the Susquehanna River Basin Compact. In 1971, the SRBC was formed to coordinate the water resources efforts of New York, Pennsylvania, Maryland and the federal government. The President of the United States appoints the federal member. The State Commissioners are the governors or their designees. Each of the four commissioners has a single vote and meets periodically to act on applications for projects using water, adopt regulations, and direct planning and management activities affecting the basin's water resources.

### DRBC and SRBC Water Conflict Resolution Functions

As federal interstate compact commissions, DRBC and SRBC have helped prevent water conflicts through the project review processes. When conflicts do emerge, both commissions have played an important role as dispute resolution forums.

- *Project Review Process.* The two commissions make a significant contribution to the resolution or avoidance of conflicts among private water users. Through the project review process, the commissions review and approve large water uses, often inserting conditions in approvals that are designed to prevent future conflicts with other water users. Both commissions value and encourage strong public participation throughout the project review processes. The expertise and on-the-ground experience that is brought to the table through public advisory committees and task forces add very important perspectives to the decision-making process.
- *Dispute Resolution Forums.* The commissions act as administrative forums where member jurisdictions can come together in a non-judicial setting to resolve inter-jurisdictional differences. The commissions, acting in effect as the agents of the U.S. Congress, have the power to arbitrate disputes among members and to allocate the waters among them. Without this administrative forum, there are really only two alternatives for the settlement of interstate disputes over water: (1) ask Congress to make such allocations via special legislation, or (2) take the dispute to the Supreme Court of the United States.

### China's River of Sorrow

The Yellow River—China's "mother river" and the cradle of Chinese civilization—gets its name from the high amount of silt in its flow. Siltation is so severe that in some downstream areas the riverbed is 10 meters higher than the surrounding farmland, necessitating the creation of extensive dyke systems. This 5,464-kilometer river—China's second longest—passes through nine provinces and supplies water to 12 percent of the country's population and 15 percent of the farmland. This river also is tapped for water diversions to thirsty cities in northern China—most notably numerous emergency transfers to Tianjin since the early 1990s.

Similar to the Mississippi River in the United States, the Yellow River has for centuries been plagued by flood disasters, frequent dyke breaches, and course changes once every ten years. After the 1949 founding of the People's Republic of China, some of the first infrastructure projects were flood control dams and reservoirs along the Yellow River (e.g., Sanmenxia, Liujiaxia, Longyanxia). These dams helped reduce flood threats in the Yellow River Basin and expanded irrigated land. Ironically, since the early 1970s the provinces along the Yellow River have been struggling with severe water shortages, caused by exploding economic development and population growth.

Like the rest of China, urban and rural water users pay very low fees for water and many urban areas have lacked any form of metering. The excessive extraction of water has led to yearly river dry outs since 1972, sparking ever serious conflicts within the basin. Since the mid-1990s the Yellow River has grown so dry it often does not reach the ocean for up to 200 days a year.<sup>1</sup> Besides the damage to industrial and agricultural production, the water shortages have had severe impacts on the natural ecosystem—shrinking of the river's delta has led to a major die off of many fish and plant species in the downstream basin.

The under utilization of water saving measures in the basin has served to exacerbate water shortage conflicts along the Yellow River. For example, in upstream Ningxia and Inner Mongolia farmers still depend on flooding irrigation, which is highly wasteful and has brought them in conflict with the middle and lower reaches where cities, industries, and agriculture also are demanding more water. In 2002 when water flow stopped right before harvest time in Shandong, provincial officials appealed to the central government to force Ningxia and Inner Mongolia to open up reservoirs to quench the thirst of the lower reaches. This informally negotiated reallocation of water ended up damaging upstream crops, fueling more inter-provincial disputes over allocation.<sup>2</sup>

