



1. Project Data

Project ID P096926	Project Name CN-Jiangsu Water and Wastewater Project	
Country China	Practice Area(Lead) Water	
L/C/TF Number(s) IBRD-76840	Closing Date (Original) 31-Dec-2014	Total Project Cost (USD) 431,800,000.00
Bank Approval Date 02-Jun-2009	Closing Date (Actual) 31-Dec-2015	
	IBRD/IDA (USD)	Grants (USD)
Original Commitment	130,000,000.00	0.00
Revised Commitment	129,203,572.97	0.00
Actual	129,203,572.97	0.00

Prepared by Ranga Rajan Krishnamani	Reviewed by George T. K. Pitman	ICR Review Coordinator Christopher David Nelson	Group IEGSD (Unit 4)
--	---	---	--------------------------------

2. Project Objectives and Components

a. Objectives

The Project Development Objective (PDO) as stated in the Loan Agreement (LA, page 4) and in the Project Appraisal document (PAD, page 7) was:

"To improve the efficiency and effectiveness of water and wastewater services and reduce pollution discharges into local rivers in Jiangsu Province."

The PAD further states that the PDO was to be achieved through municipal water expansion to towns and the expansion of wastewater collection and treatment in project cities or towns.



b. Were the project objectives/key associated outcome targets revised during implementation?

No

c. Will a split evaluation be undertaken?

d. Components

The activities aimed at improving the delivery of water and wastewater systems in 78 towns and villages in three municipalities (Nanjiang, Yancheng and Zhenjiang) and two country level cities (Danyang and Taixing) in Jiangsu province. There were three components.

1. Water Supply Expansion. *Appraisal estimate US\$152.10 million. Actual cost US\$165.38 million.* This component aimed at enhancing the capacity of quality water supply systems. Activities included: (i) enhancing the capacity of quality water supply systems in 24 towns in Danyang through expanding the Water Treatment Plant (WTP); (ii) enhancing the capacity of quality water supply systems in 22 towns in Yancheng through rehabilitating the water distribution network and activities aimed at reducing Non-Revenue Water (NRW) losses in two towns through network expansion and implementing a participatory planning pilot in one town (NRW losses refer to both commercial losses and physical water losses due to outdated water distribution networks); (iii) enhancing the capacity of quality water supply systems through water transmission pipelines and activities aimed at reducing NRW losses in 21 towns in Zhenjiang. At the time of restructuring in 2012 the following changes were made to activities in this component: Some activities (Yangcheng water supply network) were reduced in scope and funds allocated for this activity were reallocated for financing a new activity (Taixing Town Water Supply Network).

2. Wastewater Management. *Appraisal estimate US\$199.30 million. Actual cost at completion US\$207.40 million.* Activities included: expanding (i) wastewater collection system in the Schicheng urban district of Danyang city through wastewater interceptors and secondary collection networks; (ii) wastewater collection in Qiaobei, Tiebei and Chengbei areas of Nanjing city through a Waste Water Treatment Plant (WWTP), new pumping stations, wastewater interceptors and secondary collection networks; (iii) wastewater collection in Huangqiao town through wastewater interceptors, secondary collection networks and discharge outfall (an outfall is the discharge point of a waste stream into a body of water): and, (iii) wastewater collection and treatment in Taixing-Huangqiao town through a WWTP, wastewater interceptors and secondary collection networks. At the time of restructuring in 2012, the following changes were made to activities in this component: Some activities such as investments for the wastewater collection system in Danyang and institutional capacity building for the Taixing Huangqiao waste water treatment component were dropped. The activity associated with waste water treatment treatment plant in Taixing was dropped, as the facility was built under a Build-Operator Transfer (BOT) scheme. Funds allocated to these activities were reallocated for financing a new activity (Nanjing Longtan Water Treatment Plant).

3. Institutional Strengthening and Capacity Building. *Appraisal estimate US\$2.50 million. Actual cost at completion US\$1.69 million.* There were two sub-components:

1. Activities at the Provincial level. This included (i) providing technical assistance for project management, financing a study on the existing wastewater and water supply tariff



system, piloting strategies for reducing NRW at the township level; and (ii) training and study tours on various aspects of water supply and wastewater services.

