

PROJECT INFORMATION DOCUMENT (PID) APPRAISAL STAGE

Report No.: PIDA2888

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| Project Name | China-Qinghai Xining Water Environment Management Project (P133116) |
| Region | EAST ASIA AND PACIFIC |
| Country | China |
| Sector(s) | Wastewater Treatment and Disposal (60%), Sanitation (30%), Agricultural extension and research (5%), Water supply (5%) |
| Theme(s) | Water resource management (60%), City-wide Infrastructure and Service Delivery (40%) |
| Lending Instrument | Investment Project Financing |
| Project ID | P133116 |
| Borrower(s) | PEOPLE'S REPUBLIC OF CHINA |
| Implementing Agency | Xining Municipal Government |
| Environmental Category | A-Full Assessment |
| Date PID Prepared/Updated | 11-Feb-2014 |
| Date PID Approved/Disclosed | 16-Feb-2014 |
| Estimated Date of Appraisal Completion | 14-Mar-2014 |
| Estimated Date of Board Approval | 16-Oct-2014 |
| Decision | The negotiation package will be finalized in March 2014 and then go for negotiation in May 2014. |

I. Project Context

Country Context

With 20 percent of the world's population but only 7 percent of its freshwater, water scarcity is a major problem for sustainable urban development in China. Although China has the fifth largest endowment of fresh water resources, its per capita resources of 2,100 m³ are about one third of the global average of over 6,000 m³ per capita annually. There are strong spatial differences as 81 percent of China's water resources are concentrated to the south of the Yangtze River, where 60 percent of the population lives; and only 19 percent is therefore available to the 40 percent of the population in the north, where most of the major grain production is located, and in the west. Per capita water availability in the north is only about 900 m³ per year. About two thirds of China's cities – 420 cities – are water short, of which 110 face severe shortages, with a total deficit of 10.5 billion m³.

The main driver of water demand is increasing consumption by a growing population, by agriculture, and by expanding water-intensive industries in the water-short north and west, although

falling precipitation, possibly due to climate change, is probably also contributing to water shortages in some regions. Under current policies, demand increases are likely to continue and China's total water demand is projected to rise by 61 percent over 2005 levels by 2030 (2030 Water Resources Group 2009). Urban municipal and domestic use is expected to rise from about 12 percent of total demand in 2005 to 16 percent. However, the total amount of water use in China will be limited to 670 billion m³ by 2020 and 700 m³ by 2030, respectively according to the National Water Resource Master Plan approved by State Council in December 2010.

In addition the problems of water scarcity problems are exacerbated by the growing pollution of rivers. By some measures, water quality in China's major river basins actually show small but steady improvement since 2001 thanks to investments in end-of-pipe controls for industry, although water quality continues to be far worse in the northern basins. Forty percent of Chinese rivers were seriously polluted and unfit for drinking water in 2010, and in 2011 the ground water quality in more than half of 200 cities surveyed were "bad" (40.3 percent) or "extremely bad" (14.7 percent). Groundwater pollution is especially worrying because it takes decades for polluted aquifers to recover (see World Bank 2012 [groundwater]). Also, there are now concerns in major urban centers over new kinds of pollutants such as medicine residues, micropollutants, and odor and taste pollutants (World Bank 2012 [groundwater]).

Sectoral and institutional Context

Xining Municipality is the provincial capital of Qinghai Province. The municipality lies in the eastern part of the province and has a population of 2.23 million people and total area of 7,649 km². Among the 2.23 million people, about 1.46 million (65%) live in urban areas. The municipal GDP has increased by 15% over the past year, and reached RMB 77.1 billion in 2011. The urban per capita income has reached RMB 15,842 in 2011, an increase of 12.5% compared to 2010. The rural per capita income is only RMB 6,634, but a 20.2% increase from 2010. The Xining GDP per capita in 2012 was RMB 38,534, which is about the average of the GDP per capita in urban areas in China, but one of the lowest compared to provincial capitals.

Located in the Huangshui River Basin, and at the confluence of the Nanchuan and Beichuan Rivers, Xining is a city with a serious water resource shortage set of issues. The average annual rainfall in this area is about 360 mm and the average elevation of the municipality is 2,260 m. The available water resources per capita is less than 600 m³ per year; which places Xining in the category of areas with severe water shortages based on international standards (500-1000 m³ per year). The estimated safe limit for water use in Xining Municipality is 479 million m³ per year, which would not cause any depletion or pollution of groundwater. However, the annual water consumption of Xining municipality is estimated to be 675 million m³ in 2012, an over withdrawal of 196 million m³. Based on data provided by the Provincial Hydrology Bureau and a water balance analysis, the water shortage in Xining is getting worse, and is projected to be 550 million m³ by 2020, and 615 million m³ by 2030.

