

Introduction

Promoting Sustainable River Basin Governance: Crafting Japan-U.S. Water Partnerships in China

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INTRODUCTION

China is a country facing numerous ecological stresses—with water problems posing one of the greatest challenges. Throughout the centuries China's great fluctuation in precipitation regionally, seasonally and temporally often has caused severe floods and droughts. In ancient times there was a belief that such natural disasters were a sign the heavens no longer supported the emperor's mandate, so a major flood could be a catalyst for a revolt. For both insurance against heavenly wrath and protection of economic resources Chinese leaders—both ancient and modern—have prioritized water management, particularly the use of large infrastructure projects and top-down rulemaking.

While ill-conceived development campaigns under Mao Zedong caused deforestation and water pollution that decimated rivers, lakes and groundwater (Shapiro 2001), the remarkable economic growth under the economic reforms and open-door policy over the last two decades has also created serious environmental pollution in surface and groundwater throughout the country. In addition to domestic pressures on China's water, global warming is suspected as one critical factor potentially increasing the risk of water disasters, particularly in the western regions of the country.

Water pollution and scarcity are creating a plethora of negative impacts on the Chinese economy, including lower crop yields and a slowdown of industrial production. In 1997, the World Bank estimated that water scarcity in Chinese cities costs about \$14 billion in lost industrial output, while water scarcity and pollution contribute to agricultural losses of roughly \$24 billion annually.¹ To solve these scarcity problems, the Chinese government continues to prioritize supply-side water management over conservation work, leading to extremely costly projects such as the Three Gorges Dam and the south-north water transfer project.

While the Chinese government has promulgated a number of water use laws and regulations that mandate water conservation efforts (such as water fee collection, rationing programs, water use permits, and installation of water efficient equipment), weak monitoring and enforcement capability at the local levels and difficulties in creating clear water-use rights hinder many water reforms.

An examination of river basin management in China offers one useful lens for understanding the complexity of China's water problems and for exploring potential solutions to water pollution and scarcity problems. There are countless river stories to relate, but current challenges facing the Huai, Yellow, Yangtze, and Nu rivers underscore the need to strengthen river basin management, financing, and public participation institutions to seek solutions.

The Huai River Basin exemplifies the triple threats many regions in China face: flood, drought, and pollution. The Huai River, one of the seven major rivers in China, covers an area of 270 square kilometers (km²) containing a population of 160 million (*Year Book of Huai River* 1998, p.355)—its watershed almost as large as a small country like Japan. The river basin is located at a climate transition area between north and south with a web of river and lake networks, so residents along the river have historically suffered from frequent floods and droughts. In addition to such water disasters, water quality of the river has been worsening since the 1970s, mainly because of rapid industrialization

¹ World Bank. (1997). *Clear water, blue skies*. Washington, DC: World Bank.

without efficient treatment of wastewater from factories. In the early 1990s much of the river was ostensibly “dead,” unable to sustain plants or animals along about eighty percent of its main stream (*Yearbook of Huai River* 1996, p.62; Economy 2004). In 1994, due to a complex sequence of pollution, drought, and flood, a large-scale industrial accident forced about 1.5 million residents along the Huai to fall into a drinking water emergency. Although the central government then began a ten-year clean-up campaign of the river, such accidents continue to this day. China Central Television recently revealed a spike in cancer death rates in some villages surrounded by polluted canals, which are fed directly from a tributary of the Huai River.²

China’s “mother river,” the Yellow River is also in crisis—plagued by shortages that stopped the river’s flow to the ocean for over 200 days each year since 1998. While the central government has expended considerable resources and energy to reinstate the river’s flow, most of these solutions are top-down water allocation mandates and expensive public works projects (Wang 2003). For example, to remedy water shortages in northern China in the Yellow and Hai river basins, the Chinese government has begun a controversial project to transfer water from the Yangtze to quench the north’s thirst rather than undertake some of the more challenging conservation and institutional reforms of water management institutions.

While the Yellow River fights drought problems, the Yangtze (the world’s third largest river) combats severe floods. One massive flood in 1998 caused considerable destruction in the lower reaches. In the subsequent “flood” of news reports—even in the Chinese media—human actions were blamed as the most likely cause of this “natural” disaster, specifically, over-logging in the upstream areas and reclamation of lakes and ponds in the midstream. The central government was quick to respond to the disaster by: (1) banning logging of most forests in southwest China, (2) closing timber markets in the upstream, (3) regenerating lakes that had been land filled, and (4) launching a campaign to encourage farmers to replace slope land agriculture with trees (*duigeng huanlin*). It is hoped that these campaign style policies will lead to significant improvements of the Yangtze’s damaged ecological system (Yin, et al. 2005, forthcoming).

While the above three rivers support huge populations and are lined with cities, there are some wild rivers in western China populated by small numbers of rural poor that are being targeted for large dam construction. Provincial and central policymakers view these dams as poverty relief programs, while China’s growing green nongovernmental community and environmental journalists have begun opposing such construction. In early 2004, a collection of Chinese environmental nongovernmental organizations (NGOs) and journalists succeeded in initiating a successful anti-dam campaign to prevent a series of thirteen dams from being built on the Nu River, one of China’s last wild rivers, which is notably registered as world natural heritage site by UNESCO. After the environmental NGOs in Beijing and Yunnan initiated the anti-dam campaign through meetings, Web sites, the news media, and petition letters to top leaders, the Prime Minister Wen Jiabao issued a halt on all dam building on the Nu River. While the central government, at least temporarily, has heard the voices of grassroots environmentalists, it merits mention that opportunities for such NGOs to participate in the formal government decision-making process to manage rivers are limited (*Jingji* 2004).

