



Report Number : ICRR0021247

## 1. Project Data

<b>Project ID</b> P096812	<b>Project Name</b> CN-Yunnan Urban Env		
<b>Country</b> China	<b>Practice Area(Lead)</b> Water	<b>Additional Financing</b> P117819	
<b>L/C/TF Number(s)</b> IBRD-76920,IBRD-79370	<b>Closing Date (Original)</b> 30-Jun-2015	<b>Total Project Cost (USD)</b> 240,000,000.00	
<b>Bank Approval Date</b> 05-May-2009	<b>Closing Date (Actual)</b> 30-Apr-2017		
	<b>IBRD/IDA (USD)</b>	<b>Grants (USD)</b>	
Original Commitment	90,000,000.00	0.00	
Revised Commitment	130,695,988.99	0.00	
Actual	130,695,988.99	0.00	
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## 2. Project Objectives and Components

### a. Objectives

The Project Development Objective (PDO) was to "assist Yunnan Province in improving the effectiveness and coverage of critical urban infrastructure services in selected counties and the effectiveness of lake basin management in Dianchi, through investments in systems for the management of wastewater, water supply, solid waste, river environment and cultural heritage" (Loan Agreement (LA) page 5). The formulation of the PDO was identical in the Project Appraisal Document (PAD) (page 3) and in the Additional Financing LA (page 5).



The PDO remained the same throughout the project, however, a level 2 restructuring brought about modifications to indicators and to key outcome targets. A split evaluation will therefore be undertaken to reflect those changes.

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

Yes

**Did the Board approve the revised objectives/key associated outcome targets?**

Yes

**Date of Board Approval**

15-Jun-2015

**c. Will a split evaluation be undertaken?**

Yes

**d. Components**

The project had three components:

**Component 1:** Urban Environment Infrastructure Development (Appraisal: US\$82.5 million; Additional Financing: US\$60 million; i.e. Total Allocated: US\$ 142.5 million; Actual: US\$123.7 million)

This component was to help key counties develop critical urban environment service infrastructure through construction and rehabilitation of solid waste management services systems, wastewater and water supply systems, cultural heritage management, river improvement measures, and capacity building for environment monitoring and project management. The component was to increase urban residents' access to three critical services: wastewater, solid waste management, and water supply. These investments were further expected to help Yunnan meet the challenges of rapid urbanization while also improving environmental quality and quality of life for urban residents.

**Component 2:** Integrated Lake Basin Management (Appraisal: US\$ 7.2 million; no Additional Financing; Total Allocated: US\$ 7.2 million, Actual: US\$ 7.0 million).

This component was to assist Kunming municipality in establishing better integrated lake management systems through technical assistance in policy actions and to develop monitoring systems. Acute water pollution in Dianchi Lake, largely attributed to coordination challenges between the multiple governments and entities charged with improving water quality and managing the lake basin was targeted. Aside from an Integrated Lake Basin management master plan, a master vision for development and environmental protection of the lake through a consultative process was formulated under this component, as were an online data-sharing platform and associated access system, the installation of water quality monitoring equipment, and associated water quality monitoring records (ICR page 37).

**Component 3:** Resettlement (amounts sub-summed under component 1).

No funds were earmarked for this component, and all its activities were carried out under component 1.

This encompasses the resettlement and rehabilitation of Displaced Persons relating to the implementation of component 1 of the Project (LA page 6). This was not described as a separate component in the PAD,



but it appeared as a separate component in both the original LA and in the ICR (pages 6 and 4 respectively). The component was never formally dropped as there is no mention of it in the amendments to the LA following restructuring and it is listed in the last ISR. No PDO outcome or intermediate indicators were specified for this component.

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

##### **Project Cost**

The estimated total project cost at appraisal was US\$191.3 million. Additional financing brought the total estimated cost up to US\$328.7 million. The Total Actual cost was US\$280.8 million (ICR pp 34-35).

##### **Financing**

The project was financed through two IBRD loans and province of Yunnan Borrower contribution. The IBRD contribution was initially appraised at US\$90 million, and the additional financing of US\$60 million through a second IBRD loan brought the total IBRD estimated cost to US\$150 million. The total actual Bank financing was US\$130.7 million.

##### **Borrower contribution**

In the PAD, the borrower contribution was estimated at appraisal to be US\$101 million (PAD initial summary table, page unnumbered). The ICR reports that the borrower contribution was estimated at US\$88.3 million at appraisal and was later revised to US\$72.9 million. Additional borrower financing was US\$68.9 million and later revised to US\$64.6 million (ICR page 35). This brought the total borrower contribution to US\$157.1 million at appraisal, later revised to US\$137.5 million. The ICR also includes the Borrowers' implementation reports, which states that actual amounts disbursed as of the project's closing date were \$104.9 million supplemented by 52.7 million, bringing total actual borrower contribution to \$157.6 million (ICR page 49).