The water environment conditions are declining, mostly due to increasing pollution from municipal water discharges, but also from increased industrial, and rural discharges. There are four major rivers in and around Xining Municipality, these are the: Huangshui, Nanchuan, Beichuan, and Shatangchuan Rivers. These are polluted to different extents by direct wastewater discharge, low carrying capacity of the river water, gully inflow with sediments rich in nutrients, and solid waste disposal into the rivers from local industrial and domestic sources. The water quality in the

Beichuan and Huangshui Rivers in and around the Xining urban area are Classes IV and V, respectively indicating that the rivers are highly polluted (refer to Annex 2 for the listings of classifications). In Huangshui River, the content of NH₃-N is over 1.5mg/l in the sections of Xiaoxian Bridge and Chaoyang Bridge, which is the legal limit for a Class IV river.

The provincial officials have for some time now recognized the problems and multitude of costs (financial, environmental, etc.) associated with the rapidly deteriorating water quality in and around Xining Municipality. If left unchecked, the water quality and the quality of life in and around the river system environment would continue to deteriorate leading to an overall increased dissatisfaction from the local populace and continually escalating associated costs of the inaction. Xining generates significant revenues and local employment as a result of its attraction to tourists, particularly in the summer months. Again, the provincial leadership has recognized this, and is responding to the situation by investing very heavily in water pollution control measures.

In order to address the dual challenges of water shortage and increasing water pollution, the Xining municipal government plans to adopt an integrated water resources management strategy. The strategy includes interventions which promote water-savings and pollution reduction at source, increase wastewater collection, increase wastewater treatment plants' outflow water quality, and increasingly utilize the treated water as an alternative water source for non-portable uses. The proposed project will contribute to the implementation of this strategy and the municipal 12th Five-Year Plan (FYP) by focusing on water pollution reduction from municipal sources and increased reuse of wastewater in the Huangshui River basin.

The main government agencies involved in water resource and environmental management in Xining Municipality are: Xining Water Resources Bureau, Xining Section of the Integrated Huangshui River Basin Management Committee, and Xining Environmental Protection Bureau. These government agencies contribute to integrated water resource and environmental management in the areas of coordination, information sharing policy making, planning, regulation, management, and operations based on their respective responsibilities assigned by the Municipal Government.

Based on the Provincial and Municipal 12th FYP, the Xining Municipality Urban Development Master Plan (2030), and the Integrated Management Plan of Huangshui River Basin (2011–2015), the Xining Municipal Government is strengthening its efforts to protect water resources, improve water use efficiency, enhance environmental adaptive capacity of the rivers, and limit pollutants discharged into rivers. To improve the overall water environment, the local government has been working on improved industrial water pollution management through the adoption and enforcement of more stringent pre-treatment standards, completing and upgrading domestic sewerage & storm water management, and limiting the potential silt and suspended solids washed down by storms from its large number of gullies, as well as the urban land surfaces, streets, and highways. The goal of the municipal government under the Urban Development Plan is to raise the quality of the rivers by 2030 in and around Xining from Classes IV and V to Classes III and IV.

This Project will complement large investments by Xining Municipality in building wastewater treatment plants. Currently there are 6 WWTPs in operation within the municipality with an aggregate design capacity of 260,000 m³/day. Another two WWTPs are under construction with a combined capacity of 60,000 m³/day and another 2 WWTPs are planned with a total capacity of 105,000 m³/day. All 9 WWTPs (WWTP No. 2 will be taken out of service when WWTP No. 6 comes on line) WWTPs will provide 382,500 m³/day of treatment and will achieve Class 1A or 1B

treatment standard levels, in line with the Urban Development Plan to raise the water quality levels of the rivers to Classes III and IV. The total investments in these 9 WWTPs will be in the range of US\$ 500 million, showing the commitment of provincial and municipal authorities approach to improving water quality and addressing water scarcity issues in the municipality. To put this into a bit of perspective, currently approximately 61% of the urban wastewater is collected and treated, in the next 5 years, this will move up to close to 100%.

The Project will also complement the ongoing Bank financed Xining Flood and Watershed Management Project (XFWMP), which aims at improving the protection of property and safety of people from flood events and bring about sustainable utilization of land and water resources in Xining Municipality. The project is designed: (a) to increase flood protection and enhanced flood management; (b) improve wastewater collection rates; (c) improve soil and water conservation in catchment areas; and (d) strengthen institutions and build capacity of Xining Municipality to manage and protect water resources through pollution control. The XFWMP is making very good progress in helping the municipality to reach a 1 in 100 years recurrence flood protection standard, the municipal government wants the World Bank further support it to better conserve its scarce water resources and protect the urban environment. The XFWMP became effective in November 2009 and is scheduled to be completed in December 2014.

II. Proposed Development Objectives

The Project Development Objective is to reduce water pollution and pilot the exploration of potential sustainable reuse of wastewater in Xining Municipality.

III. Project Description

Component Name

Component A: Construction of stormwater and wastewater collection systems.

Comments (optional)

This component will reduce water pollution by construction of 128 km of wastewater and rain water collection pipes along rivers and urban wastewater distribution networks.

Component Name

Component B: Comprehensive stormwater management and river-bank environmental restoration.

Comments (optional)

This component will apply Low-Impact Development strategies, greening and landscaping, to increase natural infiltration and reduce peak runoff and non-point source of pollution of the Beichuan River

Component Name

Component C: Integrated gully and canal improvement.