In sum, an examination of the problems facing China’s rivers opens up an opportunity to understand the country’s water crises, as well as the social and political problems hindering effective river basin governance. It is beyond the scope of this short paper and the project it outlines to delineate all of the ingredients for effective river basin governance, rather we wish to highlight what we believe are three key institutions: (1) river basin management institutions, (2) financing mechanisms, and (3) public participation. Below is a short review of these three institutions in China, which will provide the context for the joint project we at the Woodrow Wilson Center and the Institute of Developing Economies have undertaken to promote research and exchange on river basin governance in China.

² The title: “Heliu he cunzhuang (The River and Village).” The program: Xinwen diaocha (News and Survey). CCTV August 9, 2004. (<http://www.cctv.com/news/china/20040810/102281.shtml>)

River Basin Management Institutions in China

China's river basin commissions—which were initially created in the 1950s to exploit water resources, generate electricity, mitigate flood damage, and provide facilities for navigation—possess strong technical and hydrological expertise, but often lack the management and outreach capacity to monitor and enforce water protection and conservation measures. The effectiveness of river commissions is also limited due to: (1) poor (and sometimes even adversarial) relationships with provincial and local governments and (2) a failure to incorporate broad stakeholder input in basin management efforts.

Financing Mechanisms

Chinese river basin commissions and cities lack financing mechanisms such as revolving funds and bonds, which could fund the construction of sorely needed wastewater treatment facilities—70 percent of Chinese cities have no sewage treatment plants and 60 percent of China's major watersheds have water quality of the lowest grades. Market tools such as green taxes, water trading, and upstream-downstream compensation strategies, which could promote conservation of river water resources, have been slow to develop in China.

Public Participation

In China, public participation in the water policy sphere is generally limited to complaints and protests. Moreover, while Chinese citizens are allowed to make formal complaints to the government on damages from pollution or water shortages and to sue polluters, these efforts do not always affect change. Greater citizen and NGO involvement in monitoring water policies and projects holds promise of improvements in protecting China's river basins. However, there remain questions whether the Chinese government would be willing to permit another nationwide protest like the one that took place in 2004 surrounding proposed dams on the Nu River.

In the next section of this paper, we will first describe the potential to strengthen U.S.-Japan water collaboration by promoting sustainable river basin governance in China. Then we will introduce the central themes and activities of our project, and briefly summarize the findings of the three study tours. We conclude in the last section with an introduction of the themes the project members have addressed in their papers, which aim to explore options and lessons for sustainable river basin governance in China.

1. POTENTIAL TO STRENGTHEN U.S., JAPAN WATER PARTNERSHIP ON RIVER BASIN GOVERNANCE IN CHINA

Both the United States and Japan are giving water sector issues a high priority in their international assistance programs, often as part of broader poverty relief or urban development efforts in developing countries. In Japan, the Third World Water Forum in Kyoto, Shiga and Osaka, March 2003 encouraged international cooperation to improve water issues in developing countries. Networking of Asian River Basin Organizations (NARBO) coordinated by Japan Water Agency and the Asian Development Bank is one of active projects initiated at the World Water Forum. The goal of NARBO is to help achieve integrated water resource management (IWRM) in river basins throughout Asia by advocacy, training, technical advice and regional cooperation, based on Japanese experiences of water development.³

In addition, the United States and Japan are exploring ways to strengthen their water programs through cooperative efforts. At the World Summit on Sustainable Development (August/September 2002), the U.S. and Japanese governments launched a new cooperative initiative on water, in which the two countries will pursue joint or parallel water projects in developing countries. At the Third World Water Forum, the U.S. and Japanese governments announced new cooperative water management activities focusing on the implementation of projects in Africa (Ghana, Mali, Niger, and Senegal) and

³ See the Web site of NARBO (<http://www.narbo.jp/>).

Asia (the Philippines, Indonesia, and Bangladesh).⁴ Under this cooperative initiative the two governments also are considering collaboration in creating water-financing mechanisms. While China is not currently targeted under this collaborative program, it is a country that could benefit from joint U.S.-Japan assistance on water.

The need to build U.S., Japanese, and Chinese environmental partnerships on multiple levels is particularly crucial as China's integration into the world economy speeds up both economic growth and environmental degradation. The same economic reforms in China that have brought rapid industrialization, raised standards of living, and freed many rural people from agricultural work have produced declining environmental conditions that directly impact the health of the Chinese people and their economy.

Air pollution problems, such as greenhouse gas emissions and acid rain created by sulfur emissions of Chinese industries, are clearly a growing concern for neighboring Asian countries, the United States, and the world. However, equally important are China's severe water degradation and scarcity, deforestation, erosion, and hazardous waste problems—all of which contribute to population movements, health risks, food security problems, and rising income disparities. These problems raise humanitarian concerns and also have the potential to affect China's social, economic, and political stability. While China's water challenges are severe, they do hold many opportunities for U.S.-Japan assistance in the areas of watershed management, financing, and stakeholder participation.

The policies and assistance necessary to mitigate China's river basin problems will demand creative thinking and dialogue with environmental experts and practitioners from global, regional, national, and sub-national organizations. Indeed, assisting China onto a sustainable river basin development path in the coming decade is of such great importance that Japan and the United States must do their utmost to cooperate in this important arena, and to provide the benefits of their experience and technology.

In China, the U.S. and Japanese governments (as well as NGOs and research institutes) are quite active in assistance and research on environmental protection issues (particularly water). But little information is shared and there are no formal joint initiatives. Economic slowdowns have led both the United States and Japan to make some cutbacks on overseas development assistance. Therefore, information sharing and joint work in international environmental assistance could enable both countries to increase the impact of their shrinking aid budgets as well as avoid investing in redundant projects in China and other developing countries.