##### **Dates**

The project was appraised on December 3rd, 2007 and became effective 17 months later, on May 5th, 2009. The original closing date was June 30th, 2015, and the actual closing date was April 30th, 2017, i.e. a 22 months' (or 1 year and 10 months) extension. The project received Additional Financing on May 27th, 2010 and underwent a level 2 restructuring on June 15th, 2015.

The two main changes were:

- 1 . Additional financing at government's request in 2010, consisting in the inclusion of Zhaotong municipality as a subcomponent under component 1 to expand access to water supply and wastewater services in Zhaotong.
- 2 . A level 2 restructuring in 2015 due to administrative delays pertaining to the World Bank seeking to use the project to reestablish dialogue with the government on cultural heritage issues. The original Lion Mountain subcomponent investments became prohibitively expensive due to these delays; the restructuring allowed for i) a reallocation of funds to other municipalities, thereby deepening the project's reach, ii) consolidation of the project's indicators, from 33 to 26, and iii) revision of cost recovery estimates to include government subsidies (ICR page 6).



### 3. Relevance of Objectives & Design

#### a. Relevance of Objectives

China's Yunnan Province was benefiting from years of strong economic growth at the time of appraisal. Tourism was a key driver of growth. The economic growth was accompanied by rapid urbanization in the province's largest cities and several county seats, heavily straining existing urban water supply, wastewater treatment, and solid waste disposal infrastructure. The urbanization rate for Kunming Municipality, for example, was 57% in 2005, while the province-wide rate was almost 30%. The strain on sanitation infrastructure was resulting in considerable environmental degradation, especially water pollution. For example, at the time of Project appraisal, the province-wide wastewater treatment rate was 40.5 percent, far below the national level of about 50 percent. The project development objectives did not change at restructuring. Though all three project objectives were aligned with development outcomes, the goal of improving the effectiveness of critical urban infrastructure services lacked sufficient definition on what the expected transformation would be, thus limiting the clarity of the project's theory of change.

**At appraisal**, the Relevance of objectives was high as the Provincial Government's 11th Five Year Plan (2007-2012) directly targeted Dianchi lake pollution, due to local authority's lack of coordination and its growth strategy was based on providing basic services to urban residents (and exploiting its natural resource base and promoting tourism) (PAD page 1). These priorities were aligned with the Bank's strategy for urban environmental management under Pillars 3 and 4 of its China CAS (2006-2010).

**After restructuring and at closure**, the PDO remained relevant to both National and Bank priorities, as the province's 13th 5-year plan (2016-2020 and complementing the Central government's 5-year plan) seeks to further expand urban infrastructure provisions and to enhance environmental protection (ICR p. 18). The project's PDO is aligned with the Bank's latest country strategy, particularly under the first strategic theme of supporting green growth (CPS China FY13-16 page 18 and its subthemes of enhancing urban environmental services and demonstrating sustainable natural management approaches).

However, while there is clear alignment between the project's development objectives and the country- and WB strategies, the relevance of the objectives is pitched at a level that does not adequately reflect a potential solution to the development problem identified. While acknowledging the difficulty of the operational environment, the objective should be directed at a level where it can be traced to what effectiveness the improvements made and the coverage of critical urban infrastructure services and lake basin management are likely to lead to, whether it be improved environmental and health outcomes, improved production and increased income or other factors affecting community livelihoods. These may be longer term targets but tracking them and identifying them is an important aspect of a successful development operation.

**Rating**  
Modest

**Revised Rating**  
Modest



## b. Relevance of Design

The Project Design with its components and activities is consistent with the stated objectives of assisting Yunnan Province in 1) improving the effectiveness of critical urban infrastructure services in selected counties, 2) improving the coverage of critical urban infrastructure services in selected counties, and 3) improving the effectiveness of lake basin management in Dianchi. However, the components and activities were not sufficient to address the first stated objective pertaining to improved effectiveness of infrastructure services.

In addition to the three stated objectives, the World Bank also sought to use the project to reestablish dialogue between the World Bank and the Chinese government on cultural heritage issues. On page 2 of the PAD, it was stated that the project "is also a vehicle to reestablish policy dialogue in cultural heritage, which was once carried out under the "Yunnan Earthquake Reconstruction Program" in 1997."

