



1. Project Data

Project ID

P096925

Project Name

CN- Bengbu Integrated Environment Improv

Country

China

Practice Area(Lead)

Social, Urban, Rural and Resilience Global Practice

L/C/TF Number(s)

IBRD-75410

Closing Date (Original)

30-Jun-2014

Total Project Cost (USD)

224,000,000.00

Bank Approval Date

11-Mar-2008

Closing Date (Actual)

30-Jun-2015

IBRD/IDA (USD)

Grants (USD)

Original Commitment

100,000,000.00

0.00

Revised Commitment

99,946,414.96

0.00

Actual

99,946,414.96

0.00

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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) was:

"To assist Anhui Province in improving the effectiveness and sustainability of selected urban environmental services delivered to Bengbu Municipality, including improving water supply, reducing incidents of land submergence from flooding and enhancing wastewater management."

The PDO as stated in the Project Appraisal Document (PAD, page 3) was similar, albeit not identical. **"To improve the effectiveness and sustainability of selected urban environmental services delivered in Bengbu Municipality through improving water supply, reducing incidents of land submergence from**



flooding, and enhancing wastewater management."

This assessment is based on the PDO as stated in the Loan Agreement.

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

No

c. Will a split evaluation be undertaken?

d. Components

The project covered Bengbu City proper, including Huaishang District, and the satellite counties of Guzhen, Huaiyuan and Wuhe, all of which are located along the Huai River, except Guzhen which is on a tributary of the Huai River. There were four components.

Comprehensive Water Resources Management. *Appraisal estimate* US\$27.39 million. *Actual cost at closure* US\$16.52 million. Activities included:

(a). Tianhe Lake Water Resources Management. Construction of a pumping station to manage floods and increase the storage capacity of Tianhe Lake.

(b). Longxi Lake Flood Management, Ecological Improvements and Restoration. Construction of a flood discharge pumping station at the Longzi outfall for flood management and lake embankment improvement for erosion control and ecological restoration. Following the project restructuring in November 2013, lake embankment activity was cancelled as this activity was completed by the implementing agency through another company outside the project. The dredging of Longxi Lake was cancelled as the detailed technical analysis conducted during implementation showed that lake desilting work was not necessary for drainage work. Savings from the cancellation of these activities was used for expanding the scope of the project and financing additional project activities such as rehabilitation of two new roads in Longxi Lake District.

Urban Environmental Infrastructure Improvement. *Appraisal estimate* US\$109.09 million. *Actual cost at closure* US\$103.96 million. Activities included:

(a). In Bengbu City Proper (south of the Huai River). Construction of storm drainage facilities in the old city area, High Tech Development Zone (HTDZ), Economic Development Zone (EDZ) and Longxi Lake District, reconstruction of Xinchuantang and Nanshijia storm drainage pumping stations and rehabilitation of Zhi Huai Road storm drainage systems. Following the restructuring on November 2013, activities associated with construction of storm drainage centers and wastewater collection works in HTDZ was completed through their own funds and activities associated with the storm drainage network, wastewater collection networks and secondary and tertiary roads in the EDZ were cancelled as they were completed with collaboration from another company outside the project.

(b). In Huaishang District (north of the Huai River). Construction of storm drainage networks, three flood discharge pumping stations, wastewater collection networks (including a pipeline to transfer wastewater from Huaiyuan County to Huaishang District for treatment), construction of roads and desilting of drainage canals. Following the restructuring on November 2013, savings from cancellation of activities was used for financing additional activities such as construction of water trunks, sewer networks and storm water drainage works in certain areas of Huaishang District and Bengbu.



Sub-Urban Environmental Infrastructure Improvement. *Appraisal estimate* US\$66.84 million. *Actual cost at closure* US\$88.65 million. Activities included:

(a). In Guzhen County. Construction of storm drainage networks, roads and desilting of drainage canals.

(b). In Huaiyuan County. Construction of storm drainage networks, two storm drainage pumping stations and roads and rehabilitation of three flood retention basins and a drainage canal. Following the restructuring on November 2013, activities associated with rehabilitation of the flood retention basins and rehabilitation of the pumping station were completed with financial resources outside the project.

