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**PROJECT PERFORMANCE ASSESSMENT REPORT**

**PEOPLE'S REPUBLIC OF CHINA**

**SECOND TIANJIN URBAN DEVELOPMENT AND ENVIRONMENT PROJECT  
(LOAN NO. 4695)**

**CHONGQING SMALL CITIES INFRASTRUCTURE IMPROVEMENT  
PROJECT (LOAN NO. 4794)**

**June 23, 2014**

**IEG Public Sector Evaluation**  
*Independent Evaluation Group*

## Currency Equivalents (annual averages)

*Currency Unit = Chinese Renminbi (RMB)*

Year	US\$	RMB
2002	1.00	8.28
2003	1.00	8.28
2004	1.00	8.28
2005	1.00	8.29
2006	1.00	7.97
2007	1.00	7.61
2008	1.00	6.95
2009	1.00	6.83
2010	1.00	6.77
2011	1.00	6.46
2012	1.00	6.31
2013	1.00	6.24

## Abbreviations and Acronyms

ADB	Asia Development Bank
BOD	Biochemical Oxygen Demand
ICR	Implementation Completion and Results Report
IEG	Independent Evaluation Group
IEGPS	IEG Public Sector Evaluation
GDP	Gross Domestic Product
JBIC	Japan Bank for International Cooperation
KPI	Key Performance Indicator
M&E	Monitoring and Evaluation
MTR	Mid-Term Review
PAD	Project Appraisal Document
PPAR	Project Performance Assessment Report
PMO	Project Management Office
RAP	Resettlement Action Plan
RMB	Renminbi (Chinese currency)
TA	Technical assistance
TTL	Task Team Leader
WWTP	Wastewater Treatment Plant

## Fiscal Year

Government: January 1 – December 31

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<p>This report was prepared by Fang Xu and Roy Gilbert who assessed the project in October 2013. The report was peer reviewed by Mats Andersson and panel reviewed by Midori Makino. Romyne Pereira provided administrative support.</p>
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## Principal Ratings

### SECOND TIANJIN URBAN DEVELOPMENT AND ENVIRONMENT PROJECT (LN 4695)

	ICR*	ICR Review*	PPAR
Outcome	Moderately Satisfactory	Moderately Satisfactory	Moderately Unsatisfactory
Risk to Development Outcome	Negligible to Low	Moderate	Negligible to Low
Bank Performance	Moderately Satisfactory	Moderately Satisfactory	Moderately Satisfactory
Borrower Performance	Moderately Satisfactory	Moderately Satisfactory	Moderately Satisfactory

\* The Implementation Completion and Results Report (ICR) is a self-evaluation by the responsible Bank department. The ICR Review is an intermediate IEGWB product that seeks to independently verify the findings of the ICR.

### CHONGQING SMALL CITIES INFRASTRUCTURE IMPROVEMENT PROJECT (LN 4794)

	ICR*	ICR Review*	PPAR
Outcome	Satisfactory	Moderately Satisfactory	Moderately Satisfactory
Risk to Development Outcome	Moderate	Significant	Significant
Bank Performance	Moderately Satisfactory	Moderately Satisfactory	Moderately Satisfactory
Borrower Performance	Satisfactory	Moderately Satisfactory	Moderately Satisfactory

\* The Implementation Completion Report (ICR) is a self-evaluation by the responsible Bank department. The ICR Review is an intermediate IEGWB product that seeks to independently verify the findings of the ICR.

## Key Staff Responsible

### SECOND TIANJIN URBAN DEVELOPMENT AND ENVIRONMENT PROJECT (LN 4695)

Project	Task Manager/Leader	Division Chief/ Sector Director	Country Director
Appraisal	Songsu Choi	Keshav Varma	Yukon Huang
Completion	Suhail J. S. Jme'an	Mark Lundell	Klaus Rohland

### CHONGQING SMALL CITIES INFRASTRUCTURE IMPROVEMENT PROJECT (LN 4794)

Project	Task Manager/Leader	Division Chief/ Sector Director	Country Director
Appraisal	Thomas Zearley	Keshav Varma	David Dollar
Completion	Ji You	Mark Lundell	Klaus Rohland



**IEG Mission: Improving World Bank Group development results through excellence in evaluation.**
**About this Report**

The Independent Evaluation Group assesses the programs and activities of the World Bank for two purposes: first, to ensure the integrity of the Bank's self-evaluation process and to verify that the Bank's work is producing the expected results, and second, to help develop improved directions, policies, and procedures through the dissemination of lessons drawn from experience. As part of this work, IEG annually assesses 20-25 percent of the Bank's lending operations through field work. In selecting operations for assessment, preference is given to those that are innovative, large, or complex; those that are relevant to upcoming studies or country evaluations; those for which Executive Directors or Bank management have requested assessments; and those that are likely to generate important lessons.

To prepare a Project Performance Assessment Report (PPAR), IEG staff examine project files and other documents, visit the borrowing country to discuss the operation with the government and other in-country stakeholders, and interview Bank staff and other donor agency staff both at headquarters and in local offices as appropriate.

Each PPAR is subject to internal IEG peer review, Panel review, and management approval. Once cleared internally, the PPAR is commented on by the responsible Bank department. The PPAR is also sent to the Borrower for review. IEG incorporates both Bank and Borrower comments as appropriate, and the Borrowers' comments are attached to the document that is sent to the Bank's Board of Executive Directors. After an assessment report has been sent to the Board, it is disclosed to the public.

**About the IEG Rating System for Public Sector Evaluations**

IEG's use of multiple evaluation methods offers both rigor and a necessary level of flexibility to adapt to lending instrument, project design, or sectoral approach. IEG evaluators all apply the same basic method to arrive at their project ratings. Following is the definition and rating scale used for each evaluation criterion (additional information is available on the IEG website: <http://worldbank.org/ieg>).

**Outcome:** The extent to which the operation's major relevant objectives were achieved, or are expected to be achieved, efficiently. The rating has three dimensions: relevance, efficacy, and efficiency. *Relevance* includes relevance of objectives and relevance of design. Relevance of objectives is the extent to which the project's objectives are consistent with the country's current development priorities and with current Bank country and sectoral assistance strategies and corporate goals (expressed in Poverty Reduction Strategy Papers, Country Assistance Strategies, Sector Strategy Papers, and Operational Policies). Relevance of design is the extent to which the project's design is consistent with the stated objectives. *Efficacy* is the extent to which the project's objectives were achieved, or are expected to be achieved, taking into account their relative importance. *Efficiency* is the extent to which the project achieved, or is expected to achieve, a return higher than the opportunity cost of capital and benefits at least cost compared to alternatives. The efficiency dimension generally is not applied to adjustment operations. *Possible ratings for Outcome:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, or Highly Unsatisfactory.

**Risk to Development Outcome:** The risk, at the time of evaluation, that development outcomes (or expected outcomes) will not be maintained (or realized). *Possible ratings for Risk to Development Outcome:* High, Significant, Moderate, Negligible to Low, or Not Evaluable.

**Bank Performance:** The extent to which services provided by the Bank ensured quality at entry of the operation and supported effective implementation through appropriate supervision (including ensuring adequate transition arrangements for regular operation of supported activities after loan/credit closing, toward the achievement of development outcomes. The rating has two dimensions: quality at entry and quality of supervision. *Possible ratings for Bank Performance:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, or Highly Unsatisfactory.

**Borrower Performance:** The extent to which the Borrower (including the government and implementing agency or agencies) ensured quality of preparation and implementation, and complied with covenants and agreements, toward the achievement of development outcomes. The rating has two dimensions: government performance and implementing agency(ies) performance. *Possible ratings for Borrower Performance:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, or Highly Unsatisfactory.