This project, "Crafting Japan-U.S. Water Partnerships: Promoting Sustainable River Basin Governance in China," jointly initiated by the Woodrow Wilson Center's China Environment Forum (WWC-CEF) and the Institute of Developing Economies, JETRO (IDE-JETRO), aims to inform U.S. and Japanese policymakers and agencies involved in the Clean Water for the People Initiative of opportunities for bilateral collaboration on water basin governance in China. As the two world leaders in environmental protection policies, environmental technology, and environmental financing, Japan and the United States have considerable expertise to offer China, which faces serious water problems. In their joint project, WWC-CEF and IDE-JETRO have sought to create research setting forth policy options to illustrate how the two countries—within their governmental, nongovernmental, and research communities—could coordinate water initiatives in China, which might ultimately improve the efficiency and synergy of each country's individual efforts.

⁴ See Web sites of U.S. Department of State (<http://www.state.gov/g/oes/rls/fs/2003/18965.htm>) and Ministry of Foreign Affairs, Japan (<http://www.mofa.go.jp/policy/environment/wssd/2002/document/us.html>).

2. RIVER BASIN GOVERNANCE PROJECT FOCUS AND ORGANIZATION

This joint WWC/IDE project created a tri-national working group—comprised of water and environment experts from Japan, the United States, and China—and asked them to explore the potential for joint U.S.-Japan efforts to enhance river basin governance systems in China. To accomplish this task the group participated in study tours in Japan, China, and the United States that emphasized three key aspects of river basin governance: (1) the structure and function of river basin commissions; (2) the creation and operation of innovative finance mechanisms; and (3) the amplification of public participation in river basin decision-making processes.

Over the course of the study tours, the working group met with government representatives (especially of river basin commissions), environmental financing experts, NGO activists, and scholars, in order to examine opportunities for U.S.-Japan assistance in strengthening Chinese river basin governance. Integrated river basin management (IRBM) is one model for building stronger governance institutions (GWPTAC, 2000). Specifically, IRBM requires holistic management institutions that include channels for broad stakeholder participation and sustainable financing mechanisms to support basin-wide conservation and development initiatives. Therefore the working group has focused on three key areas necessary for IRBM:

- (1) Innovative management structures (basin commissions, river commission networks, and water rights).
- (2) Financing mechanisms to support river basin protection and pollution control (revolving funds, bonds, green taxes, and public-private partnerships).
- (3) Scope of public participation in protecting river basins (activism, legal routes, public hearings, stakeholder consensus meetings, riverkeepers, NGO initiatives, and farmer/citizen associations).

U.S. Study Tour

On 28-31 March 2004 we held the first study tour for the group in Washington, DC. During the tour we held a series of meetings in the Woodrow Wilson Center, bringing in federal, state, and city government, as well as river basin commission staff and researchers to talk about the three themes the group is addressing in their research. We spent one day visiting water managers and NGOs at Chesapeake Bay to learn how a multi-stakeholder EPA-led program is working to help protect this fragile watershed. The tour was designed with the expectation that the discussions would help generate research ideas and help the Chinese and Japanese partners understand some basics of U.S. river basin management issues.

China Study Tour

14-17 June 2004 was the second study tour in China. Most of our meetings were held in Beijing on the campus of Tsinghua University, but we did take a one-day trip to the nearby city of Tianjin to meet with local government officials. Our roundtable discussions included:

- (1) A session with Ministry of Water Resources (MWR) officials discussing water law and rights, which helped the U.S. and Japanese participants understand major legal and bureaucratic obstacles to better river management in China.
- (2) A roundtable with Chinese journalists and NGO activists learning how they are promoting stronger public participation in river protection. Many in our group were surprised at the growing openness for such activism, which indicates considerable potential for Japan-U.S. NGO involvement in this sector.
- (3) A day visiting the Hai River Basin Commission and Tianjin Environmental Protection Bureau brought the group some sober insights into the great differences between Chinese river basin commissions and those in the U.S., Europe, and Japan. Chinese river basin commissions are merely extensions of the Ministry of Water Resources and take a very top-down and narrow approach to managing the river basin (e.g., they have authority for water quantity management issues, but not for water quality or for convening stakeholders in the basin). The group did discover that there is a great interest within the Hai River Basin Commission to learn from U.S. and Japanese experi-

ence and this meeting led some in the group to speculate on a future Japan-U.S.-China project working with the Hai River Basin officials we met.

- (4) A roundtable with nearly 20 international donor and NGO representatives who are active in implementing river basin projects in China. This was one of our most lively and optimistic sessions, for the group obtained some insights into successful international river basin initiatives in China.
- (5) Roundtable with environmental economics researchers to talk about work they are doing in improving financing of river protection in the Yellow River Basin (part of an Asia Development Bank project).
- (6) Meeting with a senior irrigation specialist at the World Bank Office in Beijing was our wrap up meeting in China, which left the group feeling more optimistic about river basin management reforms and innovation than some of the previous sessions. They learned about some innovative World Bank projects, one of which has established China's first truly "participatory" river basin management commission. The group also learned about how the World Bank has been piloting many technical and institutional innovations to potentially overhaul basin management institutions in the Hai River.