(c). In Wuhe County (Mohekou Industrial Zone (MIZ) and Township). Construction of a water supply intake, treatment plant, transmission and distribution networks, an industrial Waste Water Treatment Plant (WWTP) and collection networks, a flood discharge pumping station (including a detention storage basin), facilities for containing first flush flows and accident spills, desilting drainage canals and roads.

Institutional Development and Capacity Building. *Appraisal estimate* US\$6.87 million. *Actual cost at closure* US\$7.73 million. Activities included;

(a). Water Quality Monitoring Improvement. (i). Automatic water quality monitoring stations, apparatus for online water level measurement, data collection and processing systems for Bengbu Environmental Protection Bureau (EPB) and online analyzer for Huai River Outfalls.and, (ii). Class II level water quality monitoring laboratory and equipment for County EPBs.

(b). Implementation support. Activities included: (i). design review. (ii). support for project management, implementation and monitoring. (iii). design of infrastructure facilities, preparation of rules and operational procedures and bid documentation for selecting a professional operator for Mohekou Industrial Zone (MIZ). and, (iii). monitoring safeguards.

(c). Technical Assistance and Capacity Building. Activities included: (i) support for the institutional strengthening of utility companies. (ii). support for water sector management and institutional reforms. (iii).Equipment and vehicles for the Project Management Office. and (iv). Training and study tours.

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

Project cost. At appraisal the total cost estimate (including baseline cost, costs associated with interest during construction and Front-End IBRD fee) was US\$224.63 million. Costs of component three and four activities were about 33% and 13% above their appraisal estimates and costs of component one and two activities were about 40% and 4% lower than their appraisal estimates. The costs of component three and four activities were higher due to a combination of factors including design changes, inflation and exchange rate fluctuations during implementation. The increase in cost of component three and four activities was met through a combination of factors including allocation of funds from cancelled activities and reallocation of spending between components. The actual total project cost at closure was US\$218.27 million, about 3% lower than the appraisal estimate.

Project Financing. The project was financed by an IBRD loan of US\$100.00 million, of which US\$99.97 million was disbursed. At preparation there was parallel financing from a project preparation grant which provided funds for hiring a French consultant for developing feasibility studies to the Bengbu Project Management Office (BPMO) for developing a computer model for assessing flood risks based on an integrated approach.

Borrower Contribution. Appraisal estimate US\$124.63 million. Their actual contribution at closure was about 98% of the appraisal estimate at US\$118.31 million.



Dates. The project was restructured once on November 26, 2013. In addition to the changes to the project activities described above, the following changes were made: (i). The project closing date was extended by twelve months for completing ongoing activities. (ii). The disbursement percentage for civil works was increased from 71% to 85% for fully utilizing the loan savings. (iii). Bengbu Investment Group Company Limited was added as a project company for implementing activities associated with construction of two new urban roads. (iii). Project costs and financing plans were adjusted. and, (iv). The results framework was modified following the Mid-Term Review (MTR).

The project closed on 06/30/2014 one year later than originally planned.

3. Relevance of Objectives & Design

a. Relevance of Objectives

The PDOs were highly relevant to the Bengbu municipality of Anhui Province. Anhui is a relatively underdeveloped province in mid-eastern China and in the years before appraisal economic growth in Bengbu Municipality was sluggish as compared to growth elsewhere in the other new economic centers in the Yangtze Delta and coastal regions. This was partly due to infrastructure bottlenecks such as unreliable delivery of water services, frequent flooding that interrupted economic activities and industrial pollution from the older industries located within the urban core due to inadequate facilities for wastewater collection and treatment. In the years before appraisal Bengbu Municipality had issued a number of strategic and sector plans including: (i) The Bengbu Municipal Urban Short term construction plan with specified urban infrastructure targets. (ii) The Bengbu Municipal Wastewater and Storm Drainage Master Plan for relocating the worst-polluting industries to newly established industrial zones in Guzhen, Huaiyuan and Wuji. and, (iii). The Bengbu 11th Five-year Plan which underscored the need for completing the existing storm water and drainage systems for protection against flooding.

