Report Number : ICRR0021066

1. Project Data

Project ID	Project Name
P096923	CN-Shanghai APL III
Country	**Practice Area(Lead)**
China	Social, Urban, Rural and Resilience Global Practice

L/C/TF Number(s)	Closing Date (Original)	Total Project Cost (USD)
IBRD-77070	30-Jun-2015	631,140,000.00
Bank Approval Date	**Closing Date (Actual)**	
25-Jun-2009	30-Jun-2017	

	IBRD/IDA (USD)	Grants (USD)
Original Commitment	200,000,000.00	0.00
Revised Commitment	200,000,000.00	0.00
Actual	200,000,000.00	0.00

Prepared by	Reviewed by	ICR Review Coordinator	Group
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2. Project Objectives and Components

a. Objectives

The Project Development Objective (PDO) as stated in the Loan Agreement (LA, Schedule 1, page 5) and in the Project Appraisal Document (PAD, page 5) was:
"To assist the Borrower's Shanghai Municipality in improving its resource and environmental sustainability in the core and suburban areas through strategic priority investments and selective institutional reforms in the water and wastewater sectors".
The IEG review is based on the three PDO objectives. (1) To improve Shanghai's resources and environmental sustainability in the core and suburban areas through strategic priority investments in the

water sector. (2) To improve Shanghai's resources and environmental sustainability in the core and suburban areas through priority investments in the wastewater sector. (3) To improve Shanghai's resources and environmental sustainability in the core and suburban areas through selective institutional reforms in the water and wastewater sectors.

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

No

c. Will a split evaluation be undertaken?

No

d. Components

This project was the third phase of an Adaptable Program Loan (APL 3) aimed at improving environmental conditions in Shanghai through implementing integrated metropolitan wide measures. Specifically, the program aimed at improving water service delivery, reducing the load of untreated pollution discharged into water sources and sustainable environmental infrastructure investments in suburban areas. The first phase (APL 1) was approved in 2003 and completed in 2010 and the second phase (APL 2) approved in 2006 and completed in 2015. There were four components (PAD, pages 5-7).

One. Water Supply and Management. Appraisal estimate US$409.31 million. Actual cost US$325.65 million. This component aimed at constructing the Nanhui Raw Water Conveyor for supplying raw water to about 1.8 million people. Activities included construction of raw water transmission lines and booster pumping stations in Pudong New District and Nanhui districts to enable water from the Qing Cao Sha Reservoir (under construction) to be supplied to the outer metropolitan areas in southeastern Shanghai municipality.

Two. Wastewater Management. Appraisal estimate US$67.84 million. Actual cost US$47.35 million. This component aimed at financing the construction of the Puxi Trunk Sewer (one of the two sections of the extension of the Bailonggang Southern Trunk Sewer System (BSTSS). Activities in this component included 8.12 kilometer (km) of pipes and a major pumping station for the Puxi trunk and connecting sewers.

Three. District Environment Management Program. Appraisal estimate US$86.21 million. Actual cost US$158.61 million. This component provided continued financing for environment-related infrastructure projects in the suburban districts of Shanghai through the District Financing Vehicle (DFV) - a subsidiary of the Shanghai Chengtou Corporation (SCC). (The Shanghai Chengtou Environment Asset Management Company (also known as DFV) was established as an intergovernmental mechanism during APL 2 dedicated to financing selected environmental investments in Shanghai sub-urban areas targeting water, wastewater and solid waste investments. Activities included strengthening DFV's institutional and operational capacities to provide financing.

Four. Institutional Strengthening and Training Component. Appraisal estimate US$3.40 million. Actual cost US$2.39 million. This component provided support to Shanghai Chengtou Corporation, its subsidiary raw water and wastewater companies and the Shanghai Water Authority. Activities included technical assistance in areas such as: (i) performance benchmarking and economic regulation methods in the water sector: (ii) water demand management: (iii) security of water supply: (iv) project management of urban

infrastructure investments: (v) feasibility study of asset management system: and, (vi) optimization of the operation and management of water and wastewater systems. The technical assistance activities were to include specific trainings, study tours and workshops.

