

Report for
Australia-China
Environment Development Program

China Country Survey

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Foreword

Globalisation and increasing concerns over environment issues have driven the governments of China and Australia together to strengthen cooperation on environmental issues on the basis of mutual benefit. This includes win-win solutions for environmental protection and economic development, promotion of sustainable development in both countries and contributing to regional and global development in this regard. Agreement was signed in October 2006 for initiating the Australia China Environment Development Program under the Australia-China development cooperation program for 2006-2010.

The Australia-China Environment Development Program (ACEDP) is an Australian Government funded five-year, AUD25 million partnership initiatives to support China's policies for environmental protection.

Potential activities under the program are likely to:

- § Demonstrate improved environmental governmental governance in China;
- § Cooperate with decision-making levels for practical application of integrated River Basin Management in China;
- § Foster and strengthen enduring linkages and partnerships in all aspects between Chinese and Australian environment agencies at all levels through high-level policy dialogue.
- § Assist decision makers of all levels to balance the requirements of environment protection and social-economic development.

The ACEDP is a dynamic program initially focusing on water resource management to address a present high priority policy issue. However, this is not exclusive and the program is likely to expand and develop to include other environmental issues over the life of the program. The program was initiated on 1st July 2007 and the Program Coordination Office has been mobilised in Beijing.

The paper highlights key elements of the China water resources and environment governance system, including the legislative framework, micro policy, administrative

management system and mechanisms. It briefly analyses the relevant policy priorities, rules as well as laws and regulations. The paper aims to provide program partners with prompt and proper background information to guide the formulation of the first annual plan (AP-1) and Program management process.

1. Water environment issues in China

Due to rapid industrialization, urbanization as well as economic development in China, water availability has been a major constraint to sustainable development of its socio-economy. Since the reform and opening up period in 1978, China's economy has sustained an average 8% high annual growth, and average Gross National Product has been more than 1000 US dollars. China's water resources and the environment are under great pressure by this economic development and population growth (taking 1.3 billion as a base figure).

The key challenges to China's water resources are:

(1) Increasing water shortage and conflict between water supply and demand;

The national average water resources in China is 2200 m³ per capita per annum, only 28% of the world average. In the past twenty years, influenced by climate change and human activities, water resources in north China have shown a declining trend. In the last 20 years, annual run-off for the Yellow River, Huai River, Haihe River and Liao River in this region has decreased more than 10% with the Haihe River suffering the most. Drought and water shortage are the major constrains to economic development in northern China. Based on the projected growth population and economic development, it is estimated that conflict between water supply and demand will be sharpened in 2030 with the population of 1.5 billion.

(2) Flood control capacity to be largely improved to avert huge flood losses;

China is one of the most vulnerable countries in the world to flood disasters. The flood risk has been increased dramatically as a result of rapid growth of population and properties at the flooding regions. The increased risk of flood related losses is putting pressures on flood control and disaster mitigation. The statistic analysis from 1990s shows that the average flood-caused loss per year amounts to 110 billion, nearly 1% of the corresponding period's GDP, which would be more when hit by big floods at the major catchments.

(3) Excessive pollution exacerbates the water shortage issue;

Water pollution in China is fairly serious on account of lagging sewage treatment

infrastructure versus socio-economic development and sub-optimal pricing mechanisms for urban and industrial sewage treatment. Large amounts of sewage are discharged directly to the rivers and lakes, causing pollution in water bodies. Therefore, regions with abundant water are experiencing emerging pollution-induced water shortages. All these factors jointly contribute to the water shortage issue in China.

(4) Unregulated exploitation and inappropriate protection of water resources bring about a series of ecological and environmental issues covering rivers dried up, shrinking of wetlands, grassland degradation, over-exploitation of ground water and soil erosion.

For example, national lake coverage has shrunk 15% in comparison with its scale in the 1950s; degradation and desertification of various degrees have affected 90% of the national useable grasslands; ground water over-exploitation area expanded to 190,000 km². Ecological and environmental problems have greatly influenced the sustainable development of China's socio-economy.

2. Legislative framework of China water resources and environment governance system

The Legislative framework of China water resources and environment governance system mainly comprises the following laws and regulations: *Water Law of the People's Republic of China*, *Flood Control Law of the People's Republic of China*, *Law of The People's Republic of China on Water and Soil Conservation*, *Law of the People's Republic of China on the Prevention and Control of Water Pollution* and *Marine Environmental Protection Law of the People's Republic of China*.