## Preface

This is a Project Performance Assessment Report (PPAR) for the following two projects:

- China: Second Tianjin Urban Development and Environment Project (loan 4695), a World Bank loan of US\$150 million approved May 20, 2003. The loan closed June 30, 2012, two years later than planned, and US\$2.8 million was cancelled.
- China: Chongqing Small Cities Infrastructure Improvement Project (loan 4794), a World Bank loan of US\$180 million approved June 21, 2005. The loan closed as planned on June 30, 2012, and US\$4.9 million was cancelled.

The report is based on a review of project documents, including Implementation Completion and Results Reports (ICRs), Project Appraisal Documents (PADs), legal documents, and project files as well as discussions held with Bank staff involved in the projects. An Independent Evaluation Group (IEG) mission visited China in October–November 2013 to review project results and met with some 50 persons including national officials and experts as well as local officials and project staff. The IEG mission made field visits in both cities to project sites of urban road and transportation improvements, water supply and raw water supply systems, flood protection works, storm water drainage and wastewater sewerage, the main Dagu Canal, and public toilets. These visits gave the mission opportunities to engage directly with final beneficiaries of the projects under review. IEG gratefully acknowledges the courtesies and attention freely given by these interlocutors as well as the excellent planning and logistical support received from the Ministry of Finance, local authorities, and the Bank’s own country office in Beijing.

IEG selected these two projects for a field assessment to verify their results and assess their sustainability. The PPAR mission also asked the Bank staff and the client a specific question, “What did the Bank and the Chinese government learn from each other?” The response generated is intended to contribute to IEG’s ongoing evaluation of “Learning and Results in World Bank Operations.” In addition, the findings from this report will serve the upcoming IEG evaluation “Tackling Urban Poverty” (to be delivered in FY17). Following standard IEG procedures, copies of the draft PPAR were sent to government officials and agencies for their review and comments and no comments were received.



## Summary

This is a Project Performance Assessment Report (PPAR) of two urban development projects in China: (i) the Second Tianjin Urban Development and Environment Project (loan 4695) in the amount of US\$150 million approved in 2003, called “Tianjin-II” hereafter; and (ii) the Chongqing Small Cities Infrastructure Improvement Project (loan 4794) in the amount of US\$180 million approved in 2005, called “Chongqing Small Cities” hereafter. Both operations were among 65 urban development projects approved by the World Bank during 2003–2013 with commitments of US\$7.3 billion in China.

The unprecedented scale of urbanization in China, as it affects the two projects, forms the backdrop to this evaluation. Tianjin and Chongqing have the status of provinces, but are administered directly by the central government. Nationwide, 260 million migrants moved to these megacities during the last three decades. From 2002 to 2012, more than 5 million people migrated to Chongqing, the urbanization rate in Chongqing increased by 17.1 percentage points to 57 percent in 2012. The urbanization rate in Tianjin was higher at 80.5 percent in 2011, as a result of about 3.5 million people moving to the urban area during an 11-year period (2000–2011).

Accompanying the big scale of urbanization is the increasing demand for urban services. Both operations reviewed here were trying to address the key question of how to improve urban services for a rapidly growing population.

### Tianjin-II

The Tianjin-II objective, “to assist Tianjin in enhancing the efficiency and equity of wastewater management and transportation system aimed at the sustainable development of Tianjin” (loan 4695-CHA, Schedule 2), left the concepts of *efficiency and equity* undefined. Nevertheless, the Independent Evaluation Group (IEG) found the project development objective to be relevant to China’s national goals of improving infrastructure and building a harmonious society and relevant to the Bank’s partnership strategy for China.

The original design tackled the wastewater and transport sectors, focusing on improving the efficiency of these two sectors, expanding the service coverage, and benefiting the low-income group. However, some activities turned out to be infeasible or less relevant at implementation because of the changing local environment and ended up either being cancelled or replaced with lower-cost activities.

Project implementation was challenging. The implementation experienced delayed effectiveness, slow disbursements, and two restructurings to accommodate the many changes from the original design. Two one-year extensions of the closing date were needed to fully disburse the loan.

The design and implementation of project monitoring and evaluation (M&E) were defective. It led, for example, to the unconvincing claim that the increased modal use of buses in the megacity from a 6 percent baseline of all trips to 21 percent at completion was the result of a project that invested US\$7.1 million in the bus system. The *equity*

*aspect of* wastewater management did not figure in the project results framework. In a data abundant city like Tianjin, it is unclear why more indicators were not measured.

That said, the project delivered soundly built and well-finished components. The infrastructures built under the project are also well-maintained. The project activities increased the wastewater service area by 6,100 ha, or by 8 percent in downtown Tianjin and Binhai New District in suburban Tianjin. This has improved the lives of an additional 441,000 local residents in low-income areas in downtown Tianjin and Binhai New District.

The Yingcheng Wastewater Treatment Plant, the first plant in China using the design-build-operate method,<sup>1</sup> was also supported under the project. It has the treatment capacity of 10,000 ton/day and is using energy efficiency technology. It is operating more efficiently with a unit energy cost<sup>2</sup> that is 20 percent lower than the average for the entire wastewater treatment system in Tianjin.

The Dagu Canal cleanup not only increased the hydraulic capacity of the canal to carry increased discharges of treated effluent and storm water, an efficiency gain of the wastewater management system, but also improved the environment and prompted development along the canal.

The urban road works on Tianjin Middle Ring Road improved the function of the ring road and improved the efficiency of the transport system by helping alleviate congestion along the western, southern, and north-eastern sections.

It is evident that the project's physical investments contributed to the enhanced efficiency of wastewater and transport systems in the project areas in downtown Tianjin and Binhai New District. The project's contribution to the equity of these two systems, however, was quite limited because of the fact that majority of the project investments were in wealthier downtown Tianjin, and there was limited investment on bus transport under the project. It is also harder to make a direct linkage between the project investments and the improvements in the entire wastewater and transport sectors in Tianjin. This is because the scale of the physical investments supported under the project was "supplemental" and "corrective" (PAD, p. 14) when compared with the massive wastewater and transport network in the city, which comprised a total length of 6,058 km of roads and 16,551 km of sewerage pipes with a capacity of 2.3 million ton/day in 2013.

The technical assistance component supported under the project, on the other hand, targeted the improvements in institutions, policy, and financing of the wastewater and transport sectors, with the potential of contributing to making a larger impact at the city level. The project carried out a study whose recommendations were implemented by the Tianjin Municipal Government, and this involved the establishment of the Tianjin Water

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<sup>1</sup> The design-build-operate method is a form of project management, wherein a private entity receives a concession from the private or public sector to design, construct, and operate a facility stated in the concession contract.

<sup>2</sup> Energy consumption usually accounts for 30 percent of the operational cost for a wastewater treatment plant.

Bureau to integrate the water and sewerage service, leading to a more efficient and effective water and sewerage system. Another study for the transport sector helped establish a model to evaluate trip demand by route and a system to allocate and manage bus routes on that basis. This has contributed to an improved bus deployment system and helped promote public transport.

The economic analysis of the project roads investment shows that the investments were worthwhile. The economic rates of return of three representative urban road activities ranged from 13.5 percent on Beicang Street improvement to 243 percent on Nanjing Road improvement. Cost-benefit analysis was carried out for some wastewater activities at appraisal stage, but such an analysis was not done at project completion. It is therefore difficult to assess the overall efficiency of the project because of a lack of information.

Works in Tianjin were completed to a high standard with ongoing operations and maintenance, which should help reduce the risk to development outcomes. However, the residential and commercial development prompted by the Dagu Canal cleanup will generate new sources of pollution. Extensive and necessary mitigation and control measures, such as closely monitoring the quality of the discharge to the canal, shutting down the polluted factories along the canal, and continuing the dredging, are being implemented to sustain the successful environmental cleanup of the canal.

As noted above, an unclear objective and a weak M&E and results framework reflect initial weaknesses in Bank performance. Bank performance during implementation was stronger and benefited from the timely oversight of the Bank's Beijing Office. The Bank's teamwork was viewed by the Borrower as "responsive" and "supportive."