Before restructuring, The Mountain Lion Subcomponent was to address this issue, but the subcomponent faced delays, which ultimately led to the project's restructuring. This objective of reestablishing the policy dialogue with Chinese authorities over cultural heritage issues was not reflected in the project's PDO formulation.

**At appraisal**, the logical chain for the first objective of improving the effectiveness of critical urban infrastructure services in selected counties was not clear in the PAD or LA. However, the PAD established cost recovery as a proxy for "effectiveness". The proxy was established through i) financial covenants for solid waste and wastewater services, ii) intermediary indicators in the results framework, and iii) through the PAD statement that "improved financial viability of wastewater services and solid waste management were "key intermediary outcomes" for urban infrastructure" (PAD page 3). The logical link to improving effectiveness of infrastructure services was significantly weakened by using a proxy, by using financial viability as the only lens through which to assess "effectiveness", and by the lack of activities designed to contribute to the achievement of this objective.

The second objective of improving the coverage of critical urban infrastructure services in selected counties had a clear and convincing logical chain, linking outputs such as construction of infrastructure to outcomes such as improved access to services.

The third objective regarding Lake Basin Management had sought to carry out activities related to data sharing and to establish a master plan to improve coordination as main management capacity challenges were attributed to lack of coordination among basin entities (PAD page 26, ICR page 37). This logical chain and its activities had shortcomings in ensuring the stated objective of improved capacity, as there was no direct logical link between the activities and their expected outputs and outcomes such as the degree to which the platforms would be used, or the master plans would be followed. The key PDO indicator conflated data sharing with improved management and coordination (conflating intermediary outcome with outcome level indicators) while intermediary indicators were only output level.

**After restructuring**, the Results framework at restructuring did not address the shortcomings related to the first objective of improving the effectiveness of critical urban infrastructure services.

For the second and third objectives, improving coverage of infrastructure services and improving lake basin management, the results framework introduced at restructuring was simplified by consolidating indicators, sharpened by adopting core sector indicators, and refined to distinguish between inputs, intermediary



outcomes and final outcomes through the introduction of one PDO indicator per objective. In the case of the third objective, lake basin management, all previous indicators were folded under the new PDO.

**Rating**

Modest

**Revised Rating**

Substantial

#### 4. Achievement of Objectives (Efficacy)

##### **Objective 1**

###### **Objective**

Improving the effectiveness of critical urban infrastructure services in selected counties.

###### **Rationale**

This objective was to be achieved through investments in systems for the management of wastewater, water supply, solid waste, river environment and cultural heritage.

###### **Outputs:**

- An average of 38 percent of operating costs were covered by solid waste fee revenue (achievement in 2014 ranging from 11.2 to 91 percent), not achieving the original target ranging from 55 to 121 percent increase. The indicator was dropped at restructuring and the definition of cost recovery was changed to include government subsidies.
- The target that the collection of tariffs was to cover Operations and Management (O&M) costs and some debt obligations for wastewater was not achieved and the indicator was dropped at restructuring. The ICR does not supply any data for either baseline or original target.
- The target of an increase in the collection rate of solid waste services was not achieved and the indicator was dropped before implementation and formally dropped at restructuring. The ICR provides no data for either baseline or original target.

###### **Outcomes:**

Unachieved targets for all three output indicators pertaining to increased efficiency at appraisal. There were no indicators at outcome level for this objective.

**Rating**

Negligible

##### **Objective 1 Revision 1**

###### **Revised Objective**

Improving the effectiveness of critical urban infrastructure services in selected counties.



## Revised Rationale

### Outputs:

All output indicators pertaining to **increased efficiency** were dropped at restructuring.

Achievement of **increased effectiveness** was assessed in the ICR through an economic lens, focusing on the financial viability and sustainability of the wastewater utilities and solid waste utilities. The project's five wastewater utilities all comply with the Project Agreement-mandated tariff rate of 0.8 renminbi per cubic meter and fully recover costs when local government capital subsidies are included in the estimation.

However, the financial viability through O&M costs of solid waste utilities at completion was jeopardized by the difficulty of private operators to access government subsidies during construction. The ICR states (page 17) that it is expected that once O&M is reverted to county-owned enterprises financial viability will be ensured. Outputs pertaining to **increased effectiveness** therefore only partially met the financial viability of utilities targets used as proxy.

### Outcome

Though an adequate proxy, financial viability only partially covers effectiveness, which weakens the assessment (PAD page 3, ICR page 19). Furthermore, there are no reported achievements directly pertaining to the effectiveness dimension of the objective (ICR Table 6 page 22).

## Revised Rating

Modest

## Objective 2

### Objective

Improving the coverage of critical urban infrastructure services in selected counties.