Amended in 2002, China's Water Law outlines the national strategy of water resources management and underpins the approaches of water resources planning and allocation. Water sectors are the major players to implement the Water Law as well as the 1997 Flood Control Law managing flood control issues. And environment protection sectors are competent for implementing the Law on the Prevention and Control of Water Pollution, which was promulgated in 1984 and amended in 1996. Law on the Prevention and Control of Water Pollution conducts water resources management through water quality protection, sewage discharge control and

exercising pollutant discharge fees system. The Marine Environmental Protection Law, revised in 1999, requires that the competent water environment management sectors commit to the control and prevention of river pollution in the interests of protecting marine water quality. Issued in 1991, the Law on Water and Soil Conservation, enforced by forestry sectors, manages the water resources by control and prevention of water and soil erosion as well as water source conservation.

The 11th Five-Year Plan for the Prevention and Control of Water Pollution is under amendment, especially focusing on better water source protection in key river basins. This was in response to recent drinking water accidents in succession. Presided over by Premier Wen Jiabao on 4th July 2007, the State Council executive meetings discussed and approved the revision of the Law on the Prevention and Control of Water Pollution. It clarified the principle of ‘Levying pollution discharge fees and punishment for excessive discharge’, and determined to establish and implement over the country water pollution-discharge licence system and to optimise the drinking water source protection zone grading system. The meeting discussed and agreed, in five years, to progressively legislate the statutory status of the Regulation of Water Pollution-discharge Licence and Pollution Control Regulation at Drinking Water Source Protection Zone.

3. Administrative regime of water environment management

3.1 Governance regime

Observing the China Water Law, the State employs the integrated water resources management system, combining river basins management and administrative regions management, to manage national water resources. The administrative department for water resources, under the State council, is responsible for the integrated management and supervision over water resources throughout the country. The administrative department for water resources under the local people’s government at or above the county level shall, within its jurisdiction, be incumbent upon integrated management and supervision over water resources. Set up by the administrative department for water resources under the State council, at six rivers (Yangtze River, Yellow River, Huai River, Zhujiang River, Haihe River and Liao River), the catchment management agencies affiliated by the Ministry of Water Resources commit duties of formulating

and implementing integrated catchment management plans, formulating water allocation plans while coordinating and monitoring the implementation of flood control and drought relief.

China Law on the Prevention and Control of Water Pollution requires application of integrated monitoring and management systems incorporating with integrated management and sector management for the prevention and control of water pollution. Specifically, the environmental protection department of the people's governments at various levels shall be the entities that are responsible for exercising integrated management and supervision of prevention and control of water pollution. In conjunction with performing their respective commitments, the other relevant sectors cooperate with the environmental protection department to fulfil their duty of management and supervision over prevention and control of water pollution. Currently, in North China, South China, Northwest, Southwest and Northeast of China, five environment-monitoring centres are afoot to launch by State Council competent environment protection sectors. These environment-monitoring centres are directly governed by the State Council competent environment protection sectors, vertically responding to and settling major environmental disputes relating to cross jurisdiction, cross catchment, environment pollution and ecological degradation.

3.2 The Role of water related sectors

3.2.1 Development and Reform Commission (DRC)

The major task of Development and Reform Commissions (DRC) on water management is to formulate water-related rules, law and regulations and standards, to develop water-saving strategy and policy as well as to examine and approve the key water construction projects.

The function of DRC on prevention and control of water pollution covers researching and developing relevant policy, comprehensively coordinating the implementation process, formulating prevention and control plans, making rules, laws and regulations and standards for the development of the environment industry. In parallel, NDRC also plays a role at organizing the formulation of the annual plan of environment protection and resources utilization, directing the delivery of promotion and training on resources saving and utilization.

3.2.2 Water resources sectors

The water resources sectors are responsible for integrated managing the water resources, monitoring water quality and quantity of rivers and lakes, releasing national water resources bulletins, implementing the water access licence system and charging water fees, balancing water allocation to meet project demand, initiating and managing key water projects, developing and implementing water saving and water use policies, formulating water-related standards and so forth.

The water resources sectors' duty on prevention and control of water pollution is to examine and approve catchment pollutant carriage capacity, to provide advice on restricting discharge amounts, etc.

3.2.3 Environment protection sectors

The environment protection sectors play an important role for water management by engaging in formulating the water-related policy and resources protection plans as well as examining and approving the environmental impact assessments (EIA) of water construction projects.

The environment protection sectors are also responsible for formulating and implementing policies, plans, laws and regulations, rules and standards for prevention and control of water pollution, monitoring the water environment and water pollution, releasing monitoring results information, levying discharge fees and formulating the charge policy for sewage treatment plants and so on.

3.2.4 Forestry Sectors

The forestry sectors also do the part of water management and prevention and control of water pollution, which is described respectively as water sources conservation and water saving of forestry territory together with ecological water conservation, prevention and control of soil erosion as well as wetland conservation.

3.2.5 Construction Sectors

The construction sectors conduct drinking water management, water access licence management, and management of municipal water use, water supply and water saving.