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

Project cost. Appraisal estimate (including baseline cost, contingency costs and Front-End Fee) was US$631.14 million. Actual cost US$565.47 million. Cost of Component Three activities were 84% higher than estimated while the cost of Components One, Two and Four were 20%, 30% and 30% lower than estimated at appraisal. Actual project cost was however 10% lower than the appraisal estimate as there were cost savings due to competitive bidding procedures and actual cost of detailed design of Component One activity was lower as compared to the cost of preliminary designs. The increase in the Cost of Component Three activities was met through reallocation of financing between project components.
Project financing. The project was financed by an IBRD loan of US$200.00 million. Amount disbursed US$200.00 million.
Borrower contribution. Contribution from local governments was estimated at US$431.14 million at appraisal. Their contribution at closure was lower than planned at US$365.47 million. As discussed below, the financing plan was revised reflecting a reduction in the total financing needed, due to the cost savings associated with the competitive bidding process and detailed process designs. Hence less counterpart funding was required.
Dates. The following changes were made through a Level 2 restructuring on June 23, 2015.

- The closing date was extended by two years for completing activities (such as the Puxi Trunk Sewer crossing) which had been subject to delays due to the technical problems encountered at the Huanggpu river crossing.
- One sub-component activity - institutional strengthening - was dropped, as similar activities had been completed with domestic funds. Financing for this activity was reallocated to project management and capacity building activities.
- The Results framework (RF) was removed from the legal agreements and defined as a stand-alone document to allow for adjustments without a loan restructuring. According to the clarification provided by the team, in the past, apart from being included in the PAD, the RF was also embedded in the Project Agreement for projects in China. This implied a very inflexible model regarding updating the RF, as every time there was a need to update an indicator, the Project Agreement would need to be formally amended. During the restructuring of this project in question, it was determined to detach the RF from the Project Agreement, so as to allow the necessary updates in the RF to better align with the PDO and reflect project progress, without requiring an amendment to the legal documents. The team also clarified that the approach of having the RF as a standalone document, detached from the legal agreement, was adopted for the entire China portfolio starting from 2014.
- Some indicators and targets were modified and a relevant core indicator (direct project beneficiaries).
- Two financial covenants (full cost recovery and debt to service ratio of the water and wastewater utilities) were dropped (According to the project restructuring paper (page 6) the demand for infrastructure services outstripped supply in Shanghai due to unprecedented population growth. Since

this was unanticipated, the water and wastewater utilities were unable to achieve full cost-recovery, particularly since Shanghai's environmental regulations had also been tightened, which increased the overall cost of water and wastewater delivery. While tariffs increased in Shanghai from 30% to 40% since the project began, the cost-recovery ratio was below the targets set during preparation. During implementation, Shanghai's wastewater sector underwent structural reform, with the wastewater treatment assets unbundled from pipeline assets. With this, the Municipal Government was responsible for managing wastewater treatment assets, with the Shanghai Municipal Sewerage Limited Company (SMSC) responsible only for pipeline services. SMSC's revenue was no longer linked either to tariffs or to the quantity of wastewater treated. SMSC receives payment from the Shanghai Municipal Government through a series of annual lump sum contract, with an implicit government guarantee of full cost recovery. Along with the unbundling, the government took over all liabilities of wastewater services. With guaranteed full cost recovery and no outstanding debt service obligations, SMSC was in a sustainable financial position and in compliance with the original financial covenants). Hence these covenants were dropped.

- The financing plan was revised to reflect the modifications to project activities and actual project costs to date.

The project closed two years behind schedule on June 30, 2017.