2. **Company Capacity Building.** Activities included strengthening the Taixing Huangqiao Wastewater Treatment Company's institutional capacity to manage and implement project activities, through technical assistance and training.

e. **Comments on Project Cost, Financing, Borrower Contribution, and Dates**

Project cost. The appraisal estimate (including baseline cost, costs associated with physical and price contingencies, interest during implementation and front-end IBRD fee) was US\$431.80 million. Costs of component one and two activities were about nine and four percent above the appraisal estimates, and cost of component three activities were about 33% lower than the appraisal estimate. Some component one and two activities were reduced in scope and costs allocated for these activities were reallocated for financing additional project activities. Actual cost at closure (there were no physical or price contingencies during implementation) was about 10% lower than the appraisal estimate at US\$374.47 million.

Project Financing. The project was financed by an IBRD loan of US\$130.00 million of which US\$129.20 million was disbursed. There was parallel financing for complementary technical assistance activities aimed at community participation in the water sector from the Regional Water Sector Governance Program, financed by the United States Agency for International Development (USAID).

Borrower Contribution. Appraisal estimate US\$301.80 million. Their contribution at closure was about 81% of the appraisal estimate or US\$245.60 million.

Dates. The project was restructured three times. Changes were made to the scope of the project through the first restructuring on November 2013, after the Mid-Term Review (MTR) on November 2012 when some project activities were cancelled or reduced in scope and Loan funds to these components was reallocated. The target values of several interim outcome indicators were marginally increased in view of the progress made towards achieving the original targets and the project closing date was extended by a year to enable completion new activities. The second restructuring on March 2015, increased the disbursement percentage of the Nanjiang Longton Water Treatment Plant (WTP) from 50% to 80% to allow full utilization of the loan.

The project closed on 12/31/2015 one year later than originally planned.

3. Relevance of Objectives & Design

a. **Relevance of Objectives**

The PDOs were highly relevant to the Jiangsu Province in eastern China. Pollution of surface water in the years before appraisal had created a scarcity of quality water supply for residential users in Southern Jiangsu. Also, in 2007 a severe algal bloom in Lake Tai, an important water source for Jiangsu's several large cities, had caused the emergency shutdown of the Wuxi City water supply system and this in conjunction with similar problems in smaller rivers and canals, had resulted in frequent disruptions to water



supply in towns and peri-urban areas. This had led many towns and peri-urban areas to revert to groundwater sources, thereby contributing to over-extraction, deterioration of groundwater quality and saltwater intrusion in coastal areas of the province. Alongside this, many of the oldest and most heavily urbanized areas in the province lacked wastewater service facilities. Before appraisal in 2007 the province had issued legislation mandating wastewater treatment to meet Class A discharge standards in view of the importance attached by the province to water quality in the Lake Tai and Changjiang River areas. (The Task Team Leader clarified that prior to the legislation, the Urban Waste Water Treatment Plant (WWTP) effluent adhered to Class I-B standards. In order to preserve the water quality in the downstream water body in Jiangsu, the new standard required that the effluent quality comply with Class 1-A standards. This requires tertiary treatment to reduce Ammonia, odor and other pathogens). The PDOs were also highly relevant to the current phase of the Jiangsu Rural Drinking Water Initiative, which started in 2009 and was to be effective until 2018. This initiative aimed at providing better water service delivery in rural areas and townships and connecting households through network improvements.

The PDOs continue to be highly relevant to the Government's strategy. At appraisal, the project was consistent with China's 11th Five Year Plan for the 2006-2010 period. The plan highlighted the need for reforming the pricing system for water supply services for promoting conservation and efficiency. China's 12th Five Year Plan for the 2010-2015 period identified the need for addressing environmental and social imbalances through development of services and measures for reducing pollution. The PDOs continues to be relevant to the Country Partnership Strategy (CPS) with China. At appraisal, the PDO was consistent with three of the five pillars of the CPS for the 2006-2010 period: (i) Reduction in poverty and inequality through balanced urbanization and access to basic infrastructure (Pillar Two); (ii) Management of resource scarcity and environmental challenges through conserving water resources (Pillar Three); and, (iii) Improvement of public institutions through public sector reforms (Pillar Five). The Bank's current CPS for the 2013-2016 period highlighted the need for better management of environmental pollutants from wastewater. The current CPS also recognized the need for: (i) High-quality public services; (ii) Promoting an integrated approach to water and environmental management; (iii) Expanding safe water supplies to smaller cities; and (iv) Improving service delivery of water and wastewater services in urban and rural areas.