The construction sectors are also involved in the supervision the discharge of industrial sewage, municipal sewage and management of sewerage pipeline networks, the formulation of urban sewage treatment plant plans and the delivery of plant construction and operation.

3.2.6 National Land and Resources Sectors

Groundwater management and marine environment protection are the main responsibilities of the national land and resources sectors on water issues.

3.2.7 Communications Sectors

Ensuring navigation safety in key catchments, maintaining the navigation environment and preventing the occurrence of navigation pollution are the major duties of the communications sectors.

4. Water environment policies in China

4.1 Policy Principles

(1) People-oriented principle. Improving water resources management is critical to ensuring the safety of water supply, food security, flood control safety and eco-environment water share and other demands of human being.

(2) Obeying the law of nature and harmonising the relationship between human and nature. Water utilization and protection shall be balanced with full consideration of water and environment carrying capacity with the purpose of relieving and further to prevent human activities to deteriorate water environment.

(3) Water saving, protection and rational allocation shall be prioritising based on the basic national policy of resources conservation and environment protection.

(4) Law and regulations shall be developed and optimised to regulate water related operations while improving water management capacity with the best available science and technology and full public involvement.

(5) In line with the rules of economy, integrated governance mechanism combining

the approaches and measures of macro control and market economy shall be employed to promote the establishment of water entitlement and water market, and to accelerate the reform on investment and financing system and water pricing system.

4.2 Major Policies

(1) Building water saving society is the key measure to balance the conflict between supply and demand of water resources;

Based on the theories of water entitlement and water markets, China resolves to establish a water management system through further reform:

- a) to identify the 'Macro Control Index' for water resources development and utilization;
- b) to clarify the water rights for different regions, industries and even each unit water user for the identification of initial water rights;
- c) to implement the micro quota index management of water quantity and cap the reasonable volume of water use for manufacturing and service industries and;
- d) to form a market-based water saving mechanism for improving the efficiency and effectiveness of water utilization with the fundamental goal of coordination of economic development, resources utilization and environmental protection.

(2) Transferring to flood management rather than flood domination and reserving outlets for floodwater;

It is recognised that human activities affecting the natural behaviour of floodwaters require adjustment. In particular, the tasks of strengthening flood control structures at weak points such as flood detention areas, optimisation of flood alarm systems and risk management systems are critical as well as rationally utilizing stormwater and establishing floodwater management systems.

(3) Developing recycling economy and integration to resolve water problems through prevention and control;

In this regard, to prioritise water source protection, it is essential to establish a discharge right management system and to control the total pollutant amount based respectively on water and catchment carriage capacity. This will facilitate

development of a recycling economy and promote industry restructuring, application of sewage treatment and recycled water utilization. Groundwater exploitation is to be strictly managed according to the groundwater protection policy.

(4) Fully playing the role of nature's self-recovering capacity to protect and rehabilitate the ecosystem.

Subject to the principle of protection and effective monitoring, China employs a policy of returning farmland to forestry, closing mountains to grazing and tree-felling, utilisation of engineering measures, administration, technology and management while strengthening water and soil conservation at key and vulnerable catchments to revert the trend of water-related ecology degradation.

5. The Development Direction of Water Environment Management

(1) Securing the safety of drinking water is the primary task of China's water management strategy;

In the past 5 years, the Chinese Government has invested over 20 billion on drinking water issues to resolve the problems of China's more than 60 million rural populations. Currently, the Government's focus targets solutions on water security issues for the nearly 80 million rural populations, who are targeted to have access to safe water by 2010. The Rural Drinking Water Security Plan is in the process of formulation as well. China is capable enough to achieve the Millennium Development Goal and halve the proportion of people without sustainable access to safe drinking water.

(2) Promoting the establishment of a water saving society;

The key element of building a water saving society is to structure the water saving system and mechanism in all society. China is reforming its water management system and plans by 2010 to finish the rational water allocation, to cap the volume of utilizable water for each province within the key river basins, to identify the provincial right and obligation of water entitlement. Further it plans to establish the framework of a water entitlement system in parallel with complete application of a water assessment system and a water access licence system in construction projects.

This will include full engagement of the water users into the water management process with the goal of optimising the integrated water resources management system combining river basins management and administrative regions management. In the meantime, launching in over 100 cities, the pilot water saving projects are up and running, which is supposed to accumulate rich experiences for large-scale practice. Water use in industry and agriculture sectors will become more efficient through strengthening water saving management and upgrading technology.

By 2010, concrete progress shall be made on building a water saving society especially on efficiency and effectiveness of water utilization; per capita water use reduces above 20% over the 2005 level; rate of irrigation water utilization raises from 0.45 to around 0.50; water consumption per unit of industrial added value remains less than 115m³, over 30% lower than the level of 2005; and the leakage rate of municipal pipe network remains lower than 15%; domestic water saving devices shall be largely used among urban residents; utilization rate of recycled water is equivalent 20% of the sewage treatment volume and the numbers of water shortage cities drops to the percentage from 5% to 10% in southern China coastal cities.