Japan Study Tour

4-9 October 2004 was the last study tour in Japan. The study tour covered Tokyo metropolis and Saitama, Ibaragi, Kanagawa and Chiba prefectures. It included three roundtables with: (1) the central government Water Agency, (2) Tax Reform Office of Kanagawa prefecture government, and (3) rural water management experts at Tsukuba University. The group also went on two field trips to: (1) Tokyo Bay organized by the local office of Bureau of Port and Harbor, Tokyo Metropolitan Government; and (2) a visit to Lake Kasumigaura with an NGO to learn about grassroots efforts to promote lake and water ecosystem preservation. This tour concluded with a one-day international workshop in Tokyo with a broad range of government, research and NGO participants to join our discussion.⁵

3. ONGOING ACTIVITIES OF INTERNATIONAL COOPERATION ON SUSTAINABLE WATER USE AND RIVER BASIN GOVERNANCE IN CHINA

Through our roundtable meetings in Beijing, the group was introduced to many activities on sustainable water use and river basin governance in China initiated by governmental donors and international NGOs. Short summaries of these projects are below.

INTERNATIONAL ORGANIZATIONS

World Bank⁶

The World Bank has been involved in two projects aimed at improving the capacity of river basin governance institutions. In Xinjiang they undertook a challenging project to create a new river basin commission for the Tarim River. With \$17 million in GEF grant money, the World Bank has just begun a project on the Hai River Basin that aims to speedup the integrated water and environment management in the basin. The main challenge of this project is bringing together China's State Environmental Protection Administration (SEPA) and MWR to jointly undertake the institutional reforms necessary to establish mechanisms for water and environment departments to truly work together. The project also wishes to improve the technologies to undertake integrated water planning (e.g., establishing a shared database, river coding stream, and remote sensing). While not a river basin project, for many years the World Bank has been creating water user associations to help manage major irrigation projects in China. Lastly, as noted below, the World Bank also has an initiative with DFID to support the reform of the National Water Law.

⁵ See Appendix A for schedule of March 2004 DC study tour, Appendix B for schedule of June 2004 China study tour, and Appendix C for schedule of October 2004 Japan study tour.

⁶ The information is provided by Liping Jiang, a senior irrigation specialist who met with project participants at the World Bank Office Beijing on 17 June 2004.

China Council on International Cooperation for Environment and Development (CCICED)⁷

The China Council for International Cooperation on Environment and Development (CCICED) is a high-level consultative body providing strategic consultation to China's State Council concerning environment and development issues. A Task Force on Integrated River Basin Management (IRBM), focusing on the Yellow River, was officially launched in Beijing in March 2003. The overall objective of this task force, which includes considerable NGO participation, is to promote the maximization of the public welfare of river basins in China through better governance of water resources, biodiversity conservation, and ecosystem management through information sharing, demonstration, and public participation.

In addition to undertaking studies of IRBM in Canada, Germany, and the United States, the CCICED IRBM task force staff also had been working with WWF-China to undertake various case studies in the Yangtze River Basin.⁸ The research the IRBM team and WWF have conducted is being used to create a river basin conservation plan for the Yangtze. The plan includes a ten-year target for conservation on the river, which focuses both on protecting animal species and habitats. The ideas in this plan will be shared with local and central government agencies, as well as community groups to solicit input for the final version they will present to the CCICED.

The European Union⁹

For over five years the EU office in Beijing has been working with Liaoning Province to create and implement a broad range of projects promoting sustainable river basin management in the Liao River Basin.

UK's Department for International Development (DFID)¹⁰

Worldwide, DFID only works on poverty alleviation in partnership with developing country governments. In China, DFID's water work therefore has a strong poverty alleviation component and most of its work is primarily done through environmental education. DFID, together with the World Bank, has supported the reforms proposed in the 2003 revision of the Chinese Water Law. DFID and the World Bank are also working with the Chinese government to implement a water resource demand management assistance project. In addition, within a China watershed management project DFID and the World Bank are supporting the government in developing and implementing new approaches to soil and water conservation. DFID and the World Bank also just approved a water user association pilot project in the summer of 2004 that will be set up in Gansu Province. The World Bank is managing the project, which will be steered by a committee that includes members from the major river conservancy commissions in China. Two other DFID/World Bank projects include:

- Pro-Poor Rural Water Reform Project
- Lhasa Valley Water and Sanitation

Japan International Cooperation Agency (JICA)¹¹

In China, JICA's work is based in four priority areas: environment, policy reform, mutual understanding, and poverty alleviation. Among JICA's six environmental goals sustainable water resource use is one. Ongoing JICA projects related to water include a technical cooperation project in which Japanese experts are dispatched to train counterparts from China on issues such as: (1) human resource development project for water resources, in which JICA aims to train more than 2,000 central and local government water bureau personnel; (2) model planning project for water saving measures in large-scale

⁷ The presentation "CCICED IRBM Task Force—a high level advisory body on IRBM in China" by Yu Xiubo & Li Lifan, IRBM Task Force Secretariat on June 16, 2004 at Tsinghua University, Beijing, China.

⁸ Case studies the IRBM and WWF have carried out in the Yangtze Basin include: (1) Xianghexi River Basin; (2) Lake Zhangdu River Basin to examine wetland and river basin management; (3) Minshan Mountain System to draw lessons from a landscape restoration project; (4) Lake Poyang where WWF has been working with local stakeholders (government, NGOs, and community groups) to devise an IRBM Action Plan; and (5) Danjiangkou Reservoir (upper Han River)

⁹ The presentation "Sustainable River Basin Management in the Liao River Basin" on June 16, 2004 at Tsinghua University, Beijing, China.

¹⁰ The presentation "DFID Water Sector Partnership in China" by DFID China Water Team on June 16, 2004 at Tsinghua University, Beijing, China.