Rating

High

b. Relevance of Design

The statement of the PDO was clear. Project activities and their outputs were likely to produce the specified outcomes which were measurable. Activities such as expanding the Water Treatment Plant (WTP) and treated water transmission pipelines could be expected to increase the capacity for quality water supply in selected towns and cities. Activities such as, rehabilitating the water distribution network, improving customer's meter management and leakage detection capacities could be expected to reduce NRW losses. The activities associated with investments in wastewater asset management (such as, wastewater interceptors, secondary collection networks and new pumping stations) could be expected to increase the capacity of waste water systems, and the activities associated with discharge outfall could be expected to reduce waste water pollution discharges to local rivers. The outputs of these activities in conjunction with the



institutional strengthening and capacity-building activities both at the provincial and company level could be expected to contribute to the PDOs of improving the effectiveness and efficiency of water and wastewater services and reducing pollution discharge into local rivers in Jiangsu Province.

The project design addressed both water supply and wastewater service expansion and this could be expected to assist the province in evaluating the true cost of these programs and thereby aid in designing a tariff system that could support both programs concurrently. The design also identified the exogenous effects on the environment and incorporated measures for addressing such effects (discussed in Section 11).

Rating

Substantial

4. Achievement of Objectives (Efficacy)

Objective 1 Objective

To improve efficiency of water supply services.

Rationale

Outputs:

- The NRW losses strategy was developed by the four water supply implementation units as targeted. This strategy included improved pressure management, leakage detection capabilities, customers' meter management and asset management through agglomeration and reorganization of services. Number of project towns with NRW losses at or below the target determined in the NRW strategy increased from 18 at the baseline to 58 at project closure. This exceeded the target of 51.
- Jiangsu Province's integrated urban and rural water supply plan was completed as targeted. The plan included a staffing plan based on the size of service area, annual water sale and number of water users.
- Geographic Information System (GIS) based Network plans for Town Networks and Transmission Lines were completed as targeted.
- A "Water Tariff Institutional Reform Report" was completed and specific training was provided to the relevant staff on project financial management and audit requirements, as targeted.

Outcomes:

- Following the implementation of the NRW strategy, average NRW in the targeted four cities reduced from 27% at the baseline to 22% at project closure as per the target.



- The number of towns which met the strategic targets for NRW increased from 18 at the baseline to 58 at project closure. This exceeded the target of 51.
- NRW activities increased water availability by more than 50,000 cubic meters (equivalent to around US\$10 million in annual revenue increase at an average price of US\$0.5 per cubic meter).

Rating

High

Objective 2

Objective

To improve the effectiveness of water supply services.

Rationale

Outputs:

- Three new raw water intakes and pumping stations with a combined capacity of 705,000 cubic meters/ a day and 26.1 kilometer (km) of large diameter raw water transmission pipelines were constructed as targeted. Five new Water Treatment Plants with a combined capacity of 650,000 cubic meters/a day and 594 km of treated water transmission and distribution pipelines were constructed as targeted. 1,815 km of new and rehabilitated water distribution lines in rural towns were constructed as targeted.
- Number of project towns receiving city water supply increased from 14 at the baseline to 70 at project closure. This exceeded the target of 68 towns. Number of project towns with 24-hour water supply increased from 40 at the baseline to 84 at project closure. This exceeded both the original and revised targets of 50 and 52 respectively.
- 4,769,000 people (of which 48.5% were women) benefited from the project at closure. This was a core indicator for which no targets were specified.
- The project supported five water utilities at closure as compared to none at the baseline. This was a core indicator for which no targets were specified.