### Rationale

This objective was to be achieved through investments in systems for the management of wastewater, water supply, solid waste, river environment and cultural heritage.

### Outputs:

The following outputs were reported for Kunming, Lijiang and Wenshan in the ICR's Annex 2, no targets were provided:

Kunming:

- 450,000 cubic meter sanitary landfill; 30 ton/day leachate treatment facility; 1 waste transfer station; 300m access road; associated equipment for collection and site operation; closure of existing dumping site.
- 600,000 cubic meter sanitary landfill; 2 waste transfer stations; 70 ton/day leachate treatment station; associated equipment for collection and site operation; closure of existing dumping site.





- 319,000 cubic meter sanitary landfill; 50 ton/day leachate treatment station; 1 waste transfer station; associated equipment for collection and site operation; closure of existing dumping site.

**Lijiang:**

- 2.19 million cubic meter sanitary landfill; 9 waste transfer stations, 200 ton/day leachate treatment station; 3.95 km access road; associated equipment for collection and site operation; closure of old landfill site.
- 20,000 cubic meter/day wastewater treatment plant; 311 km of sewers
- 129.74 km sewer network
- 6,000 cubic meter/day wastewater treatment plant; 35.74 km sewer network
- 35 high-powered electric lights, Lion Mountain access road, trash receptacles, parking lot; afforestation of 1505m<sup>2</sup> and landscape lighting

**Wenshan:**

- 8km water transfer pipe, 6,000 cubic meter/day water pumping station, 14 km water supply pipe
- 6,000 cubic meters/day wastewater treatment plant and 850m access road, 14.8 km sewer network
- 8,000 cubic meter wastewater treatment plant, 15.29 km sewer network
- 27.25km sewer network, 4.4 km pressure pipe and channel for discharge of effluent from WWTP, lifting pump of 10,000 tons/day
- 6.17 km drainage ditches and associated filtration infrastructure
- 6.6 km river bank restoration, 1548m boardwalk construction, and afforestation of 2322 square meter.
- 1 Environmental monitoring vehicle, 4 emergency protective clothing procured

In addition to the above outputs, the ICR reported on the following outputs under this objective:

- 12 water monitoring activities were carried out per year in Wenshan, achieving the target of 12 (from a baseline of 6).
- A Lijiang Development Master plan complying with United Nations Educational, Scientific and Cultural Organization (UNESCO) and National Protection codes was established, achieving the target (from no plan to a plan).
- Maintenance of Lijiang's UNESCO world heritage status, target achieved (status was maintained and not rescinded).

**Outcomes:**





- There was a 114 percent average increase (87 to 157 percent achievement) in the amount of solid waste disposed to sanitary landfills in tons per day. The target was partially achieved (from a baseline ranging between 0 to 142.7 tons per day to a target of 70 to 230.1 tons per day).
- An average of 150 percent (ranging from 118 to 173 percent) achievement rate in the population served by wastewater management system, target fully achieved (for a targeted number of 52,000 to 248,900 people).
- 320,600 people in urban areas provided with access to improved sanitation, target exceeded (319,300 people from a 190,200 baseline).
- 400,000 people in urban areas provided with access to improved water sources, target exceeded (for a targeted 347,600 people from a 270,050 baseline).
- There was less than 60 mg/L (ranging from 24 to 36) Chemical Oxygen Demand (COD) level at discharge point. The target was exceeded (60 mg/L from a 250-400 mg/L range).
- 100 percent of Wenshan polluters were aware of the new regulation standards, achieving the target of 100 percent.
- No data available regarding rainwater drainage population served, target not assessed (target was 60,000 people).
- No data available regarding the incidence and severity of floods as compared to historical data in terms of number of people displaced and extent of material damage. Though listed in the PAD, the indicator is not included in the Project Agreement results framework and no data is available.

The achieved outputs contributed to three main outcomes: increased coverage of urban infrastructure services (through output and outcome achievements pertaining to infrastructure service), environmental outcomes (through the input level indicator tracking COD levels), and cultural heritage outcomes (through the output level indicators regarding the UNESCO status and UNESCO compliant Development master plan for Lijiang). Between the lack of data pertaining to the comparison in incidence of floods (output) and the lack of data regarding the beneficiaries of rainwater drainage systems (outcome), the objective's efficacy at appraisal is weakened despite achievement of its other outputs and outcomes

**Rating**  
Modest

## **Objective 2 Revision 1**

### **Revised Objective**

Improving the coverage of critical urban infrastructure services in selected counties.