3. Relevance of Objectives

Rationale

Before appraisal, the Shanghai Municipal Government (SMG) in eastern China, experienced rapid economic and population growth. While SMG's population of 18.2 million was expected to reach 24.5 million by 2020, actual growth was much higher and SMG's population had reached 23 million by 2010, with growth concentrated in suburban areas. As a result, Shanghai's environmental infrastructure could not keep pace with demand. The proposed project was highly relevant as evidenced by its aim to address critical environmental deficiencies through halting deterioration of existing raw water sources, investing in new water sources, upgrading wastewater collection systems, expanding wastewater treatment systems and institutional framework for managing urban environmental infrastructure through an integrated approach. The PDO was consistent with the government and the SMG strategy. At appraisal, China's 11th Five Year Plan for 2006-2010 highlighted the need for balancing economic growth with distributional and environmental considerations. Shanghai's 11th Five year plan for 2006-2010 specified initiatives for improving resource and environmental management, pollution control and treatment and environmental infrastructure development in suburban areas. These considerations were reiterated in China's and SMG's 12th Five year Plan for 2011-2015. The PDO was consistent with three of the six priority areas of the strategic China 2030 report. (1) deepening structural reforms: (2) accelerating the pace of innovation: and, (3) supporting environmentally-friendly activities through a mix of market incentives, regulations, public investments, industrial policy and institutional development.
At appraisal, the PDO was well-aligned with two of the five pillars of the Bank's Country Partnership Strategy

(CPS) for 2006-2011: (i) managing resource scarcity and environmental challenges: and, (ii) improving public and market institutions. The PDO was consistent with one of the three main area of engagement of the Bank's current CPS for 2013-2016 of "Supporting greener growth" through among other things, enhancing urban environmental services, sustainable natural resource management approaches, pollution management measures and strengthening institutional and financial mechanisms for climate change.

Rating
High

4. Achievement of Objectives (Efficacy)

Objective 1
Objective

To improve Shanghai's resources and environmental sustainability in the core and suburban areas through strategic priority investments in the water sector..

Rationale
Outputs (ICR, pages 12-16 and pages 37-44).
• The Nanhui Raw Water Conveyor (NRWC) - with a total design capacity of 1.28 million cubic meters m3/day - was operational by October 2016. The NRWC was the eighth (out of nine) and longest onshore conveyor of the Qing Cao Sha Raw Water Project (QCSRWP), aimed at supplying higher quality raw water to the east/southeastern areas of Shanghai.
• Two subprojects were completed as part of the District Environmental Management Program (DMEV): (1) The Minhang-Fengxion Raw Water Conveyor (MRWC), as part of the Upper Huangpu River Water Project (UHRRWP) was completed in December 2016, with a total design capacity of 2.15 million m3/day. This provides a more secure and sustainable raw water supply to the rapidly developing southwestern suburbs of Shanghai. The volumes of raw water received at the upstream receiving points of the Minhang and the Fengxian branch conveyor were 619,230 and 353,667 m3/day respectively. (No targets were specified for this indicator).
(2). The Xujing Water Treatment Plant (XWTP) -along with sludge management facilities - was expanded to a design capacity from 40,000 to 200,000 m3/day. The works associated with this were completed and put into trail operation in June 2017 and the treatment plant was expected to be operational in June 2018.. (There were no targets for this indicator). The expansion of the XWTP is expected to provide good quality treated water services to a population of about 510,000 people in the rapidly developing west and southwest suburbs of Shanghai by 2020.
Outcomes.

• At project closure, the NRWC was supplying 0.746 million m3/day of raw water to Water Treatment Plants. This exceeded the target of 0.58 million m3/day. The NRWC population at project closure was 1.57 million people.

- The total volume of raw water supplied by the QCSRWP network to the core and suburban areas of Shanghai at project closure was 5,108,000 m3, This exceeded the target of 5,003,000 m3.
- The QCSRWP raw water supply network was designed to provide high quality potable water supply services to about 70% of Shanghai's resident population and industrial and commercial uses by 2020. Before 2010, more than 70% of Shanghai's resident population was from Huangpu River. With the completion of the QCSRWP, raw water supply comes increasingly from the Yangtze River raw water system. Raw water diverted from the Yangtze River and transported through QCSRWP and NRWC consistently exceeded the national parameters defining class 11 raw water quality.
- The number of people benefited from investments in the water sector at closure was 6,710,100 (including 49% women). This exceeded the target of 6,660,000 (including 3,287,900 women). .
- According to the monitoring located at the Qing Cao Sha reservoir outlet, the quality of raw water transported to receiving water treatment facilities within the project area met class II national standards for raw water as targeted.
- Official data published by the Shanghai Municipal Government showed that over the 2009-2016 period there has been a reduction of daily average per capita household consumption from 139 to 118 liters a day (or a saving of an estimated 76’000 m3/day amount of household water for household consumption).

