

Introduction: The Development of a Water Rights System in China

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While water shortages and the pollution of water resources are common problems around the globe, in China, the scale of these issues is immense. The demands of 1.3 billion people, together with a rapidly growing economy, have placed tremendous pressures on China's water resources. These pressures have required new approaches to the way water resources are managed. Many of these new approaches are representative of fundamental changes occurring within Chinese society, on issues such as property rights, community participation, improved environmental management and the shift towards market-based decision making.

The challenge for Chinese water managers within this setting is enormous. They must balance limited water supplies against the needs of the world's largest population; demands for rapid economic growth with calls for improved environmental management; and moves towards a market-based approach to the allocation of water with a history of state ownership and strict government control of all resources.

The 2002 Water Law of the People's Republic of China lays the foundations for improving the management of China's water. It provides for a comprehensive planning framework, addressing flood management, water resource allocation, demand planning, pollution control and other aspects of river basin management. Since the law's passage in 2002, significant steps have been taken to implement its requirements. The 'water saving society' initiative is being expanded across the country to improve water management and encourage water use efficiency. A 2006 State Council decree has formed the basis for establishing a uniform national approach to licensing and charging for water use. The master plans for China's seven major river basins are being reviewed for the first time in more than 25 years, with a view to better recognizing environmental flow requirements. A key aspect of these changes to water management has been the development of a water rights system for allocating entitlements to water and, increasingly, allowing for the transfer of water rights between different groups.

Water Rights as a Solution

In 2006, the People's Congress affirmed the importance of the development of a water rights system. The 11th Five-Year Plan of the People's Republic of China (2006–10)

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0790-0627 Print/1360-0648 Online/09/020189-4 © 2009 Commonwealth of Australia
DOI: 10.1080/07900620902868547

requires the improvement of the water abstraction license and water resource compensation system, and the establishment of a national initial water right allocation system and water right transfer system (State Council, 2006). Both the Constitution of the People's Republic of China and the 2002 Water Law provide that water resources are owned by the state on behalf of the people. However, at issue is not ownership of the resource, but the rights to allocate, to abstract and to use water. China's water rights system is its mechanism for sharing available water resources amongst competing uses and users, including providing water for the environment. This includes establishing regional rights to a share of a trans-provincial river, the rights of an individual farmer to a share of the water available in his or her irrigation district, and many other interests in between.

However, a water rights system consists of more than just the allocation process. It is designed to provide a level of certainty to water users, and other interested parties, as to how water will be managed. This in turn can allow water users to plan with some confidence as to what water they will receive in the future. Providing this certainty requires water managers to control access to and use of all natural sources of water within a basin, to regulate the operation of water infrastructure, and to understand environmental water needs. As such, water rights form the core of the water resources management system.

Development of a Water Rights System in China

The following papers consider the development of a water rights system in China. The papers review different aspects of water resources management—including water resources allocation, environmental flows, urban water management and irrigation district management—and examine how these are being addressed through a rights-based approach and how they fit within the water rights framework.

This publication is a result of a joint project between the Chinese Ministry of Water Resources and the Australian Department of the Environment, Water, Heritage and the Arts. This project, the Water Entitlements and Trading Project, has involved a review and assessment of the development of a water rights system in China using a combination of Australian and Chinese expertise. Many of the findings and recommendations of the project are documented in the following papers. The eleven papers that make up this publication broadly fall into two groups: one group covers a number of key topics from a whole-of-country perspective while the second group of articles consists of a series of case studies.

National Water Policy Issues

The first group of articles considers the different elements of the water allocation and management framework that apply across China, and how these form the basis of China's water rights system. The papers look at:

- Water resources management: This first paper provides a broad overview of the current arrangements for water management in China, including its legal and institutional framework, and policy approaches to water allocation, water resources protection and water savings.
- Water resources allocation: This paper looks at the way rights to water are shared at the basin level (amongst provinces or prefectures), at the water-abstractor

level (between different abstractors) and within irrigation districts (between farmers).

- Agricultural water management: Agriculture remains the largest user of water in China. This paper examines the different approaches taken to allocating and managing the water used for irrigation, including both ground and surface water.
- Urban water management: This paper considers the ways in which urban water needs are considered within the context of a water rights system.
- Transferring and trading water rights: This paper reviews pilot cases of the transfer of water rights—between regions and abstractors, and within irrigation districts—as a means for moving water between uses and users in fully allocated systems.
- Environmental flows: This paper looks at current methodologies applied in China for setting aside water and maintaining flows for in-stream environmental purposes. The allocation of water for environmental flow purposes is the critical first step in the allocation of water rights, as it determines the consumptive/non-consumptive balance for a basin.

Water Rights Case Studies

The second series of articles covers a number of case studies looking at the ways in which a rights-based approach has been, or could be, used to address water management challenges. The case studies cover:

- Environmental flows and water resources allocation in the Jiao River Basin: This pair of papers describes a detailed environmental flows assessment undertaken in the Jiao River Basin in Zhejiang Province. Based on the flow recommendations, the second paper demonstrates the use of scenario analysis to develop and assess options for modifying water allocations and operational rules to achieve environmental flow and water security objectives.
- Allocation of water rights in the Shiyang River Basin: The Shiyang Basin is perhaps the most water-troubled basin in China, with extreme shortages. This paper describes the development of an allocation model, for sharing water between regions in the basin.
- Allocation and management of water rights in the Hangjin Irrigation District: This paper describes a pilot study on the allocation of water rights to water user associations within a large irrigation district on the Yellow River.

The final article is a comparison between China's approach to water rights with that adopted in Australia. The paper discusses some of the lessons that each may learn from the other. Both countries have made significant progress in implementing water rights to address common (and also different) challenges.

Conclusions

Between them, these papers provide both a high-level view as well as a detailed analysis, of the different approaches being adopted in China to improve the allocation and management of water resources through a rights-based approach. No doubt, the great

challenges presented by water resources management in China will continue for many years to come. However, the adoption of a comprehensive and robust water rights system should provide a solid foundation for addressing these challenges in a sustainable and equitable manner.

Reference

State Council (2006) *National Economic and Social Development Plan for Eleventh Five-Year Period, 2006–2010*, Available at: http://english.gov.cn/special/115y_fd.htm (accessed 15 November 2008).