Borrower performance was mixed; support by the central government in Beijing was strong and consistent, but project preparation by the Tianjin Municipal Government could have been more thorough. The municipal government did a good job during project implementation, using its own funds to finance a few activities cancelled from the project and putting in place maintenance schemes for the infrastructure pieces constructed under the project. As implementing agencies, the project management office (PMO) and local departments completed assigned tasks knowledgeably and effectively.

The overall outcome of the project is rated *Moderately Unsatisfactory*. The risk to development outcome is rated *Low*. Bank Performance is rated *Moderately Satisfactory*, while overall Borrower Performance is rated *Moderately Satisfactory*.

## **Chongqing Small Cities**

The objective of the Chongqing Small Cities Infrastructure Improvement Project was "to support emerging small cities to improve the efficiency and effectiveness of infrastructure service delivery, to accommodate the rapid urban growth" (loan 4794-CHA, Schedule 2).

Similar to the Tianjin-II project, there was no clear definition of the "efficiency" and "effectiveness" in the Project Appraisal Document. However, by focusing on infrastructure improvements in the secondary cities in Chongqing, the project

development objectives were relevant to the Bank's Partnership Strategy on China and the priority set by the Chinese government. Both called for an environmentally sustainable development process and addressing the needs (infrastructure services being one of them) of the poorer and disadvantaged people and regions of the country.

The project design was aligned with the project development objectives. The project focused on the sectors of water supply, flood protection, road improvement, and environmental sanitation. The 10 secondary cities involved in the project were all fast urbanizing areas.

Project implementation was off to a good start. Up to the project mid-term review (MTR) in 2010, actual disbursements lagged only about three months behind those planned. This was a notable achievement for local implementing agencies that had no previous experience of working with the Bank. Disbursements slowed somewhat after the MTR, but picked up later so that the loan was almost 100 percent disbursed by the original closing date of June 2012.

While completed as planned, some of the project investments did not produce high standard infrastructure pieces as was obvious during IEG's site visits. Contrary to the Tianjin-II project, where the infrastructure is well-maintained, under the Chongqing small cities project, insufficient maintenance of the project infrastructure seems to be common, thus posing risks to the sustainability of the project development outcome.

The completion of the project provided the needed infrastructure services in the project areas, increased the infrastructure service coverage to accommodate the growing population in the cities and, in some cases, prompted the local economic development with immediate effect. An impressive example is the flood protection activity in RongChang County, which was completed with high standard and was well-maintained. This piece of work saved 200,000 local residents from being flooded every year and has transformed the area into a more developed commercial and residential center. The value of the properties along the river banks rose by 300 percent to around US\$1,000 per square meter today. The project success has also led to the preparation of similar flood protection works in other secondary cities in Chongqing.

The Bank team worked closely with Chongqing secondary cities in delivering the planned activities on time, but it could have done a better job in defining a clearer project development objective. The Borrower could have improved the sustainability of the project development outcome by setting up a better maintenance arrangement.

The overall outcome of the project is rated ***Moderately Satisfactory***. The risk to development outcome is rated ***Significant***. Bank Performance is rated ***Moderately Satisfactory***, while overall Borrower Performance is rated ***Moderately Satisfactory***.

Experience with both projects highlights the following common lessons:

- **Great care is needed in project preparation and appraisal to ensure that all proposed interventions are feasible.** In the case of the Tianjin-II project, some originally designed components and activities, such as the Dagunanlu interchanges and the water reuse activities, were cancelled or modified because the feasibility studies showed that these activities were not feasible. The changes led to project restructuring and implementation delays. The Bank projects should have more thorough and solid project appraisal including the detailed feasibility studies.
- **A well-phrased and clearly defined project development objective statement and a comprehensive M&E framework is a key step towards a results-focused Bank operation.** Both the Tianjin-II and Chongqing small cities project face similar challenges of PDOs that are not clearly defined and non-comprehensive M&E framework, making it difficult to monitor and assess the project implementation progress towards achieving the development objectives. IEG's interaction with task team leaders across the Bank suggests that phrasing an accurate and relevant PDO appears to be a common challenge; more support to the project teams is needed in this area.
- **By continuing to tailor its services and instruments to the more localized needs and capacity of the Borrower, the Bank can maintain the effectiveness of its support.** The interaction with local officers in Tianjin and Chongqing suggested that there is still strong demand for the Bank's support in urban development in China. However, in more developed urban areas like Tianjin, demand is mainly for the Bank's innovation and knowledge rather than the Bank's financing. For less developed urban areas like the secondary cities in Chongqing, the Bank's financing and project management experiences with special attention to environment and vulnerable groups are very much appreciated.
- **While the Bank's engagement has supported the development in China, its prolonged internal decision-making processes may decrease its competitiveness in helping address fast-paced changes.** In the case of Tianjin-II, the project implementation often could not keep up with local development, resulting in the cancellation of project activities. Such an experience is quite common across the Bank's projects in China. Inefficiency on the Bank side is often cited by the borrower and the Bank's TTLs as the main reason. The Chinese borrower suggested that the Bank could become more efficient though simplifying the procedures and granting TTLs more authority so that the TTLs could make more timely decisions to accelerate project implementation.

Caroline Heider  
Director-General  
Evaluation



# 1. Background and Context

## China's Rapid Urbanization and the Project Cities

1.1 The backdrop to this assessment is the story of the unprecedented scale and speed of the growth of cities in China in recent years. Just over the decade up to 2012, China added 187 million people to its cities, more than the total urban population of all countries in the world except India and the United States. A key question addressed by the two operations reviewed here, the Second Tianjin Urban Development and Environment Project (loan 4695) called the Tianjin-II project in this report, and the Chongqing Small Cities Infrastructure Improvement Project (loan 4794) called the Chongqing Small Cities project, was a common question for the country as a whole, namely how to improve urban services for a rapidly growing population.

1.2 Tianjin and Chongqing, the host cities, are among China's largest (Table 1.1). The main difference as far as the projects are concerned is that Tianjin-II focused on the megacity itself, while Chongqing Small Cities focused principally on secondary cities under its jurisdiction.

**Table 1.1. The Two Project Cities Are among China's 10 Largest**

	<i>City Population with local "HuKou"*** (millions)</i>	<i>City Population* (millions)</i>	<i>City Population Growth, 2000–2010** (% per year)</i>
Shanghai	12.29	22.32	3.6
Beijing	9.65	18.83	4.8
Chongqing	7.87	17.64	2.5
Tianjin	5.69	11.09	3.2
GuangZhou	6.64	11.07	2.5
ShenZhen	2.6	10.36	4.8
WuHan	5.4	9.78	1.5
Nanjing	5.4	8.00	3.7
ChengDu	4.3	7.68	4.0
FouShan	3.7	7.19	
<b>Total for China</b>	<b>655.5</b>		<b>3.8</b>

Sources: \*www.phbang.cn; \*\* <http://www.citypopulation.de/China.html>.

1.3 Located close to the nation's capital Beijing, just 120 km to the southeast, Tianjin is China's fourth city by population, a major industrial center, and a key commercial port for the country's northeast. At more than twice the national average, Tianjin reports the highest

<sup>3</sup> "HuKou" is a record in the system of household registration required by law in the People's Republic of China. It officially identifies a person as a resident of an area and includes identifying information such as name, parents, spouse, and date of birth.

gross domestic product (GDP) per capita of any province in China, standing at RMB 93,173 (equivalent to US\$14,789) in 2012.<sup>4</sup> Along with Beijing and Shanghai, Tianjin can be found in some lists of the world's 20 largest cities. Even bigger in terms of population and size, Chongqing hosts a significant industrial sector, the most important one not located on China's thriving east coast. The city is located some 1,550 km to the southwest of Beijing in the country's less prosperous central region. Until 1997, Chongqing was part of Sichuan province, still one of China's poorest. In 2012, Chongqing's own GDP per capita is close to the country's average, reported at RMB 38,914 (US\$6,177 equivalent), less than half of Tianjin's. With GDP equivalent to US\$180 billion and US\$205 billion respectively in 2012, and gross fixed capital formation rate of 55.6 percent and 76.4 percent of GDP, actual annual investment in Chongqing and Tianjin stood at US\$100 billion and US\$ 164 billion. Compared with this, the annual investments made by the projects reviewed here, US\$70 million in Chongqing and US\$45 million in Tianjin, were considered as "supplemental" and "corrective" to the investments made by the two municipal governments and private sectors.