The project activities financed by APL 3 were one of the activities of the QCSRWP program. While it is difficult to ascertain the extent to which the project activities *per se* contributed to the PDO, it is reasonable to conclude that the APL 3 activities contributed to realizing the PDOs in the water sector.

Rating
Substantial

Objective 2
Objective
To improve Shanghai's resources and environmental sustainability in the core and suburban areas through priority investments in the wastewater sector.

Rationale
Outputs.

- The Bank-funded Puxi Trunk Sewer (PTS) (including a major in-line pumping station and major river crossing) of the Bailonggang Southern Trunk Sewer System (BSTSS), was constructed by March 2017. This was linked to the Bailonggang Wastewater Treatment Plant (BWWTP) and the capacity of BWWTP increased by 50% (from 1.6 million to 2.4 million m3/day). This exceeded the target of 195,000 m3/day.
- The activity associated with the Jiading Hazardous Waste Treatment and Disposal Facility was dropped mainly on account of the difficulties of land acquisition for the buffer zone requirements in the

Environmental Impact Assessment (EIA).

Outcomes.

- There was a net increase of 14,430 tons of Chemical Oxygen Demand (COD- pollution) withheld from entering the river system by collecting and properly treating raw sewage through the construction of Bailonggang Trunk Sewer System (Puci and Pudong trunk sewers) and augmenting the BWWTP capacity. (The calculation of COD was based on a scientific formula involving the variables of flow rate (m3/day) and COD loading of raw sewage in the BSTSS (mg/Lit).

Given that the activities financed by the project (Puxi Trunk Sewer Station was an integral (although not the only) part of the Bailonggang Southern Trunk Sewer System, it is reasonable to conclude that the APL 3 activities made a significant contribution to realizing the PDO in the wastewater sector.

Rating
Substantial

Objective 3
Objective

To improve Shanghai's resources and environmental sustainability in the core and suburban areas through selective institutional reforms in the water and wastewater sector.

Rationale
Outputs.

- Selected APL 3 recommendations were incorporated in the Shanghai Water Sector Plans.
- Five studies were completed as compared to the target of six. Of these, three studies in the water sector funded by the Bank were completed. Of the two in the wastewater sector (one bank funded and one by the government), one was completed and the other was ongoing and expected to be completed by the Shanghai Municipal Sewerage Limited Company in September 2018.
- 47 officials from the Shanghai Municipal Government were trained (including through study tours) in water sector activities.
- 1170 participants were trained at project closure as compared to the target of 1204.

Outcomes.

- The indicators were output-oriented and there is limited evidence that the activities contributed to Shanghai's resources and environmental sustainability in the core and suburban areas through selective institutional reforms in the water and wastewater sectors.

Rating
Modest

Rationale
While there is no evidence about the extent to which the activities contributed to the institutional dimension of the project, it is clear that the project made a significant contribution to improving resource and environmental sustainability in the water and wastewater sectors.

Overall Efficacy Rating
Substantial

5. Efficiency

Economic Analysis. A cost-benefit analysis was conducted for the Qing Cao Sha Raw Water Project (QCSRWP) as a whole, as the benefits of the Bank-financed Nanhui conveyor could not be achieved without the linked investments, both at appraisal and at closure. This component accounted 64% of the appraisal estimate and 57% of the actual project cost. The methodology used the willingness-to-pay approach using two scenarios: (i) using current tariffs in Shanghai: and, (ii) the much higher Beijing water tariff as a benchmark, in view of the comparable income levels in both cities. The project cost included the direct capital and operating costs of the QCSRWP and the concurrent and future capital and operating costs associated with the treatment and distribution of water to end users in the service area. The project's economic benefits to end users were assumed to come from treated water. Other project benefits such as the additional benefits due to water security related impacts were not factored in the economic analysis. The ex post Economic Internal Rate of Return (EIRR) using current tariffs in Shanghai was 24% as compared to the ex ante EIRR of 5.5% (the ex post EIRR using the Beijing tariff was 22% as compared to the ex ante EIRR of 16%).
Note; The table below shows the EIRR at appraisal and at closure using current tariffs in Shanghai.
Administrative and Operational issues. The project was able to generate cost savings due to a combination of factors including, competitive bidding process and lower cost of detailed engineering designs as compared to the cost of preliminary design. These savings were used to increase the disbursement ratio for civil works and expand the scope of Component Three project activities. There were time overruns due to implementation delays (associated with hitting a major underwater obstruction under the Huangpu River). The delays however could not be foreseen, as the obstruction was believed to be the foundation of an old and significant military structure about which there were no historical records.