**Since 2002, approximately 63 billion tons of wastewater flows into China's rivers each year.**

Paralleling this increasing water scarcity in the Yellow River has been a rapid growth in water pollution—mainly point sources—that has sharpened conflict among provinces over water. Since 2002, approximately 63 billion tons of wastewater flows into China’s rivers each year, of which 62 percent are pollutants from industrial sources and 38 percent are poorly treated or raw sewage from municipalities.<sup>3</sup> Although the Yellow River only receives 3.9 billion tons of this wastewater annually, the low flow of the river means water pollution is seriously threatening the “mother river.”<sup>4</sup>

### **Yellow River Conservancy Commission’s Water Conflict Resolution Functions**

Set up in 1955 under the Ministry of Water Resources (MWR), the Yellow River Conservancy Commission (YRCC) is the largest of China’s seven major river basin commissions with 40,000 staff to cover water research, management, and planning throughout the basin. YRCC oversees the implementation and supervision of China’s National Water Law and other MWR regulations and orders in the basin. The YRCC is supposed to adopt a unified management approach in setting water allocation plans and managing major water control projects. Since the 1970s another critical task has been to resolve growing conflicts over water shortages and pollution in the basin.

Over the past several years, MWR has been centralizing the authority to manage water by empowering river basin commissions as water scarcity and pollution challenges have increased in China’s river basins. It merits mention, however, that unlike their U.S. counterparts, the YRCC and other commissions do not have commissioners. Although, in times of crisis and major water allocation planning the YRCC does consult provincial governments, most times the provincial government and other stakeholders are not involved in the regular decision-making in the basin.

In the 1980s, as water conflicts grew in the Yellow River Basin, the State Council ordered research to create a water allocation institution in the basin. After five years of survey work, in 1987 the YRCC calculated the volume of runoff available and set allocation quotas for each province, including a small amount for ecological flows. The plan included a provision that during times of drought the volume of water permitted to each province would decrease by the same percentage. This quota system temporarily mitigated water conflict in the

basin, however, as economic development in the basin boomed in the 1990s the water demand rapidly increased, sparking new conflicts.

Water wastage remains a serious problem in the Yellow River, which the 1987 allocation plan failed to correct because the amount allocated did not push conservation. For example, while still staying within their water allocations, farmers in Ningxia and Inner Mongolia are still using flood irrigation techniques that have exacerbated water shortages downstream. In 1998 the Yellow River went dry for over 200 days, in great part because of the upstream irrigation use. At this crisis stage, the central government ordered the water allocation plan reworked. The 1998 revisions of the quota system decreased allocations by a fixed proportion in times of drought to push conservation and guarantee in-stream flows. Under this new quota system, however, provinces are still permitted to request extra water in times of drought, which has meant the water allocation process is still subject to bargaining and arbitrary reallocations (e.g., the Shandong case described above).

Besides the quota system, since the late 1980s the YRCC has attempted to rationalize water use and decrease conflicts through: (1) creating a new water administration department to oversee allocation planning; (2) establishing a new office that brings

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together water quality and water quantity management; (3) improving water withdrawal permitting as well as water use and wastewater emission charges; and (4) coordinating inter-provincial disputes.

#### *Water Administration Department*

Following the promulgation of China’s first national Water Law in 1988, the YRCC established the water administration department (WAD) to implement provisions in this new law, as well as deal with increasing water demand and the serious trans-jurisdictional water conflicts. Based on the new Water Law provisions, WAD was tasked with the responsibility of implementing unified water

resource management and allocation, supervising water withdrawal permits, and improving water quality protection in the whole basin. Eventually, WAD offices were set up in all the provinces along the Yellow River to help identify causes of various water conflicts and crises.

#### *Water Resource Protection Department*

As the YRCC recognized how growing water scarcity exacerbated pollution conflicts in the basin, they appealed to the State Council to create a new office within the commission. In the early 1990s, the YRCC set up the water resource protection department, which aims to better coordinate the commissions water management activities with the pollution control work carried out by local environmental protection departments in the basin. For the first time researchers from the YRCC and State Environmental Protection Administration are working together on sharing data and other resources to better understand the growing water quality problems in trunk of the Yellow River.