The PDOs continue to be relevant to the Government strategy. In 2007, the government announced the Mid-China Revitalization Program covering among other provinces, the Anhui province. Under the program, Bengbu was to receive additional support for accelerating its investment program for addressing issues such as controlling flooding, expanding wastewater collection and treatment, developing a secure water source with adequate capacity and achieving financial viability of wastewater services. At appraisal, the project was consistent with China's 11th Five Year Plan for the 2006-2010 period. The plan highlighted the need for building a resource efficient and environmentally-friendly society. China's 12th Five Year Plan for the 2011-2015 period underscored the need for addressing ongoing challenges associated with natural resource depletion and environmental pollution. The plan also identified the need for addressing challenges associated with urbanization in inland regions and smaller cities like Bengbu.

The PDOs continued to be relevant to the Bank strategy for China. At appraisal, the project was consistent with two of the five strategic pillars specified in the Bank's Country Partnership Strategy (CPS) for the 2006-2010 period: (1) managing resource scarcity and environmental challenges (Pillar Three). and, (2). improving public and market institutions (Pillar Five). An important goal of the Bank's current CPS for China for the 2013-2016 period was addressing environmental and service delivery challenges faced by China's cities, given their unprecedented growth. The CPS also specifically emphasized support for sustainable natural resource management, including flood protection.



Rating

High

b. Relevance of Design

The statement of the PDOs was clear. Project activities and their outputs were likely to produce the specified outcomes which were measurable. Activities such as constructing pumping stations to control floods can be expected to increase the storage capacity of Tianhe lake. Activities such as construction of storm drainage facilities in the old city area and selected areas in Bengbu city proper and Huaishang District can be expected to reduce the incidence of flooding in these areas. Activities associated with wastewater works (such as waste water collection and treatment plants) can be expected to contribute to reducing industrial pollution discharges to the Huai river. The outputs of these activities in conjunction with the institutional component of the project for the Bengbu Environmental Protection Bureau (EPB), the county level EPBs and the utilities can be expected to aid in realizing the three sub-objectives for the overall PDO of improving the effectiveness and sustainability of urban environmental services in the selected areas of the Bengbu Municipality in Annu province. The project could be expected to contribute to the higher level objective of reducing the urban-rural gap by protecting agricultural production through flood control for arable lands. The design also identified the exogenous effects on the environment and incorporated measures for addressing such effects (discussed in Section 11).

One weakness in design was trying to ensure the sustainability of the public utilities by including dated covenants for completion of major studies on institutional reform and including overly ambitious legal covenants on cost recovery.

Rating

Substantial

4. Achievement of Objectives (Efficacy)

Objective 1 Objective

To improve the effectiveness and sustainability of selected urban environmental services through improving water supply.

Rationale Outputs.

Four flood control pumping stations were completed as compared to the original and revised targets of five and six respectively.



The flood discharge pumping station was constructed in the Longxi Lake as targeted. The water supply intake, treatment plant and transmission and distribution networks were constructed in Mohekou Township and Mohekou Industrial Zone (MIZ) County.

The water level of Tianhe Lake (that served as an emergency drinking water source during dry season) increased by one meter (from 17.5 m to 18.5 m), as targeted.

Activities associated with Automatic water quality monitoring stations, apparatus for online water level measurement, data collection and management and online monitoring analyzer for Huai River Outfalls were completed for the Bengbu Environmental Protection Bureau as targeted (EPB). Class II level water quality monitoring laboratory and equipment were provided for County EPBs as targeted.

Outcomes.

Reliability of Bengbu's water supply (defined as the number of days for which the city could be supplied from its emergency source, Tianhe lake) increased from 30 days at the baseline to 90 days, as targeted.

Rating

Substantial

Objective 2

Objective

To improve the effectiveness and sustainability of selected urban environmental services through reducing incidents of land submergence from flooding.

Rationale

Outputs.