### **Revised Rationale**

#### **Outputs:**

The following outputs were reported for Zhaotong in the ICR's Annex 2, no targets were provided:



- 25.79 km water transfer pipe; 2 water treatment plants of 60,000 m<sup>3</sup>/day; 1 pumping station of 20,000 m<sup>3</sup>/day; 83.46 km water supply distribution pipes.
- 20,000 cubic meters/day extension of wastewater treatment plant and 48.92 km sewer network
- 45.35 km river rehabilitation; environmental monitoring equipment and waste collection facilities; as well as flood risk management system.

In addition, the ICR is reporting the following outputs:

- 51.97 kilometers of river section were restored, and target exceeded (target of 49.7 kilometers).
- There were 79,170 visitors to Lion Mountain Park, exceeding the target of 75,000 visitors.

Both these output targets were exceeded.

#### **Outcomes:**

- 828,800 urban residents had access to wastewater treatment services, exceeding the target of 806,000 urban residents.
- 455,000 urban residents with access to solid waste management services, exceeding the target of 448,000.
- 502,000 urban residents with access to water supply services, exceeding the target of 404,000.
- There was a total reduction of 3,815 tons per year in Chemical Oxygen Demand pollutants loads achieved under the Project, exceeding the target of 2,100 tons per year. The indicator was introduced at restructuring.
- 535 tons per day of municipal solid waste were disposed in landfills, exceeding the target of 480 tons per day.

#### **Revised Rating**

Substantial

### **Objective 3**

#### **Objective**

Improving the effectiveness of lake basin management in Dianchi.

#### **Rationale**

This objective was to be achieved through investments in systems for the management of wastewater, water supply, solid waste, river environment and cultural heritage.

#### **Outputs:**



- The project included the following output indicators, all of which were dropped at restructuring due to targets having been achieved. In the case of the monitoring instances, project staff continued to record them even after the indicator was dropped.
- The project undertook 2,190 monitoring instances of water quality per year through sampling, equivalent to 6 times a day on 3 rivers, not achieving the original target of 8,760 monitoring instances per year. The original target was assumed to be excessive as it would require hourly samplings, and the indicator was thus dropped at restructuring. Project Management Office (PMO) nevertheless continued reporting for the full year 2017.
- 24 monitoring instances of water quality per year through sampling, equivalent to twice a month on 14 streams, target not achieved (original target 8,760 monitoring instances per year assumed excessive sampling of a sampling every hour), indicator dropped at restructuring but PMO continued reporting for the full year of 2017.
- An online monitoring and evaluation system was established, the target was achieved before restructuring, and the indicator dropped at restructuring.
- A data processing system was established, the target was achieved before restructuring and the indicator dropped at restructuring.
- Dianchi protection regulations were revised, approved and enforced, with regulations approved in September 2012 and enforced since January 1, 2013, the target was achieved before restructuring and the indicator dropped.
- ILBM Master Plan for Dianchi was developed and adopted, particularly conducting water resource carrying capacity of the lake basin, target achieved before restructuring, so indicator dropped and incorporated into PDO level indicator.

#### **Outcomes:**

- Improved management & coordination by responsible agencies/bureaus for Dianchi as evidenced by regular sharing of data among all key bureaus involved, target achieved through a data sharing platform in place and in use, achieved before restructuring, and the indicator was thus dropped.

Lack of coordination and of data sharing among the different basin entities was established as the main reason for the lake's pollution and the main challenge to effective lake basin management capacity (ICR page 1, PAD page 26). Further coordination is not captured by the indicators, and existence of a data sharing platform does not imply data-sharing, coordination or even improved capacity. Strengthening of the regulatory framework through the output indicator of revising protection regulations and their enforcement does not directly track the outcome of a better regulatory environment, but merely its theoretical framework.

**Rating**  
Modest

#### **Objective 3 Revision 1** **Revised Objective**



Improving the effectiveness of lake basin management in Dianchi.

### **Revised Rationale**

#### **Outputs:**

All output indicators were dropped or integrated to the objective's outcome target after restructuring.

#### **Outcomes:**

Outcomes under this objective included only one indicator after restructuring:

Improved capacity for Dianchi Lake management, through completion of an Integrated Lake Basin Management Plan (ILBMP) which i) incorporated ILBMP lessons into the provincial 13th Five Year Plan (FYP), ii) established an information system for Dianchi Lake iii) included findings from ILBMP into sector plans under the provincial 13th FYP, target achieved (target was a) ILBMP lessons included in sector 13th FYP, b) information system for Dianchi Lake in place, c) Findings from ILBMP incorporated into sector plans under the 13th FYP PDO level indicator).