¹¹ The presentation "JICA's Activities in China (Water)" by Mr. Satoshi Nakamura from Japan International Cooperation Agency (JICA), China Office on June 16, 2004 at Tsinghua University, Beijing, China.

irrigation schemes; and (3) a water environment restoration pilot project in Lake Tai. In Xinjiang JICA is undertaking a development study of sustainable underground water in the Tulufan Basin. Moreover, JICA is working with the Chinese Ministry of Construction, the Ministry of Water Resources, as well as local and provincial governments to develop an instruction manual for promoting water saving of irrigation, which will be put on trial in water savings pilot projects in Gansu, Shaanxi, and Hunan provinces. A listing of other current JICA water projects includes:

- Study for Prevention of Land Slide Disaster in the Xinjiang River Basin in Yunnan Province
- Study for the Development of a Water Right System

Japan's Bank for International Cooperation (JBIC)¹²

In China, JBIC focuses on three target areas: environment, human resource development, and poverty alleviation in the western region. Since 1979 JBIC has made significant loan commitments to China, over the last five years JBIC loans have averaged \$15 billion a year. JBIC does not have specific projects to support river basin management, but is involved in many water-related projects such as: (1) water supply projects in more than 20 large cities in China, (2) water pollution control projects supporting sewage plant construction and expansion on three major river basins, (3) water saving irrigation in Xinjiang and Gansu, (4) deforestation on the Loess Plateau (in Shaanxi and Shanxi, and Inner Mongolia), in which one central project goal is to greatly reduce siltation of the Yellow River, and (5) multipurpose dams for flood control and water supply in Sichuan, Henan, and other provinces. Other JBIC projects include:

- Huai River in Henan Province Water Pollution Control Project
- Xinjiang River Basin Hunan Province Environmental Improvement Project
- Heilongjiang Songhua River Basin Environmental Improvement Project
- Jilin Song Liao River Basin Environmental Improvement Project

U.S. Government Water Work in China

- U.S. Department of Agriculture (USDA) has been: (1) undertaking collaborative research on China's Agricultural Water Policy Reform (Lohmar et al., 2003); (2) since 2000, the USDA and U.S. Environmental Protection Agency (EPA) have been conducting water quality monitoring, wastewater reuse, and watershed management demonstration projects on the lower reaches of the Yellow River in Shandong province; and (3) for nearly a decade the USDA has conducted in-depth studies on protecting the Hai, Huai, and Yangtze rivers with Chinese counterparts.
- On the Hai River Basin the U.S. Geological Survey started joint water quality research with Tsinghua University in 2001.
- In 2004 the U.S. EPA began a *Clean Water for Sustainable Cities in China Program* in the Hai River Basin focused on watershed management and financing mechanisms.

INTERNATIONAL NGO ACTIVITIES ON WATER IN CHINA

While the World Bank and bilateral agencies are active in river protection projects, over the past few years, interest in river basin protection and management also has spilled over into the international nongovernmental sphere as well, but these organizations are not communicating their experiences with one another. U.S. and international environmental NGOs are particularly active in river basin protection as a core or secondary area of work, most notably:

Wetlands International, China

Since 1999, Wetlands International has been carrying out an initiative focused on integrated management of biodiversity, wetlands and river basins in China. Their projects in the Tarim and Peacock River Basins have helped to design various conservation and research activities that focus on promoting wise use of river basin wetlands. The overall objective of the Tarim River Basin project is to initiate activities to support conservation and fresh water biodiversity using an integrated river basin management approach in China. WI is working with local government and communities to restore a

¹². This information was presented by Mr. Naoki Mori from JBIC's Beijing Office.

wetland nature reserve where a very large lake has almost been completely drained. They will collate, analyze and disseminate lessons learned from their current study in the Tarim River Basin in order to lay the groundwork for developing a larger demonstration project.

WWF-China

WWF-China has two major integrated river basin management initiatives on the Yangtze River, which include demonstration projects to improve flood control by restoring wetlands and lakes and activities to strengthen community education and NGO capacity building.

Oxfam-America

Oxfam-America's Upper Mekong River Program in Yunnan province has helped government and community stakeholders create a watershed management commission and micro-finance projects to help protect the river ecosystem and solve local poverty problems. The program also led Chinese researchers to create a new Chinese NGO—Green Watershed, which promotes community participation in watershed protection.

The Nature Conservancy

Since 1998 The Nature Conservancy (TNC) Yunnan Great Rivers Project has created partnerships with the Yunnan provincial government, community groups, and research institutes to create plans and projects to protect the biodiversity and ecosystems within the province's two major river basins.

Other NGOs

International Crane Foundation, Pesticide Action Network North America, the Blacksmith Institute, U.S.-China Environmental Fund, and Pacific Environment are all involved in conservation or environmental education activities, in which public participation in water management is a key theme

4. ISSUES TO BE DISCUSSED: TOWARD SUSTAINABLE RIVER BASIN GOVERNANCE IN CHINA

The ten individual research papers written by project members and IDE researchers presented in this IDE Spot Survey cover the three key themes of our project—institutions, financing and participation. These papers discuss experiences and challenges facing China, Japan, and the United States on sustainable river basin governance, all with an eye to identifying useful lessons for China. In part I, three papers illustrate the state of river basin management institutions in China, Japan, and United States. Following this overview of river basin management in the three countries, the next two parts discuss specific institutional, economic, and social issues of importance in river basin governance. In part II, four papers discuss some institutional and economic aspects of sustainable river basin governance, such as international river management regimes, integration of river basin management, rural water management, and cost sharing. While the first paper in part I includes discussion on financing problems in China, some papers in this part also focus on the issues of financing mechanism for sustainable river basin governance. In part III, three papers discuss intensively the issue of public participation in river basin governance. In this last section of this introductory paper, we summarize some of the issues the authors discuss on promoting sustainable river basin governance in the three countries.