Six storm water drainage pumping stations were built as targeted.

131.84 Kilometers (Km) of storm drainage networks were completed. This in combination with complementary activities that were completed (such as rehabilitation of roads and desiltation of two drainage canals) aided in the discharge of storm runoff to the river.

Outcomes.

85.5% of Bengbu area was protected from flooding by storm water runoff at project closure as compared to 30% at the baseline and as compared to the target of 95%.

Rating

Substantial

Objective 3

Objective



To improve the effectiveness and sustainability of selected urban environmental services through enhancing wastewater management.

Rationale

Outputs.

About 60 km of wastewater networks were completed as targeted. This included, 40 km of sewer collection networks and renovation of the Yinhu Road pump station to pump wastewater to the existing Waste Water Treatment Plant (WWTP) in Bengbu proper, a 7.8 km pipeline to convey wastewater from Huaiyuan country to be treated at Huaishang), 9.2 km of sewer interceptors and secondary sewer collection networks.

An industrial WWTP was build in the Mohekou Industrial Zone (MIZ) as targeted. By project closure, the number of chemical industries relocating to MIZ did not meet the earlier projections due to the economic downturn. Due to the decrease in demand, the plant was not operational at project closure.

86% of the project intervened area was covered by wastewater networks as compared to 20% at the baseline. This exceeded the target of 80%. 90% of the wastewater was collected and treated by project closure as compared to 30% at the baseline and as compared to the target of 80%. 100% of the sediments were desilted at project closure as targeted.

Outcomes.

The financial viability of the WWTP was not achieved as the wastewater tariff was not increased during implementation.

Rating

Modest

5. Efficiency

Economic Analysis. A Cost-Benefit Economic Analysis was conducted using the same methodology for water supply, flood control and wastewater-related activities of the project. These components accounted for approximately 97% of the appraisal estimate and 96% of the actual cost. The economic benefits of the project were assumed to come from: (i). Incremental revenue from water tariffs due to improved service delivery. (ii). Revenue due to improved wastewater services. (iii) Health benefits due to reduction or elimination of water related diseases. (iv). Agricultural production increase due to better flood control and irrigation water supply system. (v). Other amenities such as increase in land value. (vi). Increase in industrial production in the new industrial zone. and (vii). Savings in travel time. The main economic costs of each component included costs of capital, Operation and Management (O&M) costs, replacement costs and global environmental costs due to greenhouse gas emissions from pumping stations. The average ex post Economic Internal Rate of Return (EIRR) was 18.7% as compared to the average ex ante EIRR of 21%. Although the ex post EIRR was lower than the ex-ante EIRR, it was higher than the threshold level of 10% acceptable to the Bank and the Government.



An affordability analysis was undertaken with respect to three representative household groups. (i). The average income group. (ii). The low-income group. and, (iii). The poorest income group. The average city water use per household month was 88.5 m and wastewater drainage per month was 5.3 in 2014. The water tariff increased from Renminbi (RMB) 1.10/m to 1.33/m and wastewater tariff did not change. The water and wastewater expenditure per household month represented 0.35% of the average income group, 0.8% of the low-income group and 1.5% of the poorest income group. Bengbu extended low income protection for the poorest households (those under a minimum income of RMB 420 per month).

Administrative and Operational Efficiencies. There were cost overruns with the actual cost of component three activities being about 12% higher than the appraisal estimate (from US\$109.09 million to US\$122.31 million). The overruns were due to a combination of factors including design changes during implementation that were exacerbated by factors over which the project had no control such as inflation and exchange rate fluctuations. The total project cost at closure was however about 3% lower than estimated at appraisal. There were implementation delays due to a combination of factors including lack of indigenous capacity to use the computer model developed by the French government for assessing flood risks, and this in turn contributed to the extension of the project closing date by a year. The project envisaged reducing industrial pollution through relocation of the polluting enterprises to the Mohekou Industrial Zone (MIZ). Although the Waste Water Treatment Plant (WWTP) in MIZ was completed at closure, the plant was not operational due to insufficient demand. This was due to a combination of factors including the global economic crisis when many of the enterprises were either shut down or scaled down operations and reduced demand from the existing enterprises which used their own water supplies rather than municipal water.