The objective of improved lake management capacity were to be achieved through i) better access, use and sharing of data by Dianchi authorities, through an operating online monitoring data-sharing platform, and through online M&E- and data processing systems in place, where at appraisal, there was lack of information to even assess pollution load in the lake, ii) better coordination among Lake basin entities, through completion of an ILBMP detailing how the different basin authorities were to coordinate where before there was no planning toward management, and iii) stronger regulatory environment, through enforcement of protection regulations and the inclusion of the ILBMP findings and lessons in the provincial 13th FYP.

This objective is rated substantial because the PDO level indicator for this objective (ICR page vii) was achieved. The rating is highly influenced by the lack of any previous coordination and data sharing protocols, and the establishment of these into policy through integration in the 13th FYP. Other shortcomings to the theoretical framework established at appraisal remain, as existence of a plan or a policy does not guarantee its implementation. It is nevertheless a noteworthy effort as it establishes a baseline against which to look at future quality of data-sharing and coordination among entities and their level of capacity, thereby improving lake management capacity.

### **Revised Rating**

Substantial

## **5. Efficiency**

An economic analysis was undertaken at appraisal (PAD page 8 and 9) which included Economic Internal Rates of Return (EIRR) for Waste Water, Solid Waste and River Rehabilitation along with a sensitivity analysis in terms of Revenue, Capital Costs and Operations and Management (O&M) Costs. At completion, this was replicated by the ICR, thereby enabling comparison (ICR Page 24). The economic analysis in the ICR



incorporated (i) the actual scope of investments in all Project locations; (ii) the actual scope of Project impact; and (iii) the actual Project costs.

### EIRR.

Completion rates were higher at the ICR stage than at appraisal in all categories, particularly after cost adjustments (government subsidies were included in the calculations at restructuring). Higher results are also due to higher actual ratios of both households served to physical capacity of the infrastructure and households served to dollars invested than originally estimated (PAD page 25). The EIRR provided for the project overall are an interval and not a point value; at appraisal it was 5-20%, and at completion 7-29%.

EIRR	Appraisal (Base case)	Completion
Waste water	19.9% (10.2% cost adj.)	24.5%
Solid waste	5.2%	7.6%
River rehabilitation	18.2%	28.8%

### Financial Viability and Sustainability.

The PAD provided a Financial Rate of Return (FRR) for Wastewater with a base case of 2.2%-7.3% and ranging from 1.2%-6.4% in a sensitivity analysis accounting for lower revenues, increased capital costs and increased O&M Costs (PAD page 9). The ICR does not provide any FRR but details the financial viability of the project's 5 wastewater utilities: all comply with the Project Agreement-mandated tariff rate of 0.8RMB per cubic meter and, when local government capital subsidies are accounted for, fully recover costs. The financial viability of solid waste utilities at completion were somewhat jeopardized during construction due to the difficulty of private operators to access government subsidies. However, once O&M reverts to county-owned enterprises as expected, financial viability is expected to be ensured, according to the ICR (page 17).

### Administrative and Operational Efficiency.

The Provincial Project Management Office (PMO) mitigated some county level Project Implementation Unit (PIU) capacity weaknesses in terms of contract management (PAD page 5, ICR page 8). However, administrative delays pertaining to Lion Mountain Activities lead to the restructuring and adversely affected implementation efficiency (ICR page 26).

### 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		0	0 <input type="checkbox"/> Not Applicable



ICR Estimate	0	0 <input type="checkbox"/> Not Applicable
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\* Refers to percent of total project cost for which ERR/FRR was calculated.

## 6. Outcome

Relevance of Objectives is rated Modest both before and after restructuring as the project's objectives were pertinent to the sector context, but there were shortcomings in a lack of definition for the first objective and the PDO was at a relatively low level in the results chain. Relevance of Design is rated Modest at appraisal and Substantial after restructuring, as the results framework was strengthened at restructuring. For Efficacy, two of the three objectives under the original project are rated Modest and one is rated Negligible (Objective 1 Effectiveness of services). After restructuring, achievement of all three objectives improved, one is thus rated Modest (Effectiveness of services), and the remaining two are rated Substantial (Coverage of services, Lake Basin management). Efficiency is rated Substantial as the economic analysis showed high and solid economic returns.

The overall outcome rating is therefore Moderately Satisfactory based on a weighted rating of 3 before the restructuring and a 4 after restructuring, resulting in an overall rating of 3.5 which we round up to 4.

### a. Outcome Rating

Moderately Satisfactory

## 7. Rationale for Risk to Development Outcome Rating

**Financial Risk:** Financial risk is considered substantial. Although Minimum tariff levels established as requirements in the LA (and implying cost recovery levels) were all complied with, not all PIUs achieved full cost recovery by project close (ICR page 29).