1.4 Successive Five-Year Plans in China have supported urbanization since 2000. Urbanization, measured by the growth of the urban population, is still under way in both Tianjin and Chongqing. A common and constant challenge for the authorities of both megacities remains providing adequate urban services and a healthy urban environment. The attention of the projects reviewed here to improving infrastructure provision reflected a top priority in both places. It is also just part of the much bigger urbanization drama being played out in the cities themselves and more broadly in urban China as a whole.

1.5 Administratively speaking, Tianjin and Chongqing are two of China's four highest-ranking cities. Like the other two, Beijing and Shanghai, they have the status of provinces but are administered directly by the central government. The city-province of Tianjin, with a total population of 12 million, covers 11,760 km<sup>2</sup> including 15 districts and three counties. Chongqing, with 19 districts and 19 counties, covers 82,300 km<sup>2</sup>, about the size of Austria but with 34 million people. Of the 34 million, only 25 percent live in the nine central districts of Chongqing.<sup>5</sup>

## **The Two Projects and the Bank's Urban Portfolio in China**

1.6 The Bank had been supportive to the management of China's urban development through the approval of 215 projects committing US\$17.57 billion lending during 2003–2013. Of these 215, 65 projects with a commitment of US\$7.3 billion, 41 percent of the total, are within the Bank's urban development sectors. Fourteen out of the 65 projects are closed with 12 rated as moderately satisfactory or above and two unrated.

1.7 The main areas covered by these operations and the commitment amount are listed in Table 1.2.

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<sup>4</sup> China National Statistic Year Book (2013).

<sup>5</sup> Rio de Janeiro's municipality extends to only 1,200 km<sup>2</sup>, accommodating a population of 6.3 million, and São Paulo's to 1,521 km<sup>2</sup> with a population of 11.3 million. The figures for London (comprising 32 municipalities, or London boroughs) are 1,583 km<sup>2</sup> with a population of 7.5 million.

**Table 1.2. The Bank’s Urban Projects in China (2003–2013)**

Main Areas	Projects (number)	Commitment Amount (US\$, millions)	Commitment Amount (%)
China urban development projects (core)	65	7,315	
Citywide infrastructure and service delivery	40	2,876	39
Pollution management and environmental health	31	1,109	15
Climate change	15	321	4
Municipal governance and institution building	20	404	6
Urban services and housing for the poor	9	289	4
Other urban development	13	443	6

Source: IEG analysis based on World bank Business Warehouse data.

1.8 Both operations reviewed here, the Tianjin-II project and the Chongqing Small Cities project, were part of the Bank’s support to China’s urban development during this period. Both were also follow-on projects to earlier operations in their respective cities. In the case of Tianjin, the prior operation was the US\$228.9 million Tianjin Urban Development Project (Cr2387 19922000), called Tianjin-I in this report. Tianjin-II focused on similar sectors in the megacity as Tianjin-I had. In the case of Chongqing, the prior operation was the US\$450 million Chongqing Urban Environment Project (Ln4561, 20002009). The Chongqing Small Cities project focused on similar sectors to its predecessor, but brought the assistance to smaller cities of Chongqing’s interior rather than the Chongqing megacity itself that was the target of the previous operation.

## **2. Second Tianjin Urban Development and Environment Project**

### **Objectives, Design, and Relevance**

#### **OBJECTIVES**

2.1 The objectives of the Tianjin-II project as stated in the financing agreement were to assist Tianjin in enhancing the efficiency and equity of wastewater management and transportation system aimed at the sustainable development of Tianjin (loan 4695, Schedule 2).

#### **RELEVANCE OF OBJECTIVES**

2.2 The objectives did not make clear exactly what the intended outcomes of enhanced *efficiency and equity* of this operation should be for its two targeted sub-sectors. It does not provide ready answers to important questions such as: “what would Tianjin’s wastewater management and a transportation system with enhanced efficiency and equity look like?” and

“how would we recognize these enhancements?” Neither the Project Appraisal Document (PAD) nor the Implementation Completion and Results report (ICR) define or explain either term. The ICR does note (ICR, p. 16), however, *equity*'s consistency with central government policy of achieving a harmonious society through providing a comfortable means for the middle class and reducing poverty and inequality, while protecting the environment. For that, a straightforward objective indicating technical performance criteria and the target beneficiaries of the two sub-sectors would have served the project better.

2.3 However initially imprecise, the assessment found the project objectives to be relevant to China's own strategic and sector priorities for the country's urban development. At appraisal they were in line with China's 10<sup>th</sup> Five-Year Plan (2001–2005) that called for improved (understood as more *efficient*) infrastructure provision, balanced development across regions (understood as *equity*), and increased sustainability or urban services. They remain relevant today to China's current 12<sup>th</sup> Five-Year Plan that calls explicitly for enhancing urban environmental services (understood as increased *efficiency*), particularly wastewater management, as well as more emphasis on equity by calling for a better quality of life for everybody in cities. The plan also calls for balanced economic growth between urban and rural areas and across the country's different regions, elements of the central concept of harmonious society.

2.4 The Bank Country Assistance and Partnership Strategies (CAS/CPS) for China did not explicitly make *efficiency and equity* a priority for these sub-sectors, but the project did support the 2003–2005 CAS priorities of facilitating an environmentally sustainable development process. Through the wastewater services it aimed to promote, the project objective nevertheless remains consistent with the 2013–2016 CPS Strategic Theme 1 of supporting greener growth, with respect to enhancing urban environmental services (CPS 2013–2016, p. 13). Relevance of objectives is rated as **Substantial**.

## DESIGN

2.5 The project originally had the following components:

- Storm Water and Wastewater Networks in Tianjin City (estimated cost US\$77.60 million, actual cost US\$165.92 million). This component comprised construction of storm water drains, sanitary sewers, and pumping stations in Nankai and Beicheng districts, complementing the wastewater treatment plant (WWTP) being financed by the Japan Bank for International Cooperation (JBIC) and Asian Development Bank (ADB); and construction of drains and sewers in HeXi District. These activities will complete the drainage system envisioned in the Tianjin Drainage Master Plan.
- Shuanglin Wastewater Treatment Plant (estimated cost US\$55.36 million, actual cost US\$0). This component was to construct a WWTP of a 200,000 m<sup>3</sup>/day capacity in Shuanglin, serving Nanjiaowai area in HeXi district which has many small industries and lower-income residents.
- Urban Wastewater Reuse (estimated cost US\$16.7 million, actual cost US\$0 million). This included construction of water reclamation plants of 12,500–

15,000 m<sup>3</sup>/day capacity each, attached to the Dongjiao and Shuanglin WWTPs; and reclaimed water distribution systems mainly for industrial and landscape uses.