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 | ✓ | 18.70 | 96.00 <input type="checkbox"/> Not Applicable |
| ICR Estimate | ✓ | 21.00 | 97.00 <input type="checkbox"/> Not Applicable |

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

6. Outcome

The relevance of the PDO for the Bengbu Municipality in Anhui Province and the Bank strategy for China was rated as High. Relevance of design was rated as Substantial. Efficacy of the two objectives -to improve the effectiveness and sustainability of selected urban environmental services through improving water supply and to reduce incidents of land submergence d submergence from flooding- were rated as Substantial. Efficacy of the



objective -.To improve the effectiveness and sustainability of selected urban environmental services through enhancing wastewater management - was rated as Modest. Efficiency was rated as Substantial.

a. Outcome Rating

Moderately Satisfactory

7. Rationale for Risk to Development Outcome Rating

Technical Risk. The Operation and Maintenance (O&M) of the pump station and the Waste Water Treatment Plants (WWTP) including the WWTP in Mohekou Industrial Zone (MIZ) constructed under the auspices of this project was out sourced by the Government to professional operators and this could be expected to contribute to the operation of these facilities. Likewise, the O&M of the facilities for reducing impact from flooding was transferred to the responsible bureaus or state-owned enterprises with experienced staff. The technical risk to development outcome is rated as Modest given that at project closure, although the WWTP in MIZ was completed, it was not operational at project closure due to insufficiency of demand.

Financial Risk. Given that tariffs for wastewater services were not raised to full cost recovery by Bengbu Municipality, the sustainability of wastewater activities still remain heavily dependent on subsidies from the central government.

a. Risk to Development Outcome Rating

Substantial

8. Assessment of Bank Performance

a. Quality-at-Entry

The project was prepared based on recommendations from several studies including China Urban Development Program: A World Bank Portfolio Review (2007), A Partnership for Innovation: A Quarter Century of China-World Bank Cooperation (2007), and Stepping Up: Improving the Performance of China's Urban Water Utilities (2007). The main recommendations of these reports that were incorporated into the project were the following: adopting a comprehensive approach to water resource management and introducing load-based changes to operate the centralized Waste Water Treatment Plant (WWTP) in Mohekou Industrial Zone (MIZ). The preparation team included experts in the field of urban planning, water resources management, social and economic analysis, environmental engineering and industrial pollution control. The preparation team helped the Bengbu Municipal Government (BMG) to obtain a grant from the French Government to bring in international practice for activities associated with for developing a computer model for assessing flood risks based on an integrated approach. Appropriate arrangements were made at Quality-at-Entry for M&E (discussed in section 10) and compliance with safeguards and fiduciary issues (discussed in



section 11).

The preparation team underestimated the risks associated with the following: (i) The project was ambitious on aspects relating to the institutional reform and full cost recovery for wastewater services. The activities associated with development of rules and operational procedures for management of Mohekou Industrial Zone (MIZ) was completed with a two year delay. This left very little time for the Bengbu Municipal Government (BMG) to implement the recommendations of the institutional reform study and there was non-compliance with the financial covenants of full cost recovery for waste water services. (ii). The weak management capacity of the Bengbu Project Management Office (BPMO) contributed to the delays during implementation. The BPMO was short of skilled staff with experience in Bank financed projects and this contributed to implementation delays. and, (iii). The estimate of the number of industries that were expected to relocate to the industrial parks was based on a government pollution control program which did not have a detailed time-bound schedule. The slow implementation of the government plan in conjunction with exogenous factors over which the project had no control such as the global economic crisis when many of the enterprises were either shut down or slowed down their operations, contributed to undermining the results of project funded interventions in MIZ. By project closure, the number of industries that had relocated to the MIZ was significantly lower than expected at appraisal and although the Waste Water Treatment Plant (WWTP) was completed at MIZ at project closure, the plant was not operational due to insufficient demand.