Outcomes:

- Coverage of water supply in project cities increased from 96% at the baseline to 99.8% at project closure. This exceeded the target of 98%.
- Coverage of water supply in towns increased from 78% at the baseline to 100% at project closure. This exceeded both the original and revised targets of 92% and 93% respectively.



Rating

High

Objective 3
Objective

To improve the efficiency of wastewater services.

Rationale

Outputs.

The design and layout of Waste Water Treatment Plants optimizing the use of space through retrofits and applying advanced wastewater treatment technology was completed, as targeted. The Task Team Leader clarified that due to land limitations in some old and crowded parts of the cities, utilization of the existing wastewater treatment sites was optimized to allow for retrofitting the required treatment facilities rather than acquiring more land which would have resulted in higher needs for land acquisition and resettlement and one plant was fully enclosed to allow for proper odor control.

Training was provided in treatment technology and sludge handling to the relevant staff of the agencies as targeted. A private sector contractor for sludge disposal was hired as targeted.

Outcomes.

Activities were mainly output-oriented.

Total revenues were higher than total operating expenditures in all water supply companies in each fiscal year from 2012. Except for Danyang, current water tariffs include a wastewater treatment cost and all the project cities covered Operation and Maintenance (O&M) costs. However, only Zhenjiang Water Supply Company's tariff was high enough to cover total cost, including overheads and debt service. The other water companies relied to an extent on local government financial support (subsidies) to cover total costs.

Clarifications provided by the team indicated that local governments in China are responsible for raising wastewater tariffs. The local governments do not allow the water companies to raise wastewater tariffs to meet total costs and in turn the water companies are subsidized by local governments where wastewater tariffs set by local governments do not fully cover total costs. This was in line with Chinese policy to improve service delivery while at the same time taking affordability considerations into account.

Notwithstanding the inclusion of wastewater treatment in water tariffs or their adequacy, there are no indicators to demonstrate efficiency improvements in the wastewater collection and treatment process. The mechanisms to increase efficiency of WWT are discussed in the PAD (page 57-58, paras 11-13) but no information/data is provided in the ICR.

Rating

Modest



Objective 4

Objective

To improve the effectiveness of wastewater services.

Rationale

Outputs.

99 km of new wastewater collection lines and two sewage pump stations in Teibei and Chengbei were constructed as targeted. Two Waste Water Treatment Plants (WWTPs) in Qiaboei and Tiebei were constructed as targeted. New sewage pumping stations that improved energy efficiency at partial flows and WWTP tanks were completed as targeted in the three cities in Nanjing municipality.

Coverage of wastewater service in project cities went up from 67% at the baseline to 95% at project closure. This exceeded both the original and revised targets of 80% and 83% respectively.

The expansion of the sewerage collection system and increase in WWTP capacity benefitted 533,000 people within a coverage area of 146.9 km. The project was expected to serve 781,000 people by 2020.

Outcomes.

Total annual Chemical Oxygen Demand (COD) load reduction from municipal wastewater in project catchment area increased from 18,302 tons at the baseline to 60,729 tons at project closure. This exceeded both the original and revised targets of 39,436 and 43,000 tons respectively.

100% of the wastewater in Nanjing was treated as compared to the target of 83%.

Rating

High

Objective 5

Objective

To reduce pollution discharges to local rivers in Jiangsu.

Rationale

Outputs.

Outputs described above with respect to objective four were also relevant to this objective.

Outcomes.

Pollution discharges to from Chemical Oxygen Demand (COD) was reduced by 60,729 tons a year as compared to 18,302 tons a year at the baseline. This exceeded both the original and revised targets of 39,436 tons and 43,000 tons respectively.

Key parameters of the treated effluent were tested by an external environmental monitoring agency and the two new Water Treatment Plants (WTPs) that were in operation produce effluents that met the national standards for tertiary wastewater treatment (Class 1A Pollutant discharge standard).