- Dagu Canal Rehabilitation (estimated cost US\$55.15 million, actual cost US\$72.07 million). This component included dredging of sediment and rehabilitation of cross-sections, bridges and culverts, and three pump stations for Dagu Canal and its associated tributaries.
- Suburban Sewerage (estimated cost US\$43.1 million, actual cost US\$26.95 million). This component included creation of municipal wastewater collection and treatment systems in YingCheng town in HanGu district and in NanPei Hu town in TanGu district, to initiate and set models for wastewater management in suburban areas.
- Urban Roads (estimated cost US\$62.3 million, actual cost US\$36.84 million). This component included construction of interchanges at two major intersections of the Middle Ring Road and low cost traffic engineering improvements on selected locations along the Inner Ring Road and the Eastern and Southwestern parts of the Middle Ring Road.
- Traffic Management (estimated cost US\$4.1 million, actual cost US\$0). This component included extension of the existing Area Traffic Control System to 300 new intersections with channelization and in connection with bus priority measures.
- Bus Priority Measures (estimated cost US\$15.16 million, actual cost US\$6.95 million). This component included preparation and implementation of bus priority measures on selected corridors, including bus ways and traffic engineering measures, to increase the efficiency of bus operations and to contribute to increasing the modal share of the bus system.
- Technical Assistance and Training (estimated cost US\$4.63 million, actual cost US\$4.17 million). This component included (i) development of infrastructure information systems; (ii) reform and development of sewerage institutions and finance; (iii) improvement of traffic forecast model; and (iv) bus routes restructuring and design of bus priority measures.

2.6 The project was restructured twice: on May 11, 2007 and on April 14, 2011.

2.7 Under the May 11, 2007 restructuring, the following revisions were made:

- Storm Water and Wastewater Networks were expanded to include the upgrading of road surfaces as well as underground infrastructure, such as storm drainage and wastewater networks.
- Urban Wastewater Reuse was dropped altogether as feasibility studies, and a survey, done at the implementation stage, showed insufficient demand for reusing wastewater.

- The scope of Suburban Sewerage was reduced to exclude Nanpei Hu WWTP, which was built using local funds.
- Under Urban Roads, the construction of the Daganlu interchange was canceled when a study determined that a lower cost improvement such as a set of simple road modification and traffic management measures would suffice. Another road expansion investment under this component was canceled when road capacity was increased as a result of investment outside the project.
- The Bus Priority Measures were expanded to include the Lingbin Bus Parking Depot, located near planned bus priority corridors.
- Four key project performance indicators were simplified into two, mainly to ease data collection. They were: percentage of wastewater collected and treated, 2010 target 75 percent; and modal share of passenger traffic for public transportation (bus and metro), 18 percent in 2010.

2.8 Under the April 14, 2011 restructuring, the following revisions were made:

- The scope of Storm Water and Wastewater Networks was further increased to include additional roads (incorporating sanitation infrastructure) in HeXi and BeiCheng districts in Tianjin city to improve storm water and wastewater collection networks as well as improve traffic flow and pedestrian safety.
- The Shuanglin Wastewater Treatment Plant was cancelled due to changes in the regional master plan which made the Shuanglin Wastewater Treatment Plant superfluous.
- Four contract packages under Dagu Canal Rehabilitation were funded by the Borrower so as to coordinate with the development of the District where component 4 activities are located. All remaining contracts were financed by the loan.
- The scope of Suburban Sewerage was revised to construct a 100,000 m<sup>3</sup>/d wastewater treatment plant in the Binhai New area serving Hangu and the new “ECO City.”
- The scope of Urban Roads was reduced because many road sections were completed as part of the city drainage component under component 1.
- Traffic Management withdrew from the project. It was completed with the Borrower's own funds after the winning bidder was disqualified by the Bank for corrupt practices elsewhere.
- Engineering and traffic management measures on selected bus corridors under Bus Priority Measures were no longer financed by the loan. Instead they were funded by the Borrower.

- The scope of Technical Assistance and Training was reduced. The development of a management information system and training were canceled from the project but completed using local funds.

## **RELEVANCE OF DESIGN**

2.9 Project design included components and activities as well as proposed implementation arrangements that together had the potential to lead to the intended project outcomes.

2.10 Greater efficiency of wastewater management was to be achieved by (i) building the storm water main pipes to separate storm water and wastewater networks which would reduce polluted run-off during storms and reduce the volume of sewage to be treated; (ii) building sewerage main pipes and constructing WWTPs in Tianjin city and suburban areas which would help expand the coverage and increase the capacity of the sewers; and (iii) cleaning up the Dagu Canal which would increase the hydraulic capacity of the canal to carry increased discharges of treated effluent and storm water as part of the process to get the best possible overall solution for managing wastewater.

2.11 Technical assistance (TA) would review options for institutional arrangements and financing of sewerage services, focusing on turning the services to market-based operations. In addition, TA would help strengthen the managerial and technical capacity of the operating entities. The greater efficiency of Tianjin's transportation system was to be achieved through planned urban roads improvements, traffic management measures, and project technical assistance. Project investments in urban roads targeted the most congested sections of the city's Middle Ring Road, thereby easing traffic congestion, shortening trip times, lowering vehicle operating costs, and leading to greater efficiency of the transport system. In addition, efficiency was to be enhanced by technical assistance directed at better information systems for infrastructure, potentially speeding up decision making and strengthening the local institutions responsible.

2.12 The equity aspect of wastewater management would come in if wastewater collection, treatment, and disposal protected people (usually lower-income people) living or working in areas harmed by the discharge of untreated wastewater. The project invested more than 50 percent of its resources in low- to middle-income areas, namely Beicang, Nanjiaowai areas in downtown Tianjin, and Binhai New District in suburban Tianjin. Enhancing the storm water drainage capacity saved the local residents from being flooded by the polluted run-off annually, and provided expanded sewerage service to local residents who did not have such service prior to the project.

2.13 As for the equity aspect of the transportation system, Tianjin-II treated equity more directly through its focus upon bus transport, a mode used by lower-income beneficiaries in the city who cannot afford a car. The original design included dedicated bus lanes and traffic signals. During implementation they were replaced with a bus depot construction, which would also contribute to bus transportation development.

2.14 The project design therefore was relevant to the project development objectives. Some of the activities were not implemented under the project for various reasons explained earlier in this section, but these changes did not affect the relevance of the design. The revised activities still focused on enhancing the provision of improved wastewater and transport services. Relevance of design is rated as **Substantial**.

## **Implementation**

2.15 **Project Management.** Project implementation arrangements were based upon a central Project Management Office (PMO) with Project Implementation Units at local entities, an arrangement that worked well. The PMO became institutionalized as a regular Tianjin government agency financed by the municipal government's budget. Such a setup helped ensure the continuous support of the project from the PMO as well as guaranteeing the stability of its staff. The IEG mission met with the same key PMO staff who received IEG's PPAR mission for Tianjin-I in 2006. The continuity of the project teams helped ensure the smooth transition from one project to the other. It also helped build up a strong urban development team in one of China's most important cities. The mission observed increased PMO capacity as a result of this intensive engagement with the Bank's operations over an extended period. Interacting with the current IEG mission, the PMO staff aptly demonstrated their knowledge of Bank's procedures and policies. They also had their own clear views of what the Bank still needs to do to improve its own performance in China, including given more attention to the learning aspects of its assistance, a key aspect discussed later in this PPAR (Annex B).

2.16 **Implementation Experience.** Project startup was slow. By the original mid-term planned for August 2006, only 13 percent of the US\$150 million loan had been disbursed, leading to negative performance ratings by Bank supervision missions. According to the PMO, several project-level changes in Tianjin's local planning are the reasons. Clearly, it will be important for the ongoing preparation of a new Bank-financed project in Tianjin to anticipate further changes of planning likely to emanate from the 13<sup>th</sup> Five Year Plan 2015–2020. This can help prevent unexpected changes, like what the Tianjin-II project experienced.