**Political Risk:** Political Risk is considered modest as Chinese and provincial governments (though their respective 5-year plans) are committed to maintaining urban infrastructure services to urban residents.

**Sustainability Risk:** Sustainability Risk is considered substantial as private operators have had difficulty covering their Operation and Management Costs through Government Subsidies. The Risk will be mitigated once those responsibilities are passed on to county-owned enterprises.

**Environmental Risk:** Environmental Risk is considered substantial as the project's environmental improvements could be threatened should some of the proposed activities malfunction, through leachate spills for example or landfill operators foregoing to spray water (to avoid dust).

### a. Risk to Development Outcome Rating



Substantial

## 8. Assessment of Bank Performance

### a. Quality-at-Entry

The Project's design built upon previous projects and lessons learned. The Bank properly identified environmental and social safeguard risks and incorporated adequate mitigation measures. To ensure strategic priority, sub-projects were to be chosen according to set criteria such as national and provincial strategic priorities; rapid urbanization; need for tourism management; high degree of pollution; risk mitigation needs; fiscal needs; sufficient institutional capacity; and readiness for project implementation (PAD page 2). There were moderate shortcomings in preparation at appraisal as government subsidies in cost recovery calculations were initially omitted in the estimations (2015 Amendment to Project Agreement, Loan 7692-CN and Loan 7937-CN page 2). Since government subsidies to urban infrastructure utilities are customary in China (ICR page 6), the omissions of these in the PAD are technical, financial, and economic shortcomings as subsidies are "regularly allocated to support critical urban infrastructure" (ICR page 12).

**Quality-at-Entry Rating**  
Moderately Satisfactory

### b. Quality of supervision

The Bank undertook 15 supervision missions during the eight years of project implementation. In terms of implementation, the Bank coordinated the successful resolution of a leachate spill with the government and implemented mitigating measures through training (ICR pages 12 and 15). The Bank successfully addressed some of the original design shortcomings by revising the Results Framework, downscaling several subcomponents and redirecting funds to higher priority activities at the restructuring. However, the Bank team failed to define the objective of effectiveness of urban infrastructure services.

**Quality of Supervision Rating**  
Satisfactory

**Overall Bank Performance Rating**  
Moderately Satisfactory

## 9. Assessment of Borrower Performance

### a. Government Performance

Yunnan's Provincial Government demonstrated project commitment and involvement when required, as evidenced by the participation of high-level officials, usually the vice-mayor, in site visits and meetings





(ICR page 30), and in enabling policies that allowed minimum tariff levels established as requirements in the LA to be reached. Furthermore, the Government Included lessons learned from the Integrated lake basin management Plan into its 13th Five Year Plan. However, there were moderate shortcomings due to administrative delays, which led to restructuring.

### **Government Performance Rating**

Moderately Satisfactory

### **b. Implementing Agency Performance**

The Implementing agency's commitment to achieving the project's development objectives was demonstrated by satisfactory compliance with all safeguards and promotion of activities that added value to Project investments, such as the Zhaotong flood warning system (through Additional Financing the at Government's request). However, there were moderate shortcomings in procurement processes, including an instance in which the bidding process was not conducted in accordance with Bank procedure, even though the case was reverted to the Bank appropriately. (ICR page 17, page 30). Furthermore, some PIUs' capacities were lagging, leading to delays and possibly jeopardizing the financial viability of subcomponents (ICR page 29, page 30).

### **Implementing Agency Performance Rating**

Moderately Satisfactory

### **Overall Borrower Performance Rating**

Moderately Satisfactory

## **10. M&E Design, Implementation, & Utilization**

### **a. M&E Design**

Monitoring and Evaluation (M&E) Design was the responsibility of the PMO who had extensive experience, and the PIUs, many of which had high M&E capacity. Prior to restructuring, M&E Design tracked progress toward objectives but relied on Intermediary Outcome indicators which were weakly aligned with outcomes. The M&E design also failed to define effectiveness of critical urban infrastructure, placing undue importance on financial viability and cost recovery as a proxy, and failing to account for government subsidies in its cost recovery calculations.

### **b. M&E Implementation**

The PMO oversaw the PIUs' data collection and reported to the Bank. Apart from a few exceptions (ICR page 13), the PIUs provided consistent & timely M&E information, as did the PMO. The PMO also continued to monitor some of the indicators that had been dropped at restructuring (as the targets were achieved prior to restructuring), like the monitoring of streams and rivers, ensuring continued assessment of lake basin



management, ICR page 13). Most of the design shortcomings were addressed under the restructuring by sharpening the wording of indicators, aligning them to objectives, and including government subsidies in its calculations of utilities' financial viability. This improved M&E implementation.