Quality-at-Entry Rating

Moderately Unsatisfactory

b. Quality of supervision

Ten Implementation Status Reports (ISRs) were filed over a seven-year period. Sufficient funds were provided to enable the supervision team to provide training on various issues related to Bank safeguards and fiduciary policies and procedures during the early years of implementation. Supervision missions were regular in the first three years. The supervision team included staff with expertise in engineering, procurement, financial management and safeguards. Missions were less frequent in the latter years of the project due to budget constraints. During this period the supervision was more through domestic consultants. The two Task Team Leaders (TTLs) based in Beijing during project implementation, were native speakers of Chinese and this helped in communicating with the counterpart agencies in Bengbu Municipality. The Mid Term Review held in May 2011 addressed the key issues of component changes and implementation delays and also provided a time bound action plan. The supervision team was also proactive in inspecting the works of the components that were dropped from the project and financed by government funds to ensure the quality of works.

There were moderate shortcomings in design. The team could have been more proactive in pushing for institutional reforms by engaging high-level government and Bank management on the issue. The lack of follow-up action by the supervision team on some key implementation issues, such as the inadequacy of staffing of the Project Management Office and slow preparation of restructuring, caused implementation delays.

Quality of Supervision Rating

Moderately Satisfactory



Overall Bank Performance Rating

Moderately Satisfactory

9. Assessment of Borrower Performance

a. Government Performance

Both the Anhui Provincial Government and the Bengbu Municipal Government (BMG) were strongly committed to the project during preparation. A Project Management Office (PMO) established under the leadership of BMG helped in securing government support and coordination among the line departments. The Governments provided the necessary support to resolve key issues, such as obtaining the endorsement from relevant authorities for sectoral reform plans submitted by the Consultant. There was non-compliance with financial covenants associated with raising tariffs for full cost recovery for wastewater services. The slow implementation of the pollution control program undermined the results of project funded interventions in Mahoke Industrial Zone (MIZ) as by project closure, only about 72% of the 50 polluting enterprises had been relocated to the dedicated industrial zones as per the program.

Government Performance Rating

Moderately Satisfactory

b. Implementing Agency Performance

The project was implemented by several implementing agencies, including six state-owned investment companies, two utility companies and various government departments and bureaus. The analysis provided hereafter refers to the performance of the key implementing agencies: Bengbu Project Management Office (BPMO); Bengbu Water Resources Bureau (BWB) and Bengbu High-New Tech Investment Group Company Limited (HNTIGC).

Bengbu Project Management Office. The BPMO was the main agency responsible for coordination of project activities. The BPMO was located at Bengbu Development and Reform Commission (DRC). This arrangement was helpful during project preparation as DRC was in charge of infrastructure investment and had the authority and capacity to oversee the various line departments such as BWB, the Environmental Protection Bureaus (EPBs) and construction bureaus. DRC's inadequate technical and project management skills resulted in implementation delays. The BPMO had adequate staff during preparation including an experienced procurement and financial management specialist. However, after project effectiveness BPMO was short of staff to oversee and coordinate the implementation of project activities. This led to coordination issues, with neither the Bank nor BPMO being aware of some changes in implementation arrangements early on when some project activities were cancelled. Although BPMOs staffing position was strengthened in the latter years of the project, BPMO's weak management capacity in the initial years of the project caused major delays in compliance with dated legal covenants, such as the institutional reform study which was completed two years behind schedule.

Bengbu Water Bureau (BWB). BWB maintained adequate resources for assessing the design, prepare bidding documents during preparation. BWB also supervised the construction of the pumping station and ensured compliance with safeguards during project execution. The construction of the pumping station was subject to three months' delays due to a design change during implementation.



Bengbu High-New Tech Investment Group Company Limited (BHNTIGC). BHNTIGC was responsible for implementing the civil works in the High Tech Development Zone (HTDZ). The company had no experience with implementing a Bank-financed project. Although the company maintained strong commitment to achieving the PDO, its inexperience in implementing Bank's fiduciary and safeguard requirements contributed to delays in the early years of the project. One issue with the company was when other funding sources became available, it chose not to use the loan without informing either the BPMO or the Bank of the change.