2.17 As noted earlier in the Design section, there were some changes made to the project during implementation mainly because of the infeasibility of some planned project activities. Unequivocal Bank reservations about some of these components at appraisal could have been more clearly expressed to the Borrower. The changes needed later indicate that project preparation could have been more thorough, as the ICR noted (p. 8). There were also occasions when activities were cancelled from the projects but were completed using the government's funds. The reasons for such shift of financing, as explained by the PMO, were either because the project progress could not keep up with the local development, as in the case of the suburban sewerage investment, or the proceed of the activity did not meet the Bank's procurement rule, as in the case of traffic signals. The evaluation noted, though, in the rapid and dynamic developments in China, cancellations because of the project implementation failing to catch up with the local development have been a common phenomenon in the Bank's China portfolio for many years. Such experience may be an indication that the Bank could have been more efficient. The PMO also had similar

observations and suggested the Bank could simplify its procedures and allow more flexibility in project design so as to minimize the disruption to project implementation.

**2.18 Fiduciary Management.** With its prior experience of Bank-financed projects, the Tianjin PMO along with the Project Implementation Units did a relatively good job in managing the 32 civil works contracts under the project. There were no substantial contract price increases and no reported mis-procurement under the project, but they did admit that adhering to the Bank's "lowest evaluated bid" procurement rule sometimes led to difficulties for project management. Firstly, it is difficult for the PMO to verify the experiences and credentials of the bidders who pass the pre-qualification stage to ensure they are really qualified to do the work. Secondly, if the lowest but unrealistically priced bidder won the contract, the contractor will likely try to add unnecessary items to earn money or to bring a higher yield. In an input contract run by the International Federation of Consulting Engineers, as in the case of Bank projects in China and many other countries, the contractor cannot be stopped from claiming required or forgotten items not encompassed in detailed designs provided by the employer; consequently, the total cost for the employer will inevitably increase. Thirdly, the contractor will try to use cheaper and lower quality materials, making subsequent maintenance difficult and expensive. Fourthly, the contractor may delay the contract execution to trigger higher price escalation if the contract period extends beyond 18 months. PMO staff told IEG, however, that the project financial management was sufficient. The financial audits of project accounts were timely and satisfactory. There was no reported ineligible expenditure under the project. The client also commended the Bank for its efficient project expenditure reimbursement service.

**2.19 Safeguards.** The project was classified as category A; the safeguard policies triggered were Environmental Assessment (OP4.01) and Involuntary Resettlement (OP4.12). At project preparation, a full environmental assessment was carried out and environmental management plans were prepared. During project implementation, two additional environmental assessments were conducted for the revised project activities: one was for the bus parking garage in June 2009 and one was for Baidilu drainage area rehabilitation in NanKai district in May 2010. Throughout project implementation, experienced safeguard specialists from the Bank monitored and supported safeguard implementation closely. The project team and the client confirmed full compliance with the Bank's safeguard policies. The project also involved involuntary resettlement. A resettlement policy framework was prepared to guide the Resettlement Action Plan (RAP) if the project was to affect any displaced families or required any collective land. A RAP was prepared and sent to the Bank for review in 2006. A total of 278,623.59 square meters of land were acquired under the project. There was no reported violation of the Bank's Involuntary Resettlement Policy.

## **Achievement of the Objective of Tianjin-II**

**2.20** For the purpose of this assessment, the objective of enhancing efficiency and equity, aiming at the sustainable development of Tianjin, will be assessed for each sub-sector; first for wastewater management then for the transportation system.

## **ENHANCING THE EFFICIENCY AND EQUITY OF WASTEWATER MANAGEMENT AIMED AT THE SUSTAINABLE DEVELOPMENT OF TIANJIN**

2.21 By completion, the project had invested US\$265 million on wastewater management versus the planned \$240 million. The city drainage and sewerage works were expanded to include more separate drainage works in the flood-prone areas in downtown Tianjin, such as Baidilu area in Nankai districts. The wastewater treatment activities, on the contrary, were scaled down to only one major investment in suburban areas, namely the Yingcheng wastewater treatment plant and associated sewer lines, as a result of the cancellation of the Shuanglin wastewater treatment plant and two water re-use plants. Specifically, the following infrastructures were built (refer to Project Map in Annex B for specific project activity locations):

- Yincheng Wastewater Treatment Plant (100,000 tons/day), located in Binhai New District and about 45 km from Tianjin city center;
- seven pumping stations, for which about 70 km storm drainage pipes and 40 km of wastewater trunk mains were constructed in three districts in downtown Tianjin (i.e., Nankai, BeiChen, and HeXi districts);
- 81.2 km Dagu Canal being dredged; and
- one sludge landfill for depositing the sediment from the Dagu Canal.

2.22 Through field visits and visual inspections, the IEG mission had the impression that these infrastructure facilities were built to good quality standards, operational, and well maintained. The pumping stations followed a standard and well-tested design approved by the government and were two years into operation. As the first wastewater treatment plant (WWTP) constructed under the design-build-operate method, the Yincheng Wastewater Treatment Plant went into operation in 2011 and is now operating at half its 100,000 tons/day capacity, with the demand for its treatment increasing rapidly. In addition, 81.2 km of Dagu Canal was cleaned, and the sediment was deposited in a sludge landfill also built under the project. The water quality in Dagu Canal had been greatly improved; the Biochemical Oxygen Demand (BOD) in the canal wastewater was reduced from 13mg/l to 2mg/l.

### ***Efficiency***

2.23 This assessment took the outcome and impact indicators proposed at the design stage (PAD, Annex 1) to assess the efficiency improvement under the project. These indicators are: area and population served by sewerage service; water quality at streams; duration and extent of flooding; and volume and unit cost of wastewater collection and treatment. These indicators are used broadly by the sewerage industry to measure the performance of the wastewater management.

2.24 The wastewater work under the project increased the service coverage area by 6,200 ha, equivalent to an 8 percent area of downtown Tianjin (334,000 ha) and Binhai New area (392,000 ha). As a result, an additional 441,000, or 6 percent, of local residents benefited from wastewater services expansion in downtown Tianjin and BinHai New district.

2.25 The Yincheng WWTP is running efficiently. It employs 30 workers in charge of the services provided by about 50,000 wastewater treatment connections, which is about 1,667 connections per employee. The experience in developing countries suggested that five to seven staff per 1,000 connections is common, and two to three per 1,000 connections is considered as high efficient.<sup>6</sup> This treatment plant is also operating at a unit energy cost that is 20 percent lower than the average unit energy cost at the city level. In addition, the plant raised its discharge quality to Class 1B, above the Class 2B target set. In 2011, 3,577 tons of BOD loading was removed by this plant. The amount of BOD loading rose to 5,585 tons in 2012. This shows that Yincheng wastewater treatment plant is operating more efficiently and contributes to the overall efficiency improvement of the wastewater management system in Tianjin.

2.26 When measured with duration and extent of flooding, all the project areas (covering three downtown districts) are no longer flooded by polluted run-off. An example is the Baidilu area in Naikai district, which used to accumulate 30-40 cm of flood water for about 8 hours during the rainy season (June-August). The area is now free of flooding (see picture of flooded streets, Annex B). The Dagu Canal cleanup also helped reduce the flooding in Tianjin. The canal, an 84 km conduit, originally carried untreated wastewater from Tianjin to the Bohai Sea. Nearly half a century later, it became a vector of pollution, partially blocked by toxic sludge and not working properly. Annual floods brought polluted wastewater to the surrounding areas. Through dredging and careful removal of contaminated industrial sediment, the project prevented the flooding of surrounding areas. The canal now makes a major contribution to the urban environment of Tianjin and the environmental protection of coastal water. In addition, the cleanup project also produced economic gains for the Tianjin economy through new residential and commercial development along the canal.