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	✓	5.50	64.00 ☐Not Applicable
ICR Estimate	✓	24.00	57.00 ☐Not Applicable

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

6. Outcome

Relevance of the PDO to the government and the Shanghai Municipal Government's strategies and to the Bank strategy is rated as High. Overall efficacy is rated as Substantial. While it is difficult to ascertain the extent to which the activities contributed to realizing the PDOs, it is reasonable to conclude that the water and wastewater investments made a significant contribution to realizing the PDO. However, the contribution of project activities to strengthening the institutional component is Modest. Efficiency is Substantial.

a. Outcome Rating
Satisfactory

7. Risk to Development Outcome

Institutional and Financial Risk. There is moderate risk that the suburban districts may not have either the budgetary or the administrative capacity to carry out the proper operation and maintenance of the infrastructure assets.
Risk of Natural Disasters, including climate change driven events. There is Substantial risk associated with the detrimental impact of flooding and typhoons on project assets. This is particularly so, given that Shanghai is at high risk for inundation due to its position on the east coast of China, where rising flood waters related to climate change could impact on assets. Flooding could also affect the resilience of water supply infrastructure especially on the lower Yangtze River.
Risk of population growth. There is high risk that Shanghai's population growth could continue at unprecedented levels and thereby undermine the availability of suitable water resources.

8. Assessment of Bank Performance

a. Quality-at-Entry

The project was based on lessons from prior Bank-financed projects (First and Second Shanghai Sewerage Projects and the Shanghai Environment Project). The lessons incorporated included complementing investments in the water and wastewater sectors with sector reforms, balancing support for long-term strategic sector objectives with short-term development objectives (for instance, investment in Nanhui Conveyor was expected to fulfill an immediate goal of increasing raw water supply while the Bank's dialogue on sector reforms was to focus on ensuring that this investment was compatible with the sector goal of introducing conjunctive use of three raw water sources through a new water distribution system for securing sustainable raw water supply in Shanghai). Several risks were identified including, substantial risks associated with financial sustainability of the water and wastewater sectors, difficulties associated with implementing institutional reforms and the risk associated with developing the District Financing Vehicle (DFV) as a financial instrument. Mitigation measures adopted at design included covenants for addressing financial viability (such as full cost recovery and debt service covenant) and proactive assistance by the supervision team to address issues pertaining to the he financial sustainability of DFV. With the mitigation measures, overall project risk was rated as Substantial. Appropriate arrangements were made for implementing the project, with the Project Implementation Unit (PMU) which had implemented APL2 in charge of implementation. Appropriate arrangements were made at appraisal for compliance with safeguards and fiduciary issues (discussed in section 10).

Country-specific factors were not adequately considered when the financial covenants were incorporated. For instance, the Qing Cao Sha Investment Construction and Development Company Limited (QCSC) was not a project company and the company did not have operational and financial data. The team clarified that at the time of project preparation the team did not anticipate that there would be any change of asset ownership and Operation and Maintenance (O&M). The team also clarified there were several feasible options, among which, there was a distinct possibility of QCSC evolving into a standalone raw water operating company. However, due to the pressure to complete the construction on time with best quality, Shanghai Municipal Government selected the implementing agency with the best construction experience rather than operation experience. Further, the Shanghai Municipal Sewerage Company (SMSC) had no legal authority to raise tariffs. The team clarified that municipalities were not allowed to borrow directly from the market.