Balancing Water Use and Conservation

Major interests of water departments or ministries in many countries have been how to satisfy increasing water demand and how to control floods. Such priorities lead water ministries to invest considerable funds into irrigation facilities, dams, waterworks, and water transfer projects across river basins. Such funding strategies have dominated China's Ministry of Water Resources, which has generally prioritized engineering and technology as the tools for managing China's rivers. In recent decades, however, policymakers and researchers around the world—including China—have become aware that these kinds of infrastructure projects can exacerbate environmental pollution and disrupt water ecosystems. Although Chinese research centers and cooperative projects with international partners focus on the need for protecting the ecological water flow in rivers it is time to incorporate this as a priority

into the basic policy of water and river basin governance in China.

Naoki Kataoka joins the two themes of balancing water use and conservation in his paper, in which he discusses how river basin management in the area of protecting rural waterfront ecosystems in Japan is complicated by the different types of water right systems, namely approved water rights and customary water rights. In addition to discussing how these clashing water rights regimes are causing ecological problems, he delves into prospects for institutional reforms of river basin management since the Japanese government amended the River Law and Land Improvement Law. He also points out that securing water both for fluvial environments and irrigation canals close to human habitats should be considered as a key strategy for balancing water use and conservation. In her paper on rural water management, **Nanae Yamada** addresses the complex challenge of balancing water use and conservation in the context of river irrigation of paddy fields. The potential solution she examines is how the roles between government and farming communities could be divided to achieve better watershed governance of river irrigation in Japan. Her reflections on lessons learned in Japan hold promising models for China.

Carol Collier discusses the success of the Delaware River Basin Commission (DRBC) in creating a successful water quality regulatory program. Central to this success has been the establishment of number of programs that rely on a goal-based watershed management approach, in which DRBC sets quantitative environmental goals that serve as drivers for regulatory programs, as well as watershed planning. This DRBC regulatory program does not just look at one discharge or water withdrawal at a time, rather this program takes a watershed approach. Such a holistic approach allows alternatives to be assessed and environmental impacts to be incorporated in the planning process.

In their paper, **Hu Kanping** and **Yu Xiaogang** introduce the emerging environmental journalists and green NGOs in China who are joining forces to address water ecosystem conservation. The 2004 campaign these two groups created to protest dams on the Nu River raised considerable awareness of the ecological value of a river among people in China. While U.S. and Japan governments have created laws and regulations emphasizing the environmental quality and ecological water flow of rivers, China has not yet created clear policy on this issue, although we also know there are ongoing research projects on this issue in China.¹³

Creating an Institution for Sustainable River Basin Governance

Integrated water resource management (IWRM) is a main issue of our project like many other projects examining current water issues. But as some papers point out, we should discuss more its practice and implementation rather than simply its concept and theory. We focused on IWRM on the river basin, which includes a web of rivers (both its main stream and many tributaries), lakes, wetlands, and estuaries, upstream and downstream, a variety of land use, and natural and human ecosystems. We challenged our group to think in terms of river basin governance (RBG) rather than river basin management (RBM), for management tends to emphasize technical or sectoral fixes to river problems. We embraced the more encompassing term of governance, which means to build an innovative new regime that includes multiple stakeholders and sectors to solve problems facing river basins.

One of most difficult issues China faces in its river basin governance is transboundary and transjurisdictional water conflict. Crucial transboundary water issues in China encompass both water disputes (over both water allocation and water pollution) of rivers crossing jurisdictions of provinces and also include development and environmental issues surrounding contentious international rivers such as the Amur and Mekong. As papers by **Wang Yahua** and **Mikiyasu Nakayama** highlight, China is a country fraught with conflicts in both domestic river basins and in many international rivers crossing its border. Both authors cite problems in how the government bureaucracies focus almost exclusively on managing rivers for economic development rather than following a development path to balance both human and ecological needs. As a potential model of how a river basin commission can resolve and prevent conflict to protect river resources **Carol Collier's** paper introduces the creation and func-

¹³ From discussion conducted by our working group members with the Hai River Conservancy Commission, Tianjin, June 2004.

tion of the Delaware River Basin Commission (DRBC), which includes the four riparian states and federal government as members. The commission has since its creation in 1961 not only resolved contentious conflicts among the states, but acted as a forum to effectively mobilize government, citizen and NGO communities to solve water shortage and pollution problems. In contrast to China's river basin commissions that do not have provinces as members and lack sufficient power and inclusiveness, the DRBC offers a unique model for how a commission can promote better governance in a river if given sufficient regulatory authority and ability to bring together multiple stakeholders.

Understanding the role of existing organizations with authority over water is crucial, for worldwide fragmentation and/or competition of administrative sectors is one of the major obstacles for sustainable river basin governance. The experience of the Tarim River Basin Commission project in Xinjiang supported by World Bank offers a good lesson. At the beginning of setting up the commission the executive office was run solely by the provincial government, which led to its failure because the water resource bureau in Tarim district would not cooperate with any decisions made. The World Bank then pushed for the involvement of the regional water resource bureau, which then had staff and budget to help run the commission. Bringing the two bureaucracies together was difficult, but the commission—China's first true membership based commission—is now functioning better.