### **c. M&E Utilization**

M&E data was used to assess progress and adjust construction timeliness (ICR page 15). In addition to increasing the capacity of the provincial level government regarding lake basin management, the project's monitoring stations were used for water quality monitoring and progress tracking of pollution reduction goals. The existence and availability of information enabled information sharing and basin wide cooperation that further strengthened, benefited, and informed the different lake Basin management entities. Overall, the rating for Monitoring and Evaluation Design, Implementation and Utilization is rated Substantial as there were only minor shortcomings, as detailed above, in the M&E system's design, implementation, or utilization.

### **M&E Quality Rating**

Substantial

## **11. Other Issues**

### **a. Safeguards**

The project was classified as category A, and triggered six safeguard policies;

- 1 . Environmental Assessment (Operational Policy (OP) 4.01), mitigated through comprehensive Environmental Management Plans prepared for each Project city/county. With the Additional Financing and inclusion of Zhaotong municipality, a project specific Environment Management Plan was produced (E2329).
- 2 . Natural Habitats (OP4.04), mitigated through measures included in the Environmental Management Plans prepared for each Project city/county.
- 3 . Physical Cultural Resources (OP4.11), mitigated through measures included in the Environmental Management Plans prepared for each Project city/county.
- 4 . Involuntary Resettlement (OP4.12), mitigated through Individual Resettlement Action Plans contributing to safeguards compliance regarding Involuntary Resettlement.
- 5 . Indigenous Peoples (OP4.10), mitigated through Indigenous Peoples Plan contributing to safeguards compliance regarding Indigenous peoples.
- 6 . and Safety of Dams (OP4.37), mitigated through an independent dam assessment being carried out and its recommendations implemented

Project safeguards benefited from solid preparation. One instance of a leachate situation in one landfill could have evolved into an environmental issue, however, the project dealt with and monitored the situation, further strengthening its O&M capacity building efforts in response, and thereby resolved and prevented reoccurrence (ICR page 10, 15 and 16). The ICR does not report directly on compliance.



## **b. Fiduciary Compliance**

### **Financial management:**

Annual audits were submitted to the Bank on time; provincial PMOs consolidated the financial statements of subcomponents and submitted these to the bank, on time, using information provided by Implementing Agencies whose role was to establish the independent account for accounting of the project. Also, the Yunnan Finance Bureau established the designated accounts for the project and made the reimbursements on time. The financial management system was overall satisfactory as the only issues were minor disbursement delays due to staff changes (ICR page 16).

### **Procurement:**

The Fiscal Year (FY) 2016 procurement post-review revealed a procurement issue where bidders were not given the opportunity to seek clarification. However, this did not constitute substantial non-responsiveness and was resolved through intervention by the procurement specialist (ICR page 11 and 17).

## **c. Unintended impacts (Positive or Negative)**

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## **d. Other**

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## **12. Ratings**

<b>Ratings</b>	<b>ICR</b>	<b>IEG</b>	<b>Reason for Disagreements/Comment</b>
Outcome	Moderately Satisfactory	Moderately Satisfactory	---
Risk to Development Outcome	Substantial	Substantial	---
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 lessons are adapted from the ICR with some modification of language:

**1 . If relevant income sources are overlooked in the calculation of projections, projections become skewed and this may negatively affect project design and achievement.** To ensure consistent projected returns, financial viability, and project success from appraisal to close, utility cost recovery projections must rely on and take advantage of all income sources at disposal (such as government subsidies).

**2 . Complex project designs with multiple objectives may lead to implementation delays and restructurings.** Overly complex designs with multiple objectives may lead to implementation delays and restructuring. This can be avoided by dropping peripheral objectives (such as cultural heritage dialogue renewal in this project).

**3 . Institutionalization of inter-jurisdictional coordination may ensure and reinforce cooperation.**

Institutionalizing cooperation through inter-jurisdictional recurring meetings or through indicators may ensure and reinforce the institutional capacity underpinning inter-jurisdictional resource allocation, thereby fostering lasting, effective cooperation across jurisdictions.

## 14. Assessment Recommended?

No

## 15. Comments on Quality of ICR

The ICR is well written, presenting all valuable information clearly. It is results-focused and presents evidence and analysis of high quality. The lessons presented are based on experience, evidence and analysis. However, internal consistency is disrupted by a partial split evaluation (pre- and post-restructuring, for Assessment of Outcomes only, which in any case, the changes implemented at restructuring does not warrant). The ICR's Quality is rated Substantial.

### a. Quality of ICR Rating

Substantial