The raw water intake for the Nanjing-Longtan WTP - the newly created activity - was located only 1.2 km downstream from a small oil wharf owned by a company. This was not in compliance with class II raw water



regulations which required that intakes should be at least 2 km away any potential upstream water source of pollution. The existence of the wharf still imposed some risk of oil leakage to the downstream Nanjing-Longtan WTP (discussed in section 7). Additional information provided by the team indicated that while the Longtan WTP was under preparation in 2005, the "Plan for silting of Longtan WTP" developed by Nanjing Municipal Planning and Design Research Institute concluded that southern bank of Yangtze River had deep and stable water quality and was the only location available for suitable water intake, to meet the water demand of the proposed Longtan WTP. Relevance of the proposal of Longtan water intake plan was technically justified and approved by the provincial planning and water resource departments. The plan was also implemented with full regulatory compliance. Additional information provided by the team indicated that on February 12th, 2014, the Nanjing Municipal Government stated that due to the suitability of the site and cost considerations, the location of existing water intake was not to be changed. However, the site was being regularly monitored by the staff from Longtan WTP, twice a day for Grade 1 protection zone and once a week for Grade 2 protection staff through High Definition monitoring equipment and alongside this, relevant government departments have also started ongoing efforts aimed at facilitating the relocation of upstream oil wharf.

Rating
High

5. Efficiency

Economic Analysis. A Cost-Benefit Economic Analysis was conducted using the same methodology for the water supply and wastewater components of the project, which accounted for approximately 99% of the total project cost, both at appraisal and at closure. The quantitative benefits associated with improved water supply treatment and distribution services were assumed to come from: (i) Water tariff revenue and, (ii) Health benefits, such as reduction in incidence of stomach and intestinal diseases due to improved water quality. Other benefits associated with water supply component of the project, which were identified, but not factored in the economic analysis, included labor savings and increased industrial production outputs in project cities. The principal quantitative benefit associated with wastewater component of the project was assumed to come from land value increases as a result of infrastructure improvements. Other benefits associated with wastewater component of the project, which were identified but not factored in the economic analysis included: (i) ability of local governments to attract more investments and thus help the local economy; and (ii) Health benefits, such as reduction in incidence of stomach and intestinal diseases due to the upgraded wastewater treatment facilities. The average ex post Economic Internal Rate of Return (EIRR) for the city water supply components, in the four cities was 11%, as compared to the ex-ante EIRR of 12%. The ex post EIRR for the Nanjing WWTP was about 13% as compared to the ex-ante EIRR of 12%.

Operational and administrative efficiencies. There were no cost overruns and the original project components were implemented at or below costs and within the project period. The components that were added at restructuring were completed with a one-year extension of the closing date as planned and the loan



was fully utilized.

Efficiency Rating

Substantial

a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

	Rate Available?	Point value (%)	*Coverage/Scope (%)
Appraisal	✓	11.00	99.00 <input type="checkbox"/> Not Applicable
ICR Estimate	✓	12.00	99.00 <input type="checkbox"/> Not Applicable

* Refers to percent of total project cost for which ERR/FRR was calculated.

6. Outcome

Relevance of the PDO for the Jiangsu Province and to the Government strategy and the Bank strategy for China is rated as High. Relevance of Design is rated as Substantial. Efficacy of the three objectives, to improve the efficiency and effectiveness of water supply systems and to improve the effectiveness of wastewater systems, is rated as High. Efficacy of the objectives to reduce pollution discharges to local rivers in Jiangsu province is rated High. Efficacy of the objective to improve the efficiency of wastewater systems is rated modest for lack of data. Efficiency is rated as Substantial. There is a minor shortcomings in achieving one of the objectives and the overall achievement is rated as Satisfactory.

a. Outcome Rating

Satisfactory

7. Rationale for Risk to Development Outcome Rating

Financial Risk. The network expansion into growing peri-urban and rural areas can be expected to increase the customer base, water sales and net revenues and in turn can be expected to make the utilizes to become financially more self-reliant. This risk is rated as Low.