In Wang Yahua's paper he highlights how the contentious inter-ministerial conflicts between China's SEPA and MWR over control of water represents one major obstacle to better river basin governance in China. Although the two agencies have experimented with the joint creation of a consulting group such as the Leading Group for Protection of the Water Resources of the Huai River Basin, the two conflicting "dragon heads" will need to create a more effective integrated institution for sustainable river basin governance in China. Notably, Mikiyasu Nakayama suggests in his paper that in the Mekong River Basin the role of regional economic cooperation mechanisms may be a better route for improving river basin governance than the Mekong River Basin Commission, which China refuses to join. He also notes that China's ability to cooperate with downstream countries on the Mekong is possibly hindered by the differing political and economic interests between the central and local governments.

An incentive mechanism would be a key solution for hard and time-consuming process of promoting governmental collaboration and integration to manage water. **Gary Wolff** argues that the RBM component of an effective river basin management structure should: (1) identify specifically how and when collaboration between functional specialization organizations (e.g., water suppliers, wastewater treatment facilities, and flood control agencies) will be socially beneficial, and (2) mobilize sufficient political will to force functional specialization organizations to collaborate when they should. In China, it seems only a crisis—such as toxic water pollution incidents in the Huai River and major flow cut offs in the Yellow river— can act as a driving force for unifying government agencies to protect rivers. However, cooperation in response to river crises in China has often created more government centralization of authority over rivers or ineffectual campaigns—not ideal ingredients for creating an integrated institution for sustainable water governance. How to share the benefits of integration among stakeholders of the river basin should be a central focus of studies and pilot projects in China as it moves to reform its water management institutions. Information and data sharing would be most realistic first step for China to take not only to improve planning and implementation of water protection policy, but also to save cost and time in resolving water problems, which ultimately could benefit all stakeholders.

Cost Sharing

"Who gains the benefit, and who pays the cost" are major questions when discussing the economics of sustainable river basin governance. To answer these questions Chinese policymakers appear enthusiastic about introducing market-based instruments as a new enforcement tool for environmental regulations or promoting conservation—particularly of water. As **Wang Yahua** points out in his paper, water right trading is attracting much attention among Chinese technocrats and scholars as a method of improving conservation of water. However, as Wang points out, China's current unclear water rights system and weak legal institutions hinder any current systematic application of water markets.

Another issue raised by several authors is the issue of water pricing, which needs to increase in China in order to cover the costs of building and operation for water supply system and wastewater treatment plants. Currently there does not yet appear to be a good model of cost sharing for water conservation in China, which represents an urgent and challenging task for China's sustainable river basin governance.

In rural areas of Japan, the central government has subsidized and created a unique levying system for Land Improvement Districts (LID)—a type of Participatory Irrigation Management (PIM) organization that has played an important role in improving irrigation management. **Nanae Yamada** examines in her paper, how the ability of LIDs to continue effective water management is challenged by recent institutional change in rural Japan. **Kaori Fujita** also examined a traditional local water management organization—specifically the Water Board Assembly in the Netherlands. She argues in her paper that these water boards, which are constituted of local stakeholders, have played a crucial role of setting water pollution charge rates to share the costs among members. In light of the difficulties local water bureaus in rural China face in providing adequate service and in assessing sufficient water charges, the successful models of water user organizations demonstrated in other countries offer useful insights.

How to set up mechanisms to motivate downstream water users to compensate those upstream to protect watersheds is a challenge faced in many countries. One notable successful model of a payment for environmental services scheme was set up between New York City and farming communities north of the city.¹⁴ Beginning in the early 1900s, the New York State legislature gave New York City (NYC) the power to use and protect water outside the city limits, which paved the way for the city to begin building aquifers and reservoirs in the Catskill and Delaware river basins. These distant watersheds have helped guarantee the city clear clean water that did not have to be chlorinated. In the 1990s problems emerged within the upstream watersheds, which were populated by lots of small farms being intensively cultivated. The area also became a target for housing construction and tourism. These types of development activities generated so much pollution and erosion that New York City was faced with the expensive option of filtering the upper watershed. Instead, the city created draft regulations for an environmental protection plan for the watershed, which farmers and real estate developers initially opposed. The farmers were suspicious of demands by the city officials and therefore proposed that NYC help the farmers hire an expert team to design a pollution control plan for each farm that would not hurt the farmers' ability to make a profit. Many city officials complained such individualized programs would be impossible to monitor and evaluate. In the end the head of the NYC Department of Environmental Protection agreed to the farmers' demand that the city support a locally driven and implemented voluntary incentive-based conservation program. A watershed agricultural council (25 farmers and 7 agency representatives) was set up to help oversee the planning and an academic group was formed to evaluate the results. In addition to paying for the individual farm plans the city also built up a forestry program and various economic development programs for the towns in the watershed. Within five years 95% of the farmers had joined the program and the city did not have to build expensive water treatment plants. The program represents a unique urban-rural partnership that was successful because it did not just create incentives for the farmers to protect the land, but the program also created an economic structure that helped the local people survive.

Although pricing for rural water in Japan has been difficult as Nanae Yamada discusses in her paper, it should be noted that taxation for water use and conservation based on IWRM is being introduced or discussed widely in some prefectures of Japan. Kaori Fujita examines in her paper a challenge facing water resource taxation in Kanagawa Prefecture, which has an ecologically threatened mountain water catchment area and a coastal area with highly urbanized cities as major water users. She suggests that decentralization of the financial system could promote sustainable river basin governance in terms of cost sharing between these up and downstream regions. While such successful cases like Kanagawa are appealing models, it should be noted that introducing any type of cost sharing model entails a very time-consuming process of promoting public participation and building stakeholders' consensus.

¹⁴From presentation of Mr. Albert F. Appleton, Senior Fellow, Regional Plan Association, at the Woodrow Wilson Center, March 31, 2004.