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

Quality-at-Entry Rating

Moderately Satisfactory

b. Quality of supervision

Formal supervision missions were generally held twice a year and twelve Implementation Status Results Reports were filed over an eight-year implementation period, The supervision team included members with an appropriate mix of skills to address safeguard and fiduciary issues. In addition to the core team, the supervision occasionally included technical specialists to provide hands-on solutions to key implementation issues. The core team members, including the co-Task Team Leader (TTL) and safeguards and fiduciary specialists, were based in Beijing and this aided in interaction with the borrower on a day-to-day basis. Although there were four changes in the Washington-based TTL, the continuity of leadership was maintained with the Beijing-based co TTL who had a long association with the APL program (including with the implementation of APL2 and preparation and implementation of APL3). The Bank team provided additional

consultant expert advice and guidance to address the technical problems and challenges that delayed the activity associated with Huangpu River Crossing (Component Two activity). The supervision team was proactive in addressing problems during implementation. For instance, the Bank provided its own expert to ensure technical soundness of the decisions regarding the Puxi Trunk Sewer and the Huangpu river crossing delays.
The Mid-Term Review (MTR) which was scheduled for October 2014, was held on January 2015.The MTR outcome was a restructuring that included amendment to the results framework. The restructuring agreement was conveyed to the borrower on June 23, 2015, just a week short of the original closing date.
The shortcomings in M&E design were not corrected during implementation (discussed in section 10b).

Quality of Supervision Rating
Moderately Satisfactory

Overall Bank Performance Rating
Moderately Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design
The number of outcome and output indicators was limited, and the latter constituted reasonable building blocks for the determination of the former. The M&E design had four key outcome indicators (PAD, page 6). Of these, the two key outcome indicators for investment activities - the total volume of quality water supplied by the Qing Cao Sha Raw Water System (QCSRWS) and annual reduction of water pollution in Puxi area of the Upper Huangpu River at project closure, were realistic and appropriate for monitoring performance with respect to the water and wastewater systems activities. The baseline targets for these indicators were appropriate.
The key outcome indicators for monitoring performance with respect to the District Financing Vehicles and the institutional dimension of the project - adoption of a management decision by Shanghai Chengtou Corporation (SCC) on the District Financing Vehicle's (DFV's) strategic evolution and improvements in water sector management - were clearly not well-defined and difficult to measure and hence inappropriate.

b. M&E Implementation
During implementation, indicators pertaining to the DFV component and institutional dimension of the project were dropped and replaced by a key intermediate indicator- 'inclusion of selected APL3 recommendations in the Shanghai water sector plans". The outcome target for the "total volume of quality water supplied by QCSRWS was revised upwards slightly by 2%, based on the data collected thus far by 2010 (ICR, page 9).
The data collection arrangements that were in place for APL 1 and 2 were used for monitoring in this project. The data for monitoring project performance was regularly collected by the Project Implementation Units and separate social and environmental monitoring was conducted by third party consultants.
One shortcoming that was not corrected during implementation was the lack of a key outcome indicator for monitoring project activities in the wastewater sector.

c. M&E Utilization

Progress reports were used for monitoring project performance and for taking remedial actions. For instance, when the M&E systems showed that the main investments under component one would be completed two months ahead of time and with savings, appropriate reallocations of spending between components were made.

M&E Quality Rating

Substantial

10. Other Issues

a. Safeguards

The project was classified as a Category A project. Other than environmental assessment (OP/BP 4.01), three safeguard policies were triggered: (1) Natural Habitats (OP/BP 4.04). (2). Involuntary Resettlement (OP/BP 4.12); and, (3) Safety of Dams. (PAD, page 19).

Environmental Assessment and Natural Habitats. An Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) for the Nanhui Conveyor, an EIA/EMP for the wastewater component, an EIA for the Qing Cao Sha Raw Water Project,, an overall summary Environmental Assessment Executive summary of the whole project and the EIA Framework for the District Financing Vehicle (DFV) operation manual were prepared to address negative environmental impacts. A manual to address impacts associated with natural habitats was also prepared and publicly-disclosed both in English and Chinese as required at appraisal. (PAD, pages 17-18). The ICR (page 31) notes that there was compliance with environmental safeguards during implementation.