Environmental Risk. The raw water intake for the Nanjing-Longtan Water Treatment Plant (WTP) was located only 1.2 km downstream from a small-river type oil wharf. This was not in compliance with Jiangsu Province's recent regulations which require than intakes should be at least 2 km away from any potential upstream source of pollution. The Task Team Leader clarified that the feasibility study of Nanjing-Longtan showed that the wharf was not used for oil loading/unloading business, but for general use such as docking ships, furnishing supply



and maintenance of navigation equipment. The Task Team Leader also clarified that relevant government departments have started to facilitate the relocation of the upstream wharf. However, there is a short term risk that the wharf still imposes modest risk of oil leakage to the downstream Nanjing-Lontan WTP.

a. Risk to Development Outcome Rating

Modest

8. Assessment of Bank Performance

a. Quality-at-Entry

The project was prepared based on lessons from similar projects in China, assessments by the Independent Evaluation Group (IEG) and relevant Bank reports covering the urban, water supply and sanitation sectors in China: For instance, recommendations from the 2007 Bank report "Stepping Up: Improving the Performance of China's Urban Water utilities for improving the operational performance of urban water utilities." were incorporated with respect to reducing Non-Revenue Water (NRW) losses in towns, examining tariff requirements for water and wastewater services and recognizing the capabilities of town water supply agencies. Another lesson incorporated at design was using demand projections based on extensive demand surveys undertaken during preparation and phasing out some investments to ensure appropriate short and medium-term capacity. The implementing agency had prior experience with managing a Bank-financed project (discussed in Section 9b). Several risks were identified at appraisal including substantial risks associated with demand for water from towns not materializing due to alternative water systems, and substantial risk that expected demand for water supply may not materialize due to the availability of alternative sources and the high cost of central supply. Appropriate risk mitigation measures were incorporated at design. Appropriate arrangements were incorporated at design for compliance with fiduciary and safeguards (discussed in Section 11).

There were some shortcomings in M&E design (discussed in section 10).

Quality-at-Entry Rating

Satisfactory

b. Quality of supervision

Eight Implementation Status Reports were filed over a six-year period. Supervision missions were regular - albeit at longer intervals in the first few years. The supervision missions provided thorough and candid assessments. The supervision mission also fielded technical teams for follow-up outside of regular supervision missions and included specialized staff for addressing procurement, financial management and safeguards issues. After the Mid-Term Review (MTR) in November 2012, the project was restructured and appropriate arrangements were made to the scope of project activities and targets were revised in view of the progress achieved thus far. The supervision missions also assisted the Provincial Project Management office (PPMO) to advance project restructuring. Appropriate arrangements were incorporated for compliance with safeguards for the newly created activities during implementation (discussed in section 11).



Quality of Supervision Rating

Satisfactory

Overall Bank Performance Rating

Satisfactory

9. Assessment of Borrower Performance

a. Government Performance

Both the government and the Jiangsu Provincial government provided guidance and support during the execution of this project. The Provincial Project Management Office (PPMO) worked closely with the Bank during project preparation and prepared the feasibility reports, design documents and the required safeguard documents. The Provincial government provided competent staff. When some project activities had to be dropped during implementation, the provincial government presented timely proposals for restructuring and replaced dropped sub-components with equivalent investments and updated the economic and financial analyses.

There were delays associated with submitting a formal application for restructuring and this delayed the approval of project restructuring.

Government Performance Rating

Satisfactory

b. Implementing Agency Performance

The Jiangsu Provincial Management Office (PPMO) was well-staffed and had prior experience in implementing a Bank-financed project (Tai Basin Urban Management Project). The project had five Project Implementing Units (PIUs): Taixing Water Supply Company; The Danyang Water Supply Company; The Zhenjiang Water Supply Company; Yancheng Huijin Water Affairs Company Limited; and, the Nanjing Municipal Water Group Company. The companies adapted to the changes that arose during project implementation as a result of other infrastructure development plans (such as availability of private financing in the case of Taixing Water Supply Company and its Build-Operate Transfer (BOT) to build the Waste Water Treatment Plant). All PIUs completed the planned, as well as additional works by proper sequencing of activities within the project period. The agencies also implemented the Environmental Management Plans (EMPs) and Resettlement Action Plans (RAPs) and used external monitoring agencies to gather data on environmental and social aspects and this aided in full compliance with Bank policies on safeguards. The implementing agencies also adopted an action plan to guide utilities to continue tariff and institutional reform actions in the short, medium and long term until 2030.