Public Participation

The task of protecting river basin resources is too complex for governments to manage alone. One key foundation of good river basin governance is therefore government, a strong river manager in such countries as China and Japan, and broader stakeholders partnerships. This partnership can be one of citizen monitoring government enforcement of water pollution control and public comment on policy designs and projects. A more significant role for citizens would be to empower them to become stewards of the water and surrounding land. The more citizens are involved in caring for river basin resources the less costly it will be for the government to protect rivers. While public involvement in water governance and environmental protection in China has not yet approached the level of stewardship, public participation has increased in these and other policy areas over the past fifteen years.

In the early 1990s the Chinese government not only added public participation provisions to a number of new and amended environmental laws, but also passed regulations allowing for the registration of independent social organizations—the first to register was an environmental group, Friends of Nature. These openings for public participation are part of a larger government campaign to create more political space for citizen involvement in solving problems arising from rapid economic growth (Turner 2004). This strategy to give more power to the public was embodied in the slogan “small government, big society” (*xiao zhengfu, da shehui*). While this campaign to empower society could be regarded as propaganda or simply an example of the government pushing its responsibilities onto a society that lacks organizing capacity and resources, this call to tap citizen power has sparked a striking growth in social activism and volunteerism, which has been most active in the area of environmental protection (Young 2001 pp.9–19).

As mentioned in the introduction of this paper, grassroots NGOs and journalists are aware of the necessity of public participation in decision making of water use projects like dam construction and water transfer across river basins. Although there are still limits on information disclosure and public participation in decision making of governmental policy under the Chinese socialist system, green NGO activists and environmental journalists are pushing the envelope in getting the public involved in river basin governance in China.

Through our study tours, we become aware of potentiality in mutual exchange of experiences and challenges in each country with Chinese counterparts. One potentially useful case for study by China would be of the Chesapeake Bay Program, which is a unique regional partnership that has led and directed the restoration of the Chesapeake Bay since 1983. The Chesapeake Bay Program partners include the states of Maryland, Pennsylvania and Virginia; the District of Columbia; the Chesapeake Bay Commission, a tri-state legislative body; the federal government’s Environmental Protection Agency; and participating citizen advisory groups and NGOs. This is as one EPA official admitted a “messy” program that demands considerable time to create consensus, but all the partners agree the bay is better protected than it might have been under a purely federal government regulatory model. One of the keys to the success has been the large role for NGOs to help make the program’s government partners more accountable. The key NGO in the program is the Chesapeake Bay Foundation (CBF). As one of the largest environmental citizen organizations in the United States (supported by more than 116,600 active members and a staff of approximately 165) CBF acts not only as a watchdog to protect the bay, but also carries out extensive education programs and restoration activities.

In Japan, increasing debates of environmental impact caused by dam construction and also increasing demand of civic participation in the policy process of water development pushed the government to amend the River Law in 1997. Since then, water and river management in Japan has been opened more widely to the public, which has begun to seek more institutional innovation and stakeholder involvement in water and river management. Government investment into water development activities such as dam building and estuary reclamation now often requires that community and NGO stakeholders also be given a seat at the table before work commences. These more open dialogues do demand considerable time to gain consensus among the various stakeholders. This greater space for citizen involvement has led to a unique nonprofit organization (NPO)—the Asaza Fund—that has conducted citizen-initiated public works for natural environmental conservation/restoration of the Lake Kasumi-

gaura. The uniqueness of the Asaza project could be found in the way of public works to coordinate broader local stakeholders such as governmental bureau, trade unions, schools, universities and research institutes, companies and citizens by an initiative of NPO *and* upon mutual partnerships.¹⁵ Asaza Fund's successes and challenges merit close examination for possible application in countries such as China, which like Japan, is beginning to allow citizen involvement in water governance.

Almost every paper from our group included discussion of public participation, but three participants in our study group addressed the issue of public participation as their central theme. **Richard Volk** advances the proposition that a stewardship approach to resource management is a wise complement to the regulatory approach, and represents our best hope for achieving the long-term vision and sustained action needed to maintain essential ecosystem goods and services at the basin-scale over time. **Reiko Nakamura** presents two compelling case studies—one from Japan and one from India—on how positive and thoughtful participation by local stakeholders in the management of wetlands based on smart partnership with governmental sectors can lead to successful restoration water ecosystems and people's livelihoods. **Hu Kanping** describes the growing role Chinese environmental journalists are playing in shaping the river development and protection debate and policies.

Further Studies of Success/Unsuccessful Cases

Over the past fifteen years despite the Chinese government's promulgation of ever stronger water protection policies and more ambitious targets and campaigns to clean up major rivers and lakes the water quality in China's waters—particularly rivers—has decreased markedly. International assistance has helped push forward the concept of integrated water resources management while internal activities of the NGO and news media communities have helped push the policy agenda for broader stakeholder participation in water pollution control and the siting of major dams. However, many policy initiatives and projects to improve the problems facing China's rivers often have not reached their anticipated outcome. One of the major obstacles to better river conservation is the current centralized river basin management institutions, which could be strengthened by greater public participation and innovative financing mechanisms. China can learn from the plethora of successful and unsuccessful models of river basin institutions, public participation models, and financing mechanisms used in Japan, the United States and other countries—some of which are discussed in the papers in this volume. We hope that our modest study of river basin governance could mark a beginning for further studies and exchange between China, Japan, and the United States that ultimately could inspire pilot projects on how China could best to craft stronger river basin governance institutions.

¹⁵ For detail, see the website of Asaza Fund at <http://www.kasumigaura.net/asaza/en/>.

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