#### *Water Fees, Monitoring, and Water Withdrawal Permits*

More than any other river basin commission, the YRCC has been pushing for increases in water use and wastewater emission charges. Increases in fees and the establishment of a real-time water monitoring system along the whole river basin has helped promote better water use efficiency in the basin. The YRCC examines water withdrawal permits once a year. If users exceed permitted withdrawals they will have their extraction levels lowered the next season. In addition, all new medium and large projects that withdraw water must apply to YRCC for permits.

#### *Water Dispute Negotiations*

The director of the MWR's Policy and Regulatory Department of China's Gao Erkun, reported in a July 2003 meeting that from 1990 to 2002 over 120,000 water quantity conflicts had been reported to the ministry.<sup>5</sup> The growing number of water conflicts has made resolution a top priority for the Chinese government. According to China's National Water Law (both 1988 and the 2002 revisions), interregional water disputes are supposed to be resolved through negotiation. If this negotiation fails the conflicting parties should then seek resolution through arbitration by government agencies at the next higher level. In the Yellow River Basin in instances where local governments cannot resolve their water disputes, the

YRCC's Water Administrative Department calls the relevant parties to the table attempting administrative negotiations and coordination to bring the parties to agreement to resolve the dispute. Despite a tremendous commitment of staff, these administrative arbitration methods do not always work and local water and environmental agencies often have difficulty enforcing judgments.

Because of the difficulties in administrative arbitration of water conflicts, the YRCC and other basin commissions have been experimenting with more centralized watershed management systems to assure more effective water allocation and regulation to prevent conflicts from occurring. For example, in addition to measures discussed above, each October since 1999 YRCC has brought together a negotiation meeting to give representatives from provinces and autonomous regions the opportunity to critique the previous year's water allocation plan and put forward proposals for the coming year. Before coming to the table, the representatives survey or consult with their major water users. The meeting aims to reach an acceptable and feasible agreement on the water allocation plan. If the parties fail to agree on the new plan, the documents and summaries of the meetings are submitted to the Ministry of Water Resources for the final decision.

Overall, the YRCC has been particularly successful in managing the whole watershed's water allocations, but ultimately some conflicts persist when disputing parties resent solutions enforced from above. Thus, the YRCC could benefit from the experiences of the DRBC and SRBC to employ more inclusive decision-making mechanisms—including consultation with citizens and nongovernmental organizations (NGOs)—that could help promote better water management and prevent conflicts.

## **TRANSBOUNDARY RIVER BASIN COMMISSIONS**

### **International Joint Commission**

Although domestic water crises have attracted the most attention from citizen groups and local and central government officials, China boasts its fair share of international water problems as well (*Editor's Note: See Transboundary Rivers Box in this special report*). The saliency of cross-boundary water issues increased after the well-publicized chemical spill in the Songhua River affecting Russia as well as China's Heilongjiang Province. As investment and development grow

in northwest China rivers shared with Kazakhstan and Kyrgyzstan also appear ripe for disputes. But the issue does not stop at China's northern border. Its southern neighbors feel the downstream effects of Chinese industrial pollution and water diversion projects on the Mekong and Song Hong rivers. While China's observer status on the Mekong River Basin Commission indicates the Chinese leadership's nominal interest in cross-boundary water issues, the government has yet to implement any significant institutional mechanism to resolve or prevent water conflicts like it has attempted within its domestic river basin commissions. But strong international coordination of rivers is not without precedent and China could learn from the unique cross-boundary relationship between the United States and Canada.

The International Joint Commission (IJC) was established through the Boundary Waters Treaty of 1909, which set forth principles and mechanisms for resolving conflicts and preventing disputes over uses of water crossing the U.S.–Canadian boundary. The commission's basic mandate is to: (1) approve and oversee the operation of specific projects in waters that form across the boundary, (2) oversee the apportionment of certain waters between the two countries, (3) conduct impartial studies based on sound science, and (4) monitor activities to help the two governments prevent and resolve trans-boundary water disputes. The commission also has been asked to alert the two governments about potential problems along the boundary.