Implementing Agency Performance Rating

Satisfactory



Overall Borrower Performance Rating

Satisfactory

10. M&E Design, Implementation, & Utilization

a. M&E Design

The key M&E indicators included, coverage of city water in project cities and towns, Non- Revenue Water (NRW) percentage average over supply area of city water companies, total annual Chemical Oxygen Demand (COD) load reduction from municipal wastewater in the project catchment area in Taixing-Huangqiao and all others, and they were appropriate.

There were no appropriate key outcome indicators associated with the PDO of improving the efficiency of wastewater services.

The data for monitoring performance was provided by the Jiangsu Project Provincial Management Office (PPMO) and the city and provincial environmental protection bureaus (EP-B) were responsible for collecting water quality data from river systems.

b. M&E Implementation

As the project was approved before Core Sector Indicators (CSIs) became mandatory, three CSI - number of direct project beneficiaries from the project (including female beneficiaries in percentage terms), the number of water utilities supported by the project and the volume of Biochemical Oxygen Demand (BOD) loads removed by the treatment plans under the project in tons/year - were incorporated during project restructuring in November 2013. Baselines were available for these indicators, but no specific targets were set for these indicators.

Implementation of the M&E system was slow and the PPMO did not collect all the necessary data and information for proper monitoring and Project Key Performance Indicators were not updated in a timely fashion. Following the recommendations of the Mid-Term Review, the Project Management Office (PMO) was made responsible for implementing the M&E and since 2013, M&E implementation improved and complete semi-annual progress reports were delivered on time till project closing. The PMO also provided disaggregated data for the aggregated indicators and this aided in better understanding and improving the performance of individual project entities.

c. M&E Utilization

The M&E reports were utilized for tracking the progress of the project and monitoring performance. The M&E reports were also for monitoring the environmental and social aspects of the project.

M&E Quality Rating

Modest



11. Other Issues

a. Safeguards

The project was classified as a Category 'B' project under Environmental Assessment (OP/BP 4.01) and the Involuntary Resettlement (OP/BP 4.12) safeguard was triggered.

Environmental Safeguards. At appraisal, potential adverse environmental impacts during construction of the Water Treatment Plant (WTP), the Waste Water Treatment Plant (WWTR) wastewater and pumping stations were identified. The impacts included, airborne dust, noise, traffic dispersion and impacts associated with disposal of spoiled materials. An Environmental Impact Assessment (EIA) was conducted and an Environmental Management Plan (EMP) was prepared for each sub-project at appraisal. The Jiangsu Provincial Project Management Office (PPMO) also prepared a Consolidated Environment Report (CER) identifying the key issues of the sub-project EIA and EMP on the basis of China's legal and policy frameworks for pollution control, environmental protection, master plans of the project cities and Bank's safeguard policies. The EIA/EMP documents were publicly disclosed as required by national and Bank policies (PAD, page 21). A Social Survey was also conducted at appraisal, focusing on "willingness to pay" and "affordability" considerations. The survey concluded that: (i) majority of residents including those in towns, demanded water quality improvements, with more than 95% of those surveyed expressing willingness to connect to the new systems; (ii) consumers could afford the increased price for water; and (iii) most of those surveyed had elected for connecting to the wastewater network and were willing to pay the charge for the wastewater service (PAD, page 19).

During implementation, each Project Implementation Unit (PIU) set up a separate environmental management division and provided to contractors the detailed requirements for environmental management in construction contractors. Targeted on-the-job environmental training was also provided to the PIUs. Following the project restricting in November 2013, two additional EAs and EMP were prepared for the new sub-components. The ICR (page 10) reports that compliance with environmental safeguards was deemed to be satisfactory. There were no significant environmental management issues and no complaints were received relating to environmental impacts during project implementation.