Implementing Agency Performance Rating

Moderately Unsatisfactory

Overall Borrower Performance Rating

Moderately Satisfactory

10. M&E Design, Implementation, & Utilization

a. M&E Design

The four key performance indicators were appropriate and included: (i) area of Bengbu that was protected from flooding and storm water runoff; (ii) pollution discharges from Bengbu to the Huai River (expressed in tons of Chemical Oxygen Demand (COD) /year; (iii) reliability of Bengbu's water supply (defined as days of emergency supply; and (iv) break even for wastewater and water services. M&E design did not include surveys of beneficiary satisfaction with investment outcomes such as cleaner water. The Environmental Protection Bureaus (EPBs), the Water Resources Bureau, and wastewater companies in Bengbu, Guzhen, Huaishang and Wuhe were responsible for collecting data and Bengbu Municipal Project Management Office (BMPMO) was responsible for monitoring project impacts.

b. M&E Implementation

Given the difficulties associated with measuring the key performance indicator associated with measuring COD discharge, the indicator was revised to the core sector indicator "volume (mass) of COD pollution load reduction achieved under the project". The BPMO presented the necessary data and during implementation the quality of the reports for all the key indicators showed an improvement over time, due to the assistance provided by project management consultants and the supervision team from the Bank.

c. M&E Utilization

The data collected was used for monitoring progress of implementation and not as a tool for decision making.



M&E Quality Rating

Modest

11. Other Issues

a. Safeguards

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

Environmental Safeguards. An environmental Impact Assessment (EIA) was carried out for each project component and potential adverse environmental impacts during construction were identified at appraisal (PAD, page 15). The impacts included limited disturbances to communities through dust or noise, water pollution due to dredging drainage channels and waste management (PAD, page 16). An Environmental Management Plan (EMP) was prepared and publicly disclosed both in Chinese and in English as required (PAD, page 16). The Bengbu Municipal Project Management Office (BMPMO) also prepared a consolidated Environmental Assessment (EA) consolidating the key issues of sub-project EIAs and EMP at appraisal. During implementation, one environmentally-sensitive activity (the Longzi Lake Dredging) was dropped. The ICR (page 11) notes that compliance with environment safeguards was deemed to be satisfactory.

Involuntary Resettlement. The project activities required permanent acquisition of land and involuntary resettlement. The resettlement impacts were expected in 11 townships with 46 villages and the project was expected to affect 11,128 people in total. At appraisal, the following key resettlement impacts were identified. (i). 9,127 people (2,422 households) were to be affected due to permanent acquisition of their collective land. (ii). 267 people (77 households) were to be affected due to the demolition of urban residential houses. (iii). 1,710 people (405 households) were to be affected due to the demolition of rural residential houses. and, (iv). 24 people were to be affected due to the demolition of four grocery stores. Among the Project Affected Persons (PAPs), 11 persons from seven households were identified as vulnerable. Individual Resettlement Action Plans (RAPs) that were in compliance with OP 4.12 guidelines and a summary RAP was prepared both in Chinese and in English at appraisal and was publicly disclosed as required (PAD, page 72).

The ICR (page 12) reports that land acquisition were significantly reduced during project implementation compared to the original plans. Originally about 182 hectares (ha) of land was expected to be permanently acquired and 156 ha of land was expected to be temporarily acquired. At closure only 60 hectares (including 36 ha of collective land) was acquired. Actual demolition was 35,572 square meters while the original plan indicated demolition of 103,160 square meters. In terms of PAPs, the total number of PAPs was 5,824 as compared to the original number 11,128 expected at appraisal. The ICR (page 12) notes that resettlement surveys undertaken in 2015 indicated that there were no adverse impacts on the PAPs and that PAPs were satisfied with the resettlement process. Resettled individuals who met the landless farmer criteria were entitled to social insurance, including pension and unemployment allowance and Job training. The ICR (page 12) that only in one sub-project in Huaiyuan Country resettlement activities had not been completed at project closure. Some 40 displaced households had not yet moved into their resettlement housing at closing. The PAPs in this case were given two housing options. They could either move in completed resettlement houses or move in resettlement houses that were under construction. The PAPs chose the latter. The construction of these houses was expected to be completed by the end of 2016 and



the PAPs were expected to move in newly constructed houses by June 2017. The ICR (page 12) also notes that these PAPs had received their compensation, including arrangements for transitional housing.