Comments (optional)

This component will as well reduce BOD, COD, and TSS flowing in to river system, improving the environment along canals and erosion gullies.

Component Name

Component D: Wastewater reuse.

Comments (optional)

Introduce the reuse of treated wastewater by construction of treated wastewater transfer station and pipes, as well as technical assistance in areas of reclaimed wastewater policies & technologies

Component Name

Component E: Project management and capacity building.

Comments (optional)

Improve Xining's capacity in integrated water environment management through: (i) project management activities; (ii) consulting services; and (iii) workshops.

IV. Financing (in USD Million)

| | | | |
|---|--------|-----------------------|---------------|
| Total Project Cost: | 250.70 | Total Bank Financing: | 150.00 |
| Financing Gap: | 0.00 | | |
| For Loans/Credits/Others | | | Amount |
| Borrower | | | 100.70 |
| International Bank for Reconstruction and Development | | | 150.00 |
| Total | | | 250.70 |

V. Implementation**A. Institutional and Implementation Arrangements**

Xining Municipality Project Leading Group (PLG), chaired by the Major of Xining Municipal Government and composed of senior officials from relevant government agencies, has been established to provide strategic leadership and policy guidance for the project. A project management office (PMO) set up under the Xining Huangshui River Integrated Management Committee is operational to undertake project management and coordination. Also two Project Implementation Units (PIUs) based in two publicly owned companies: Xining Municipal Drainage Company and Xining Municipal Huangshui Investment Management Co., Ltd. have also be established under the leadership of the PMO. Many key officials of the PLG and PMO are coming from the ongoing Xining Flood and Watershed Management Project.

In addition, an official agreement between the PIUs and Xining Municipal Government would be signed to stipulate the duties and responsibilities of the PIUs.

Project Expert Panel (PEP). An Expert Panel is to be set up to support the PMO in quality control and project management. The PEP would be composed of technical experts, environmental expert, financial management expert, forestry management expert, procurement expert, etc. Main functions of the PEP include: design review, bidding documents review, preparation of project work programs and reports, oversight over construction supervision engineers' performance, and other pertinent technical and management assistances to the PMO and PIUs.

B. Results Monitoring and Evaluation

A result-based monitoring and evaluation system (M&E) will be developed and established under the project, and will be implemented by Xining Municipal Project Management Office. The M&E system includes a Management Information System (MIS), and a reporting system. The project MIS will be developed by the PMO and installed in the PMO and all PIUs for physical and financial progress reporting.

The MIS will be consolidated at the provincial level and provided to the Bank in semi-annual periodic reports. The system will include a database for overall project outcome or PDO indicators and intermediate outcome indicators for each component. The PMO will provide progress reports to the Bank (using the MIS) Once a year (by February 15 and August 15). The M&E report will include the agreed key outcome and output indicators, in coordination with financial and physical progress reporting. Project implementation reports include the semi-annual project progress report, the annual overall project M&E report, the MTR report and the ICR report. Special technical M&E reports include the environmental monitoring and evaluation report, the social evaluation report, and the resettlement monitoring and evaluation report. Annex 3 shows the detailed project implementation arrangement.

C. Sustainability

To enhance sustainability of the project investments and beyond, the following measures will be undertaken as part of the project design:

- a. Technical & economic aspects: The design of each component and major sub-projects will be optimized to ensure technical robustness and cost effectiveness (life-cycle cost) . Similarly, interventions with financial revenue such as the treated water reclamation operation should be designed in such way to be able to meet the water quality and supply reliability requirements of different users at a least total cost. ;
- b. Institutional arrangements: One of the two major implementation and O&M entity, Huangshui Investment Company is not a technical organization while the project facilities span cross different sectors. Therefore, this company plans to set up a technically competent team to manage the project facilities, and a cross-sectoral collaboration mechanism be set up to ensure proper functions of those facilities such as Liujia Gully and Chaoyang Canal. Further, participatory management arrangements will be made for dealing with solid and construction waste disposal in project areas;
- c. Financial sustainability: the water reclamation operations under the project are expected to be managed by the respective WWTPs. To ensure the water reclamation operation is financially viable, Xining municipal government should ensure that the reclaimed wastewater tariff is able to cover the O&M costs and required asset depreciation, etc., and that required water supply agreements are signed between WWTPs and user entities, and the revenue collected goes to the respective WWTPs.

VI. Safeguard Policies (including public consultation)

| Safeguard Policies Triggered by the Project | Yes | No |
|--|------------|-----------|
| Environmental Assessment OP/BP 4.01 | x | |
| Natural Habitats OP/BP 4.04 | | x |
| Forests OP/BP 4.36 | | x |
| Pest Management OP 4.09 | x | |
| Physical Cultural Resources OP/BP 4.11 | | x |
| Indigenous Peoples OP/BP 4.10 | x | |
| Involuntary Resettlement OP/BP 4.12 | x | |
| Safety of Dams OP/BP 4.37 | | x |
| Projects on International Waterways OP/BP 7.50 | | x |
| Projects in Disputed Areas OP/BP 7.60 | | x |

Comments (optional)

VII. Contact point

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