2.27 Compared with the project physical investments that focused on certain project areas, technical assistance activities focused on the reform and development of sewerage institutions should have a bigger impact at the city level. The Tianjin Sewerage Industry Study recommended integrating sewerage management with water supply and resources. The Tianjin Municipal Government (TMG) implemented the recommendation by setting up the Tianjin Water Bureau to integrate water and sewerage services. International experience suggests that the direct benefit of such integration is the reduced cost of the provision of water and sewerage services because of “economies of scope.”<sup>7</sup> The latest study of the water and sewerage sector in England and Wales suggests that the operating cost of a water and sewerage company would be 26 percent higher if production of different services is separated.<sup>8</sup> Cost reduction evidence is not available for the Tianjin-II project, however information provided by the PMO shows that the wastewater treatment company for the downtown Tianjin area can offer more affordable sewerage tariffs and remain financially viable. The Tianjin Sewerage Study also recommended introducing private WWTP operators to manage the wastewater system. This is likely to provide financial and technical improvements when WWTP operation contracts expire. Overall, the project-financed

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<sup>6</sup> <http://siteresources.worldbank.org/INTWSS/Resources/Workingnote9.pdf>.

<sup>7</sup> <http://corporate.unitedutilities.com/documents/InWhoseHandsReport.pdf>.

<sup>8</sup> <http://corporate.unitedutilities.com/documents/InWhoseHandsReport.pdf>.

physical investments enhanced the efficiency of wastewater management systems in project areas (downtown Tianjin and Binhai New District). There is some indirect evidence that technical assistance influenced the efficiency of the overall system. The achievement of enhanced efficiency of the wastewater management system in Tianjin is rated **Substantial**.

### *Equity*

2.28 The equity effect of wastewater management was to be assessed by the increased sewerage coverage to low-income people and increased affordability of services. As noted earlier in this report, the project invested more than 50 percent of the project resources in low-middle income areas in Tianjin. As a result, an additional 441,000 local residents in relatively low-income areas in downtown Tianjin<sup>9</sup>—with 10 percent of them having income below the minimum salary<sup>10</sup>—now have access to sewerage services and are no longer flooded by polluted storm water run-off. As to the increased affordability of wastewater treatment service, in Tianjin, the average water and sewerage tariff per household in 2005 represented about 2 percent of the average income of the residents, but about 3.7 percent of average income for those in the lowest-income decile, which was still within the widely adopted rule-of-thumb affordability limit of 5 percent of income.<sup>11</sup> In 2013, the average sewerage tariff alone per household was about 18 RMB per month (equivalent to \$3 per month). It was about 0.42 percent of average income of Tianjin residents and 1.07 percent of the income of the poor residents. Without information about sewerage service affordability in 2005, it is hard to assess whether the affordability of sewerage services has been increased over time and whether the poorer income-groups have benefited more.

2.29 Overall the project's interventions increased the access of sewerage services of local residents, especially those in low-income areas. However, the project did not define how to assess the equity effect and this report did not obtain evidence on the relative affordability improvements of different socio-economic groups. The project's contribution to equity is rated as **Modest**.

## **ENHANCING THE EFFICIENCY AND EQUITY OF THE TRANSPORTATION SYSTEM AIMED AT THE SUSTAINABLE DEVELOPMENT OF TIANJIN**

2.30 Under the Tianjin-II project, the actual investment on the roads component was less than estimated at appraisal, mainly because of the cancellation of the Daguanlu multilevel interchange on the Middle Ring Road. In addition, some original project activities, including the traffic management and bus priority lanes, were completed outside of the project using government funding. Specifically, the following transport activities were completed under the project at total cost at around \$45 million versus the estimated cost of about \$85 million:

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<sup>9</sup> Overall, downtown Tianjin is richer than suburban areas.

<sup>10</sup> Those whose income is lower than the minimum salary are categorized as low income. In Tianjin, the minimum salary is RMB 1,500 per month or RMB 18,000 per year (US\$3,000 equivalent).

<sup>11</sup> PAD, Annex C.

- A three-level interchange was built on Jingzhonghe Road on the Middle Ring Road, is about 680 m, and has been open for traffic since June 2004.
- Nanjing Road was widened by 0.8 km. A bus depot was built in the Lingbin area.
- Studies were conducted on improving the traffic forecast model, restructuring bus routes, and designing bus priority measures.

2.31 During the field visit, the IEG mission took note that these infrastructures were well built, operational, and sufficiently maintained. The IEG mission saw that the Jinzhonghe interchange had sound insulation panels to protect local residents from traffic noise and landscaping with trees planted in open areas and climbing plants for the structure's pillars. After six years of intensive use, there were no evident signs of needing repair, which indicated attention to road operations and maintenance since completion. The IEG mission's visit to the bus depot confirmed that it was in operation, providing space for up to 200 buses that had been parked on the streets prior to depot construction.

### *Efficiency*

2.32 The efficiency of a transport system could be measured by the enhanced capacity of the transport system which would enable more traffic to flow through the system more smoothly. The project investments for previously congested urban roads increased the roads' capacity, leading to smooth traffic flow in the project areas, as seen and experienced by IEG's visit to the project road sections. Traffic volume per hour through the improved Nanjing Road Section increased by 74 percent from 3,180 passenger car units<sup>12</sup> in 2001 to 5,435 passenger car units in 2012. Traffic volume per hour through the improved Jinzhonghe Road Section (with flyover constructed above it) increased by 78 percent from 5,075 passenger car units in 2001 to 9,042 passenger car units in 2012. Traffic volume per hour increased for the Beicang Street Section by 251 percent from an estimated 764 passenger-car units before the project to 2,681 passenger-car units in 2012. These capacity and efficiency gains are assessed as substantial, though the increased traffic volume per hour through project road sections could not be solely attributed to the efficiency gained under the project. Increased car ownership in the area also contributed to the result.

2.33 At the city level, project technical assistance established a model to evaluate trip demand by route and a system to allocate and manage bus routes on that basis, which would help improve the bus deployment and increase the efficiency of the city's transport system. The information shared by the PMO, however, pointed to a loss of efficiency of the transport system. During 2011–2012 the number of vehicles in Tianjin grew by 20 percent, while the average traffic speed in the city fell by 7.4 percent, a result which cannot be attributed to the Tianjin-II project. The project's contribution to the enhanced efficiency of transport system is rated as **Substantial**.

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<sup>12</sup> Passenger-car unit is a traffic volume measure used to express road capacity. One car is considered a single unit; a cycle or motorcycle is considered as half-car unit. A bus or a truck is considered equivalent to three cars or three passenger-car units.

## *Equity*

2.34 The enhanced equity of a transport system can be assessed by looking at bus transport mode sharing since bus transportation is usually used by people who cannot afford a private car. To enhance the equity of the transport system, the project invested US\$7 million in a multilevel parking garage for buses in the Lingbin area. Originally US\$4.1 million was intended for planning and implementing bus priority lanes on major urban streets, which instead were implemented with local funding outside the project. The Tianjin bus management company confirmed the usefulness of the bus depot to bus transport development. It helped prevent buses from spilling onto downtown streets, and it helped reduce labor and fuel costs associated with dead (nonrevenue) kilometers<sup>13</sup> which can drive up operation costs significantly. At the end, project information shows that the modal use of buses of all trips increased from a baseline of 6 percent in 2003 to 21 percent in 2012. However, the Tianjin-II project cannot claim much credit for this achievement given the project's less than US\$10 million investment in a bus parking garage. The project's technical assistance activities on traffic management and bus transport, commended by the PMO for laying the groundwork for future urban transport projects in Tianjin, could potentially contribute to bus transport development. Overall, the project's contribution to the enhanced equity of the transport system is **Modest**.

## **Efficiency**

2.35 The efficiency of project resources use is a mixed picture. The project experienced efficiency loss because of project closing date extensions. Altogether, 98.2 percent of the Bank loan of US\$150 million was disbursed over a nine-year period, two years longer than planned. At the same time, an efficiency gain resulted from replacing expensive and infeasible proposals with cheaper and economical solutions, such as the Dagunanlu interchange.

2.36 Cost-benefit analysis was applied to road activities at project appraisal and completion. At project completion, economic analysis done for the three urban roads activities, accounting for 12 percent of the final costs of the project, demonstrated that these investments had been worthwhile: (i) Nanjiing Road widening from four lanes to six, 243 percent Economic Rate of Return (ERR); (ii) Jinzhonghe multilevel interchange, 42 percent ERR; and (iii) Beicang Street widening, 13.5 percent ERR. In all three cases, the appraisal and completion ERRs were estimated in the same way, measuring both savings in vehicle operating costs and time spent by travelers after road improvements.

