1. Country and Sector Background

Ningbo Municipality is located approximately 150 kms south of Shanghai on the edge of Hangzhou Bay. Ningbo is the primary deep-water port for the Yangtze Delta region, and has a thriving industrial sector focused on the export of manufactured goods. Although part of Zhejiang Province, the Municipality is a separate economic planning unit and is not administratively controlled by the provincial government. The primary city in the Municipality is “Ningbo City” which extends over six urban districts and covers one quarter of the Municipality. The Municipality also includes three rural counties, and two city-level counties, one of which is called “Cixi City.” The Project finances investments in Ningbo City and Cixi City.

A key element in Ningbo’s economic success has been the development of a vibrant private sector. Ningbo’s entrepreneurial trading heritage, and the relative absence of large state-owned enterprises, has given local businesses an opportunity to take advantage of their favorable location on international shipping lanes and close proximity to the economically vibrant Yangtze Delta. The Municipal Government’s policy is to foster private sector investment, promote education and science, and provide high-quality infrastructure for the region. Investments in water infrastructure, however, have lagged behind rapid economic development.

Ningbo is addressing water issues through a regional approach, with establishment of a multi-sector “Water and Environment Leading Group,” chaired by the Executive Municipal Vice Mayor and headed by the Municipal Development Planning Commission. The Leading Group is facilitating investments and management systems which cut across administrative boundaries to resolve Ningbo’s serious water and wastewater problems, including those in Ningbo and Cixi cities.
Ningbo City is facing a two dimensional water crisis: frequent shortages and poor water quality. Water companies draw water primarily from highly polluted local surface water sources and use outdated treatment technology, rendering the piped water of questionable quality. Water supply deficiencies pose a drag on economic growth and endanger public health. Outside the core urban area, there are numerous small water companies providing service to towns which are rapidly merging into one large urban conglomeration. The Ningbo Water Supply Company (NWSC) is a well established company serving the core urban area, but there is scope for improving its operational and financial performance. The Ningbo Municipal Government has started implementation of an ambitious program to develop high quality water supplies, transfer the water to Ningbo City, and upgrade water treatment and distribution infrastructure. The NWSC service area will be expanded to include all 2.5 million residents of Ningbo City, incorporating the surrounding town water supply systems, and thereby obtaining economies of scale and professional management.

The areas surrounding Ningbo City are experiencing rapid population and economic growth due to their relatively low cost of business and abundance of under-developed land. Cixi City, located north of Ningbo City on the shore of Hangzhou Bay has a population of around one million people and a dynamic economy. Currently, only 10% of the wastewater in Cixi is treated, and the lack of an adequate wastewater management system is inhibiting potential investors, increasing pollution to Hangzhou Bay, and creating public health concerns. Cixi City plans to provide coverage to all urban areas and industries by 2010. A new company, the Cixi Municipal Sewage Company (CMSC) was established in mid-2004 to be responsible for all wastewater collection and treatment facilities. The CMSC management is facing the dual challenge of starting up a new company and managing a large capital works program.

2. Objectives

The Project development objective is to facilitate the expansion of water and wastewater services in Ningbo City and Cixi City in an economically efficient and environmentally sustainable manner, and thereby protect public health, improve the environment, and sustain the area’s rapid economic growth. The key indicators are: i) percent increase in water service reliability in Ningbo City; and ii) percent increase in municipal and industrial wastewater treated in Cixi City.

The proposed Ningbo Water and Environment Project will address two key themes from the China Country Assistance Strategy: i) accelerating the transition to a market economy through improving public sector management and delivery of services; and ii) facilitating an environmentally sustainable development process through better management of water resources. Two strategic issues for the Bank’s urban development program in China will be highlighted in the Project design:

- A focus on **urban water planning and resource management** where problems are reaching a crisis level in many cities, including Ningbo. The Project will be the first major Bank-financed urban water supply operation since the mid-1990s.

- A concentration on **regional integration** by providing water and wastewater infrastructure, and management systems that transcend administrative boundaries.
3. Rationale for Bank Involvement

The World Bank has been a close partner in Ningbo’s water sector over the past decade. The Zhejiang Mulit-Cities Development Project (FY93) financed critical water supply infrastructure for Ningbo City, and the Zhejiang Urban Environment Project (FY03) is financing a significant portion of Ningbo City’s wastewater program. The Ningbo Water and Environment Project (NWEP) will finance additional investments for water supply in Ningbo City, and will support the first comprehensive wastewater management system outside of Ningbo City in neighboring Cixi City.

With its strong economy, Ningbo has many financing options. The decision to seek World Bank financing is motivated primarily by the desire of municipal authorities to employ international methodologies, standards, and techniques to improve water and wastewater planning, construction, and service. In addition to the physical infrastructure, NWEP will finance technical assistance activities in water supply strategic planning, utility price and regulatory reforms, and operational improvements for both NWSC and CMSC.

4. Description

The project has the following three components:

Component 1: Ningbo Water Supply (US$157.9 million; IBRD-US$67.3 million): The component includes: i) raw water supply line consisting of an intake tower in Jiakou reservoir and a 9.6 km tunnel; ii) 500,000 m³/day Maojiaping water treatment plant; and iii) treated water transmission pipes, including a new 47 km ring main around Ningbo City and 29 kms of transmission pipes from Maojiaping water treatment plant to the new ring main. The component is a significant part of Ningbo’s overall plan to service the entire City, improve water quality by accessing new water sources and upgrade water treatment, and enhance distribution system reliability and flexibility. The ring main will be the first of its kind in China and will be one of the major technical innovations under the Project.