Safety of Dams. The safeguard policy on safety of dams was triggered as the sub-project activity associated with Nanhui Raw Water Conveyor was dependent on the Qing Cao Sha Reservoir for its raw water supply. Dam safety issues were reviewed by the Dam Safety Management Center of the Ministry of Water Resources and the Nanjing Institute. The review concluded that dam safety issues were addressed at appraisal (PAD, page 19). The ICR (page 31) notes that an independent Dam Safety Review Panel was established during implementation to assess and review dam safety issues and that there was compliance with the Bank's Dam Safety safeguard policy.

Involuntary Resettlement. Two of the project's components were expected to lead to involuntary resettlement. At appraisal, it was estimated that the project would require acquisition of land of about 37.4 hectares (ha) of uncultivated land, about 6.7 ha of cultivated land and require demolition of 3,413 housing areas. About 290 people were to be affected through land acquisition and house demolition. Individual Resettlement Action Plans (RAPs) that were in accordance with local laws and Bank requirements, were prepared at appraisal and publicly disclosed. The ICR (page 31) reports that issues regarding land acquisition, demolition of houses and commercial enterprises and resettlement and compensation were well-managed by the Project Implementation Unit. Compared to the approved Resettlement Action Plans, there was a 46% reduction (1164) in the total number of Project Affected Persons (PAPs) and a further 45%

reduction in the total number of persons to be resettled due to changes in detailed design, routing changes and construction methods. There was also a slight reduction of 5% in the area of land acquired temporarily. The numbers of houses and commercial enterprises requiring demolition were as identified at appraisal

b. Fiduciary Compliance

Financial Management. An assessment conducted at appraisal concluded that the financial management arrangements were deemed to be satisfactory and financial management risk was rated as Low (PAD, page 16). The ICR (page 31) notes that there were no financial management issues and compliance with financial management was deemed to be satisfactory.

Procurement. An assessment of the capacity of the Project Management Unit, the Project Implementation Unit and the line agencies to address procurement issues conducted at appraisal concluded that the Procurement risk was Moderate (PAD, page 83). A procurement plan was prepared at appraisal and the plan was to be updated annually to reflect project implementation needs and improvements in institutional capacity (PAD, page 16). The ICR (page 31) notes that compliance with procurement management was deemed to be satisfactory.

c. Unintended impacts (Positive or Negative)

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d. Other

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11. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Moderately Satisfactory	Satisfactory	Relevance of objective is High. Overall efficacy is rated as Substantial, although one of the three objectives is rated as Modest. Efficiency is Substantial.
Bank Performance	Moderately Satisfactory	Moderately Satisfactory	---
Quality of M&E	Substantial	Substantial	---
Quality of ICR		Substantial	---

12. Lessons

The IEG selected the following main lessons from the ICR, with some adaptation of language.
(1) Long engagement with the client in fast growing cities can be better accommodated by the use of an APL type instrument that provides gradual and incremental support to improving urban infrastructure. The experience of this project can be useful for African countries where large scale urbanization is just starting.
(2). Heavy initial investment focused on developing a bold, long term vision, supported by policy frameworks, is useful for building an enabling environment. The experience of this project showed that for priority infrastructure investments, it would be useful to concentrate on a few investments in one operation.
(**3). Financial covenants may not always be a good instrument for measuring financial sustainability**. The experience of this project in Shanghai may not provide a proper picture of the financial sustainability of the stakeholders. In the case of this project, given the country-specific conditions, outcomes were satisfactory, despite the dropping of the financial covenants (such as full cost recovery and the government taking over all liabilities associated with wastewater tariffs). Furthermore, for financial covenants to be effective, contractual penalty must be linked to non-compliance with financial covenants.

13. Assessment Recommended?

No

14. Comments on Quality of ICR

The ICR is reasonably well-written and provides a concise description of the issues that emerged during implementation. It is candid in discussing the issues relating to financial covenants. The lessons drawn from implementing this project are reasonable.
While the District Financing Vehicle (DFV) was an important component of the project, the ICR provides few details on the DFV.

a. Quality of ICR Rating

Substantial