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 (PAD, page 14) and the financial management risk was rated as Modest (PAD, page 45). The ICR (page 12) notes that the financial management performance was deemed to be satisfactory. The project had adequate financial management systems and financial information was provided in a timely fashion. Unaudited Interim Financial Reports were submitted in a timely fashion and no significant financial management-related issues were identified by audit reports.

Procurement. An assessment of the implementing agency to address procurement issues was conducted at appraisal. The assessment concluded that the procurement risk was rated as Average and the procurement capacity of the implementing agency was to be strengthened through training and advisory support from the Bank during implementation (PAD, page 14) . The ICR (page 13) notes that procurement performance was deemed to be satisfactory (ICR pge 13). However, local procurement practices led to some instances of non-compliance and there were delays due to the weak capacity of the implementing agency to handle procurement issues. These were eventually rectified during implementation.

c. Unintended impacts (Positive or Negative)

d. Other

12. Ratings

| Ratings | ICR | IEG | Reason for Disagreements/Comment |
|-----------------------------|-------------------------|-------------------------|--|
| Outcome | Moderately Satisfactory | Moderately Satisfactory | --- |
| Risk to Development Outcome | Negligible | Substantial | There is Substantial financial risk, given that tariffs for wastewater services were not raised to full cost recovery by Bengbu Municipality. There is modest technical risk given that although the waste water |



| | | | |
|----------------------|-------------------------|-------------------------|---|
| | | | treatment plant was complete at project closure, it was not operational due to insufficiency of demand. |
| Bank Performance | Moderately Satisfactory | Moderately Satisfactory | --- |
| Borrower Performance | Moderately Satisfactory | Moderately 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 the following main lessons from the experience of implementing this project.

(1) Inter-County collaboration for wastewater treatment and collaboration between two jurisdictions can contribute to cost-effective principles in planning, design and construction of public utilities. In the case of this project, unlike other places in China where Waste Water Treatment Plants (WWTPs) were being built in each county, Huaishang District and Huaiyuan County reached a formal agreement to share the facilities of a preexisting WWTP. Before the pipelines were built, Huaishang WWTP used only 32% of its full capacity. The wastewater conveyed from Huaishang WWTP enabled Huaishang to utilize its spare capacity and at project closure Huaishang was operating 72% of its capacity.

(2) Appropriate arrangements should be made at preparation to build indigenous capacity particularly when sophisticated systems are envisaged at appraisal. In the case of this project, during project preparation, the French government provided financing for a consulting firm to provide key guidance on the methodology for the feasibility study, design approaches and principles for the flood and drainage component. One of the highlights of the design was introducing a computerized hydrodynamic model to assess flood risks. However, given that little or no thought was given to strengthening capacity to use the model, this aspect of design could not be utilized due to the lack of indigenous capacity.

(3). Reforms relating to tariff policies need to be considered in the country context and should be addressed through policy dialogue. In the case of this project, one of the financial covenants required the implementation of a cost recovery program to eliminate government subsidies for wastewater services through increased tariffs. The waste water tariff in Bengbu was not increased during the project implementation phase, as its pre-existing level was deemed to be fully consistent with government policy.

14. Assessment Recommended?

No



15. Comments on Quality of ICR

The ICR provides a detailed overview of the project. The narrative supports the ratings and available evidence. It is candid (particularly in parts where it discusses the issues in the initial years of the project) and also provides a clear and detailed analysis of compliance with environmental and social safeguards. The ICR however could have provided more details on the load-based charge mechanism to operate the centralized Waste Water Treatment Plant in Mohekou.

a. Quality of ICR Rating Substantial