Social Safeguards. The project activities required land acquisition and resettlement. At appraisal, the following key resettlement impacts were identified: (i) permanent acquisition of 34 hectares (ha) of land (including 25 ha of collectively owned land), from which 1,053 persons derived a portion of their income. (ii) temporary occupation of 350 ha of land (including 145 hectares of collectively owned land) from which 3,433 persons derived a portion of their income; (iii) 117 households with 417 persons were to be affected due to the demolition of their houses; and (iv) ten enterprises and 80 shops were to be affected. A Resettlement Policy Framework (RPF) and a Resettlement Action Plan (RAP) that was in compliance with Bank requirements was prepared and publicly-disclosed at appraisal. Linked activities not financed by the Bank were also screened during the preparation of the RAP and three activities relating to two sub-objects were identified and the RAP included the resettlement issues of the linked activities (PAD, page 19). The ICR (page 10) reports that during implementation, the resettlement agencies had local offices and a trained full-time workforce. Project-affected persons were engaged with public participation activities and appeals mechanisms were publicized. 494 project affected persons were resettled/compensated. A total of 59 ha of land acquired and 1,043 ha of land was temporarily occupied during construction. The resettlement activities were monitored by an independent external agency and compliance with social safeguards was deemed to be satisfactory during implementation (ICR, page 11).



b. Fiduciary Compliance

Financial Management. An assessment of the financial management arrangements was conducted at appraisal. The assessment concluded that the arrangements were deemed to be satisfactory and the financial management risk was rated as modest (PAD, page 40). The ICR (page 11) reports that the financial management performance was deemed to be satisfactory. Consolidated project accounts were prepared in a timely manner and audited, as covenanted, within six months of the end of the calendar year. All audit opinions were clean and no significant financial management-related issues were identified by the audit reports.

Procurement. An assessment of the capacity of the Implementing agency to address procurement issues was conducted at appraisal (PAD, page 48). The procurement risk was rated as Substantial due primarily to the insufficient experience of procurement staff with Bank-financed projects. The corrective measures taken at appraisal included preparation of a procurement plan that was to be updated regularly, hiring an international consultant for contract management, training to the staff and six-monthly supervision missions in the first year of project implementation. The ICR (page 11) reports that compliance with Bank procurement guidelines was deemed to be satisfactory during implementation. The project procurement followed Bank rules as set out in the loan agreement, progress of bidding, contracting and construction was well monitored and there were no serious procurement issues during implementation.

c. Unintended impacts (Positive or Negative)

d. Other

12. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Highly Satisfactory	Satisfactory	There is no evidence to demonstrate the increased efficiency of the wastewater treatment process.
Risk to Development Outcome	Negligible	Modest	There is environmental risk given that the raw water intake for the Nanjing-Longtan Water Treatment Plant (WTP) was located only 1.2 km



			downstream from a small-river type oil wharf.
Bank Performance	Satisfactory	Satisfactory	---
Borrower Performance	Satisfactory	Satisfactory	---
Quality of ICR		Substantial	---

Note

When insufficient information is provided by the Bank for IEG to arrive at a clear rating, IEG will downgrade the relevant ratings as warranted beginning July 1, 2006.

The "Reason for Disagreement/Comments" column could cross-reference other sections of the ICR Review, as appropriate.

13. Lessons

The ICR draws seven lessons and the three following are the most important:

(1) **Strong provincial leadership can contribute to providing a supporting enabling environment and this can contribute to the success of a project.** In the case of this project, the provincial government's strategy and experienced staff contributed to achieving good outcomes.

(2) **Subsidies may be justified for social welfare and equity reasons.** In China, it is common practice for municipal governments to set tariffs at levels that they consider affordable and provide annual subsidies to water and wastewater companies in order to cover any revenue shortfalls. Until agreement is reached with the governments on the appropriateness of such subsidies, it would be useful for individual projects to focus on strengthening the capacities of utilities to operate efficiently and ensure that municipal governments confirm that they would provide the required subsidies if the tariff levels are not raised to recover costs.

(3) **Well designed, targeted and focused Technical Assistance activities that is implemented in a timely manner can achieve good results.** In the case of this project, the Provincial Project Management Office was well supported by technical assistance, and this contributed to successful project implementation.

14. Assessment Recommended?

No

15. Comments on Quality of ICR

The ICR provides a detailed overview of the project and is, for the most part, well written. The narrative supports the ratings and available evidence. The report follows the majority of the guidelines and the quality of evidence and analysis is aligned to the messages outlined in the ICR. The ICR could have provided better analysis on the aspects related to efficiency of wastewater services.



a. Quality of ICR Rating
Substantial