The U.S. President and the Canadian Prime Minister each appoint three Commissioners. Unlike other senior government appointees, the Commissioners operate without instructions from the President or Prime Minister to further the individual interests of their respective countries. Instead, they work collectively as independent and objective advisers for both governments regarding the mutual interests of the two countries. The commission reflects the unparalleled cooperative relationship between the two countries. There is true bi-national equality under the treaty and in operations of the commission even though the United States has ten times the population and a much larger economy than Canada. A creation of the treaty, but not a policy instrument of the governments, the IJC is a permanent, objective, independent international unitary body. Decisions are made by consensus, which further strengthens working towards common interests.

The treaty also recognized the interdependence of the two countries in trans-boundary watersheds. Notably, the geographic reality that the trans-boundary waters flow both directions at different points along the border was a powerful incentive to cooperate. For bodies of water that form the U.S.–Canadian border, bi-national approval is required for any dam, diversion or other project that would have a trans-boundary impact on the natural water levels and flows. A bi-national approval generally takes the form of an application for approval submitted to the commission, unless the two countries have a special bilateral agreement that concern specific waters. The commission retains jurisdictions over projects it approves to assure that the spirit of the treaty is followed over time.

The IJC boards—which consist of expert volunteers in related scientific disciplines from federal, state, and provincial agencies, and sometimes from NGOs, industry, and academia—carry out the majority of the commission's technical and policy development. The experts all have access to data in both countries and work collaboratively to determine jointly and impartially the facts related to their assigned tasks. All members participate in their personal and professional capacity and not as representative of their government agencies or employers. At any given time, there are approximately 300 experts currently serving on IJC boards.

Public involvement has been one of the hallmarks of the commission's work. From the very beginning, the treaty required that the IJC give all interested parties convenient opportunity to be heard on any matter before the commission. Public involvement assists the commission in assuring that it is aware of the full range of stakeholder views on all issues where the commission has responsibilities. Informal “town meetings” and formal public hearings provide opportunities to test public reaction for emerging solutions, and forums for an exchange of views among different interest groups within a watershed. The IJC's rules of procedure call for public hearings before the commission reaches final decisions on applications for project approval, and before it submits formal reports or studies to the two governments.

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## SPECIAL REPORT BOX

### Transboundary River Tensions— Opportunities for Collaboration

By Juli S. Kim and Michael Murphy

Over the past few years, China's domestic water problems have been making headlines around the world. In the fall of 2004, a coalition of Chinese environmental groups and journalists initiated a campaign demanding more stakeholder participation in evaluating the planning of 13 dams on the Nu River (Nujiang) in Yunnan Province—part of China's Three Parallel Rivers World Heritage Site, which includes the Mekong River. Their campaign for better environmental governance on the Nujiang prompted Premier Wen Jiabao to temporarily halt the dam plans in February 2005, marking a striking victory for Chinese grassroots activists. On 13 November 2005, an explosion at a PetroChina chemical plant in Jilin Province released over a hundred tons of benzene into the Songhua River. The Songhua flows into Heilongjiang Province, through the city of Harbin, before meandering another 600 km through the Russian city of Khabarovsk (the Songhua is the largest tributary of the Heilong River, which is known as the Amur in Russia). Jilin and Harbin officials initially covered up the spill, but once revealed, the local news media was quick to criticize the inadequate local response to the crisis. Although the State Environmental Protection Administration's (SEPA) minister was forced to resign, the disaster sparked stronger rules criminalizing pollution accidents and raised public awareness of China's severe water pollution problems.

In addition to signaling new openness in managing water resources, these two incidents are important in that they both occurred in international river basins where pollution and planned or existing dams already have been creating tensions between China and downstream countries. As the upstream riparian country in the Amur/Heilong and the Nujiang

and Mekong basins, China has not been subject to pressures to collaborate with downstream countries. Although no conflicts have broken out, tensions are growing in these large river basins. As China is moving to reform its domestic water protection laws and institutions, there is now a greater opportunity for international collaboration on protecting these and other transboundary rivers.