(3) Accelerating the system building of flood control and disaster relief; ensuring the flood control safety;

China has systemic flood control plans for key rivers and lakes and invests enormously on establishing flood control systems. In 1998, over 160 billion input was directed to the Yangtze River. This was the very first time in China to implement the 'return farmland to lake' approach and reserve outlets for floodwater in large scale versus the opposite approach. Contributing to the initiative, 3578km dams and dikes and 1582 unqualified reservoirs have been reinforced which recovered 2900km water surface and 13billion m³ flood storage capacity. The next step is to progressively establish and optimise the social security system of flood control and disaster relief, to adhere to the flood control plan, continually making ways for floodwater management together with project construction and other non-project measures.

(4) Attaching great importance to food safety and optimising agricultural support and protection systems;

To this end, China is now accelerating the construction of irrigation infrastructure to improve production conditions. From 1998-2004, 17.2 billion RMB has been invested on water saving and auxiliary facilities involving water users' participation in irrigation management. In the past ten years, it is estimated that over 30 billion m³

water have been saved each year, and comprehensive capacity of agricultural production increased above 40 billion kilograms. By 2010, 10 million hectares of irrigation acreage will be added by water saving engineering and the rate of irrigation water utilization is targeted to rise from 0.45 to 0.50.

(5) Reinforcing the construction of water auxiliary projects and improving the adjustment capacity spatially and temporally / on various occasions and locations;

Relieving the pressures of water shortage and eco-environment degradation in north of China, the central government is processing the South-to-North Transfer Project, which will greatly ease the water shortage problem in Beijing, Tianjing and the regions of North China and North West China. Meanwhile, The Regional Water Allocation Program is accelerating implementation and many new projects on water allocation are or will be constructed soon with the purpose of resolving unequal water allocation and coordinating regional development. Each year, 40 m³ billion water will be added to meet the demand of socio-economy development by 2010.

(6) Strengthening prevention and control of water pollution and reverting the trend of environmental degradation;

Written in the 11th Five-Year Plan, the State Council determines to reduce the amount of major pollutants by 10%. From 1998, China has input 110 billion RMB national debt fund for water pollution control while structuring its water zoning system. By 2010, China plans to increase the treatment rate of municipal sewage from 45% to 60% or more, the up-to-standard rates of water quality to over 65% in water function zones and 95% at water sources for municipal water supply. National COD emissions shall decline to 10% of the 2005 level as well as to control the amount of TN and TP.

(7) Paying close attention to eco-environmental issues and rehabilitating the ecosystem;

Largely applying environmental impact assessment and water resource assessment in project construction, from the source, water resources conditions and carriage capacity could be incorporated into city and industry development plans. Approaches and measures have been applied to recharge and rehabilitate destroyed ecosystems and Zhalong wetland recharging project sets a good example. Yellow River contributing to the gradually integrated water sources management achieves the target of not drying up for 8 continual years. And for the same reason, the ecosystems at the

catchment of Heihe River and Tarim River recover to different degrees.

(8) Optimising the water resources management system and mechanism.

Implementing the new laws as Water Law, Flood Control Law, Law of Prevention and Control of Water Pollution and Law on Water and Soil Conservation as well as other relevant administrative rules, technical policy and standards, China has established the integrated water resources management system combining river basins management and administrative regions management; accomplishing the transfer to integrated management of urban and rural water resources in many cities thanks to promoting the reform on municipal water management system; formulating a suite of policies on water pricing reform, municipal water supply and privatisation of sewage treatment while encouraging the input from the private sectors to water market establishment and operation.

Key water management projects contain The Three River (Huai River, Haihe River and Songhua River) Project, Three Lake (Tai Lake, Caohu Lake and Dianchi Lake) Project, Three Gorges Project and Water Pollution Prevention and Control Project at the upper reaches of Yangtze River, mid and lower reaches of Yellow River, Songhua River, water sources and catchment of South-to-North Water Transfer Project, etc.

6. Conclusion

The Chinese Government appreciates the importance of water environment management, integrated river basin management and efficient coordination among sectors. The Chinese Government has been engaging and cooperating on water issues with international, bilateral and multilateral organizations including the World Bank, Asia Development Bank, Global Environment Facility, World Wildlife Fund, European Union and British, Japanese and Australian governments. The Australia-China Environment Development Program serves as an appropriate platform to introduce to China precious Australian experience on water management. It offers ‘parallels drawn with the issues facing China’ and aims to achieve sustainable development of the economy and water management in China.

Appendix 1:

Ministries and Relevant Organisations

Main Responsibilities