Component 2: Cixi Wastewater (US$128.4 million; IBRD-US$57.9 million): The component includes: i) two wastewater treatment plants, one located in the north of Cixi (100,000 m³/day) and one in the east (50,000 m³/d); and ii) associated collection system mains and link sewers (230 km of pipe and 58 pump stations). The component will provide comprehensive wastewater services for all urban areas in Cixi City, and help protect Hangzhou Bay.

Component 3: Institutional Development (US$4.5 million; IBRD-US$4.1 million): Technical assistance will be provided to improve water planning, utility price and service regulation, and to enhance the NWSC and CMSC operational and business management capacities. Design review and construction management technical assistance will also be provided to ensure smooth implementation of the infrastructure works.
5. Financing

Source: (US$m.)
BORROWER 130.0
INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT 161.5
Total 291.5

6. Implementation

The Ningbo Municipal Development Planning Commission (MDPC) is the main executing agency for the project. The Project Management Office (PMO) is located under MRDC and is fully mobilized with sufficient and adequately qualified staff. The PMO is the Bank’s primary liaison in the implementation of the project, and takes responsibility for project monitoring and reporting. There will be one special account located in and managed by the Ningbo Municipal Finance Bureau. The PMO will authorize reimbursements to the two implementing entities, NWSC and CMSC.

Policy direction for the project will be provided by the Water and Environment Leading Group. The Leading Group is headed by an Executive Vice Mayor of the Municipality and is composed of Directors from the MDPC, Environmental Protection Bureau, Water Resources Bureau, Construction Bureau, and Finance Bureau. The Leading Group’s mandate is to provide policy direction and planning support for integrated water and environmental management throughout the Municipality.

NWSC is the implementing organization for Component 1. The company was legally established in 1982, but can trace its operating history back to 1926 with the City’s original water supply. The NWSC has created a Project Implementation Unit (PMU) under the direction of an Assistant Chief Engineer. The PMU is staffed with qualified procurement, financial management, environmental, and resettlement staff. NWSC is experienced in managing large capital investment projects and is also familiar with Bank procedures as the company received financing under the Zhejiang Multi-Cities Development Project (FY93).

CMSC is the implementing organization for Component 2. The company was legally established only in mid-2004. Staff and existing assets were transferred from the Cixi Drainage Department to the CMSC shortly afterwards. Since the NWEP represents essentially all of CMSC’s capital investment program, there is no distinct project management unit, rather the project is under the direct supervision of the CMSC General Manager, with the relevant departments providing procurement, financial management, environmental, and resettlement support. The CMSC has limited experience in managing large capital projects and is not familiar with Bank procedures. These constraints will be addressed through project financed technical assistance programs for project and company management.
Component 3 is aimed at a variety of government agencies and the two companies, NWSC and CMSC. The PMO will coordinate implementation of the component, but most activity will take place at the company or agency level. Government agencies involved in the component include the Cixi and Ningbo Price Bureaus, Ningbo State Asset Commission, Ningbo and Cixi construction commission, and the Water and Environment Leading Group.

7. Sustainability

Ningbo Municipality is strongly committed to the success of the project as the future economic development of Ningbo City and Cixi City depend on successful project implementation. The degree of importance attached to the project is reflected in the active participation of high-level government officials in the Leading Group. The PMO has been established as a permanent government agency, and thus is able to attract qualified individuals who are offered job security and promotion potential. NWSC and CMSC have invested significant amounts of their own funds in project prepared and have prepared high quality feasibility studies, environmental assessments, and resettlement action plans.

Financial sustainability of the companies is the key to project success. Ningbo City and Cixi City have demonstrated their commitment to ensuring adequate revenues for the companies by significantly increasing tariffs in 2004. Legal covenants for increasing tariffs in 2006 and 2008 have also been agreed upon by the Municipal Government. Both NWSC and CMSC have well qualified technical staff who can ensure efficient operation of the facilities.

8. Lessons Learned from Past Operations in the Country/Sector

Coastal cities in China, and particularly Ningbo City, are growing at a rapid pace which makes planning for utility services such as water and wastewater very challenging. Past experience in China has shown that demand is typically over-estimated, mainly due to lack of sophisticated planning techniques and inadequate consideration of price elasticity of demand. Original water demand estimates prepared by NWSC domestic consultants were not realistic. NWSC changed domestic consultants and prepared revised and reduced estimates, which were verified by independent international consultants. The short-term forecasts up to 2010 are acceptable to the Bank for project planning purposes. Long-term demand forecasts up to 2040, however, should need to be adjusted overtime to reflect changing conditions and modify capital investment programs accordingly. The Project will therefore assist Ningbo City with it’s long-term water supply planning, and prepare the basis for the next five year capital investment program from 2010-2015.

Both Cixi and Ningbo City are embarking on simultaneous large capital investment programs in water supply and wastewater. Water users receive a consolidated water and wastewater bill (although the two services are separated in the bill), and thus will experience a significant increase in overall water costs. Tariff increases in Ningbo, as throughout China, generally take considerable time to process, and lack of timely approval can increase company financial risk. The Project design takes this into account by requiring tariff increases in 2006 and 2008, and including a technical assistance component to upgrade the analytical tools and procedures used in tariff adjustments.
Advanced technologies for water and wastewater treatment are often used in China without considering the financial or operational implications. Advanced water treatment technologies were originally proposed for the Maojiaoping water treatment plant and the Cixi wastewater treatment plant (WWTP), but were subsequently revised to simply operations and reduce capital costs.

9. Safeguard Policies (including public consultation)

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<td>Projects on International Waterways (OP/BP/GP 7.50)</td>
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10. List of Factual Technical Documents


* By supporting the proposed project, the Bank does not intend to prejudice the final determination of the parties' claims on the disputed areas


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