#### MEKONG AND NU RIVER BASINS—CONFLICT AND POTENTIAL COLLABORATION

Originating deep within the Tibetan Plateau, the Mekong traverses through four Chinese provinces, Myanmar, Thailand, Laos, Cambodia, and finally Vietnam before spilling into the South China Sea. At 2,600 miles (4,200 km) the Mekong is the 10<sup>th</sup> largest river in the world, 7<sup>th</sup> largest in Asia, and the 3<sup>rd</sup> most significant in terms of biodiversity (after the Amazon and Congo rivers). Fish and other aquaculture in the Mekong provide about 80 percent of the dietary protein consumed by the 65 million people in the basin. All downstream countries depend on it for irrigating rice and other crops. The Nujiang is one of China's last wild rivers, flowing parallel to the Mekong within China and then into Thailand, and Myanmar; it is the second longest river in Southeast Asia.

#### The Issues

*The Mekong (called the Lancang in China).* The Mekong faces an array of problems stemming from growing pollution, damming, and channelization. The Yunnan provincial government plans to build a cascade of eight dams on the Lancang—two are already built and operating (Manwan and

Dachoashan) and three more under construction and potentially seven more in planning. China's dams and destruction of shoals for expanding navigation are driving much of the watershed degradation downstream, leading to considerable erosion of highly fertile land along the river (especially in Laos); sedimentation; acidification of soils in the delta; damaged fisheries from inundation, temperature changes, and pollution (mainly pesticides); rise of waterborne diseases; and growing water supply problems in rural areas along the river, especially Thailand. China's construction of dams along the Mekong/Lancang is being done without consultation with downstream countries. Like many major infrastructure projects in China, these projects lack comprehensive and transparent environmental and social impact assessments (both domestic and transboundary). Lack of transboundary consultation also is true in Cambodia, Thailand, and Vietnam where each country is developing plans for damming tributaries that feed into the Mekong. China's observer status in the Mekong River Commission (MRC) releases it from being committed to protecting downstream interests.

*The Nujiang (called the Salween downstream).* Despite the national NGO campaign, the Yunnan provincial government is still planning to construct dams on the Nujiang, which represents a major threat to the ecosystem and local livelihoods on the Nujiang (*Editor's Note: see discussion of the Nujiang dam debates in Eng and Ma and Birnbaum and Yu articles in this special report*).

#### The Stakeholders and Players

- *Government Level:* On the Mekong there are six riparian countries and the MRC (China and Myanmar participate only as observers). On the Nujiang there are three riparian countries, but no transboundary commission exists.
- *Grassroots Level:* In both the Mekong and Nujiang basins there is a growing network of grassroots groups and researchers promoting information sharing, ecosystem studies, citizen empowerment, and capacity building.
- *International Level:* Some of the international NGOs active in promoting sustainable development in these two basins include: International Rivers Network, Oxfam, Conservation International, IUCN, Mekong Watch, The Nature Conservancy, and M-Power. In the downstream Mekong nations, the World Bank, Asia Development Bank, UNDP, GEF, USAID, and

various European governments have been funding a broad range of research, technical assistance, and projects (e.g., pollution control, ecosystem protection, integrated river basin management, and capacity building of the MRC).

#### The Opportunities for Better Integrated River Basin Management (IRBM) on the Mekong

- The large number of international initiatives and active grassroots networks could help catalyze greater capacity building and commitment from at least the downstream governments to push for stronger IRBM. However, such initiatives are limited without China's commitment to addressing basin-wide impacts of dam and other infrastructure projects upstream.
- The numerous international initiatives pushing greater technical and management capacity within the basin could significantly improve transparency and promote more-informed dialogue on protecting the Mekong.
- It is possible that the internal debate on the Nujiang ultimately could have a major influence on strengthening environmental impact assessments (EIAs) and public participation in decision-making on all dams in China, which could prove advantageous for protecting downstream countries on the Mekong, the Amur, and other transboundary rivers.
- Many of the countries in the basin have EIA laws, but most are weak. Improving these EIA laws could be a fruitful area of collaboration within the basin and open the door for better transboundary impact assessments.

#### AMUR/HEILONG RIVER BASIN CONFLICT AND POTENTIAL COLLABORATION

The Amur/Heilong River, one of the world's longest rivers with a length of 4,400 km, forms the border between the Russian Far East and China. The Songhua River is the largest tributary of the Amur/Heilong, which meanders through Heilongjiang Province and into Russia ending in the Sea of Okhotsk in the far eastern Khabarovsk Province. 48.2 percent of the river is in China, 42.7 percent in Russia, and 9.1 percent in Mongolia. The Amur, which is the world's longest un-dammed river, drains a remarkable watershed of unique ecosystems that includes diverse landscapes of desert, steppe, tundra, and taiga.

### The Issues

Currently, Mongolia, China, and Russia all lay claim to the ever more scarce waters of this mighty river and there has been little collaboration to protect the river. Inadequate enforcement of domestic water protection laws and ineffective transboundary organizations plague proper management of the Amur/Heilong River. In China, increasing withdrawals for agriculture and diversion schemes by dam projects on the tributaries that feed the Amur/Heilong have reduced the volumes and altered the timing of flow—disrupting agriculture and fisheries in Mongolia and Russia. The Chinese government has proposed a large cascade of dams along the Amur/Heilong River, a project which is opposed by many local people on the Russian side of the border. Weak pollution control enforcement in China continues to pollute the river's tributaries, straining relations with Russia. Since the Songhua River spill in November 2005, Russian governors downstream have been more vocal about their anger with Chinese water pollution contaminating the Amur and endangering public health.

### The Stakeholders and Players

- *Government Level:* On the Amur there are national and regional/provincial governments of China, Russia, Mongolia, and the Amur/Heilong River Basin Management Council.
- *Grassroots Level:* Networking and coordination among domestic grassroots NGOs is not as strong in this basin as in the Mekong/Nujiang basins. However, there is a large network of strong environmental NGOs and scientific institutes on the Russian side of the border and they are eager to cooperate with Chinese counterparts. Some international exchanges have started between Russian and Chinese public organizations.
- *International Level:* WWF-China and WWF-Russia are encouraging communication between riparian countries; Pacific Environment has brought together NGOs and researchers on both sides to study natural resources issues in the basin; GEF and UNEP are designing an integrated management project specific to the Amur/Heilong River Basin; and International Crane Foundation, Wetlands International, and Wildlife Conservation Society have all been promoting broader nature conservation between Russia and China.

### The Opportunities for Stronger Integrated River Basin Management on the Amur/Heilong

- The Chinese government has strongly pushed a joint anti-poaching (fish) agreement on the Russian side of the river basin, while governors in the Russian Far East have demanded China undertake measures to more strictly control pollution coming from the Songhua River as well as revising its dam projects. Progress on these issues has been small, in part because initiatives for protecting the river are carried out by a variety of agencies on both sides without coordination or strong national government support from the Chinese side.
- Following calls by WWF for urgent action to protect the unique wetlands of the Amur, over 180,000 hectares of new protected areas have been created between 1999 and 2001. Today, up to 22 percent of the Amur River basin wetlands on the Russian side are protected.
- In the 1990s, the National Committee on U.S.-China Relations worked with parties on both sides of the border to create the Chinese-Russian Ussuri Sustainable Land Use Plan. This document called for the creation of an international governance mechanism to protect the Amur and the Ussuri (a tributary) with Russian-Chinese scientific and government collaboration. This plan was never implemented, but it lays the groundwork for future initiatives.
- There are great incentives for all the agencies working on the same problems to join forces because both China and Russia are suffering losses inflicted by the other.
- A bilateral Amur coordinating council was created by Russia and China five years ago as a means to discuss pollution issues, as well as the territorial dispute associated with the islands near Khabarovsk. The council has provided some important bilateral linkages, but has failed to address key underlying issues that led to the growing water pollution flowing from China into Russia. Nevertheless it represents a potentially useful institution from which international programs (such as the planned GEF/UNEP project) could lay the foundation for the joint management of the resources of the basin.