2.37 Cost-benefit analysis was applied to the water reuse activity, and comparative cost (cost effectiveness) analysis was applied to the Shuanglin wastewater treatment plant at the appraisal stage. However, none of these activities were implemented. At project completion, no economic analysis was carried out for the wastewater management activities completed under the project. Lack of quantitative analysis for the wastewater component, which used

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<sup>13</sup> If the buses have to be parked in a faraway depot or outside of the city rather than in downtown Tianjin, dead kilometers will increase substantially.

more than 70 percent of the project resources, leads to the project efficiency being assessed as **Modest**.

## **Ratings**

### **OUTCOME**

2.38 The project outcome rating is a measure of the project's overall performance. It is defined as "the extent to which the project's major relevant objectives were achieved, or are expected to be achieved, efficiently." The project development objectives were in line with the Chinese government's development priority and the Bank's partnership strategy with China; both called for environmentally sustainable development and enhanced urban service. The activities planned under the project were consistent with project development objectives, albeit vaguely defined. At completion, the targets of most outcome and impact indicators (listed in the PAD) have been largely met. At city level, the sewerage coverage increased from baseline 25 percent to 89.7 percent. In project areas, the storm water drains, sewerage pipes, and YingCheng Waste Water Treatment Plant were running efficiently and increased the sewerage service coverage in the project area by 8 percent. At the same time, the duration and extent of the flooding were reduced substantially, benefiting 441,000 local residents in Tianjin. The discharged wastewater quality from the WWTP and at Dagu Canal was also improved. The project technical assistance, focusing on wastewater management institutional setup and policy, would increase the efficiency of the wastewater management system as the international experiences suggested and supported by the financial viability information of the utility company in Tianjin. The project's intervention on urban roads increased the capacity and efficiency of the transport system.

2.39 However, the project's contribution to the enhanced equity of the wastewater management was assessed as modest because of lack of evidence of increased affordability of sewerage services for poor people. The project could not claim too much credit on the increased mode sharing of bus transport in Tianjin given that the project's intervention was limited to a bus depot. At project completion, the economic analysis on the project's investment on urban roads showed that the project resources were used efficiently, generating a high economic rate of return. No economic analysis was done for the project investment on wastewater management; the efficiency of the project was assessed as modest because of lack of evidence. The overall project outcome is assessed as **Moderately Unsatisfactory**.

### **RISK TO DEVELOPMENT OUTCOME**

2.40 IEG mission's discussions with local project teams in Tianjin and the field visits to project sites highlighted where the sustainability of project benefits was more assured and where it was more at risk. Across this spectrum, the mission was impressed by the awareness of the local teams to the risks for the project's outcomes and the need to take action now to mitigate higher risks. There is a demonstrated willingness and ability of the Tianjin authorities to invest heavily in infrastructure of the type supported by the Tianjin-II project and to fund the necessary maintenance and operation to keep them functioning effectively. Indeed, only a brief stay in Tianjin is necessary to see how the city takes great care of its infrastructure.

2.41 Project investments in urban roads, including the multilevel highway interchange, major street widening, and drainage, appear to have a low risk to their development outcomes. Field visits to the sites of these components by the IEG mission confirmed that the work had generally been completed to a high standard, in itself an assurance that they will continue to function properly in the short run. Furthermore, street cleaning prevents the accumulation of solid waste that can block the newly built drainage systems and lead to flooding. In addition, it was not only in the project areas that the local authorities took care of this. The neglect of maintenance commonly found in other cities was not in evidence in Tianjin. These efforts should lower the risks to the outcome of the project's limited results in suburban sewage, too. Regarding the project's principal wastewater investment, the IEG mission saw that the Yingcheng treatment plant was in good condition and operating efficiently three years after it was inaugurated.

2.42 The institutional and financial arrangements are also critical to the sustainability of development outcome in the wastewater management sector. As mentioned earlier, the TMG adopted the project study recommendation of integrating the institutions for the water supply and sewerage service, which would enable a more efficient management of the sector. The introduction of market-based financing and fee scheme as recommended by the project technical assistance for wastewater service could also help sustain the development outcome.

2.43 The possible risk to development outcome is associated with the Dagou Canal. Accompanying the success of the Dagou Canal cleanup are the environmental challenges recognized by both the Bank and the Tianjin teams. As mentioned earlier, the Dagou Canal cleanup has prompted residential and commercial development along its bank, increasing the recontamination risk to the canal. If the extensive and necessary mitigation and control measures are not sustained, the environmental cleanup success can be lost. To lower this risk, the 81 km canal will require constant and intensive monitoring to prevent illegal discharges. The local authorities are aware of this problem. The TMG has set up the rule that polluting factories should either be closed or have the polluted discharge treated to the Class 1B standard before it could be released into the canal. There was a report about factories discharging untreated wastewater directly into the canal when dredging was at its initial stage. The project task team leader (TTL) also acknowledged that there are still some violations of the rule, though the scale is unknown. Currently, the TMG is continuing the Dagou Canal cleanup and dredging using funds from the Asia Development Bank and the central government. Overall, the risk to the development outcome is **Low**.

## **BANK PERFORMANCE**

2.44 **Quality at Entry – Moderately Satisfactory.** There were shortcomings in the design of the project. Some inefficient solutions, such as the Dagunanlu interchange, had been appraised and approved. The project objective itself was not very clear; “efficiency” and “equity” were not explained or defined. Consequently, the results framework did not present a credible chain of causality connecting the project interventions to the intended outcomes of the project. At the same time, the Bank team should be applauded for trying to be innovative by introducing suburban wastewater management to the design-build-operate method and sewage canal rehabilitation; both were financed for the first time in China by the Bank and served as important experiments and demonstration for advances in urban management.

2.45 **Quality of Supervision – Satisfactory.** In the day-to-day administration of the project, Bank performance appears to have been stronger. The Tianjin PMO, which has been working with the Bank since early 1990s, informed the IEG mission that the Bank’s support to Tianjin-II had been more prompt and timely than it had been for Tianjin-I. The improved response could be attributed to the decentralization of Bank project management in the East Asia and Pacific Region. With about 70 percent of the projects now being managed by the staff based in the World Bank Office in Beijing, Bank teams are able to respond in a more timely fashion to the needs of the Tianjin client, who noted and appreciated such an improvement. The client also appreciated the efficiency of the Bank’s payment system, which usually takes only four days to process a reimbursement.

2.46 While the project’s two TTLs were very capable, responsive, and accommodating, the PMO felt that the Bank’s TTLs were not fully in charge of project management, thereby undermining its efficiency. The feedback from the PMO was that in many occasions, instead of making on-site decisions, the project TTL had to get permission from the different departments within the Bank, resulting in a relatively prolonged decision-making process and to a certain extent reducing the competitiveness of the Bank. A number of project activities were cancelled and financed using the government’s own funds because the project progress was too slow to keep up with the pace of local development. The client suggested that the Bank could be more efficient by granting TTLs more power and authority.

2.47 Project restructuring, which occurred twice, was an exhausting process for both Bank and Borrower. In the face of the many changes requested, the project TTL proved to be very accommodating and flexible, and was able to bring each process quickly to closure. While restructuring is the tool to adapt to new circumstances on the ground, it should not substitute for sufficiently thorough project preparation and careful assessment of the commitments made on the part of the Borrower.

2.48 Overall, the Bank’s performance is rated as **Moderately Satisfactory**.

#### **BORROWER PERFORMANCE**

2.49 **Government Performance – Moderately Satisfactory.** As far as the performance of the central government of China in Beijing is concerned, this was satisfactory. As it does with other provincial-level projects, the central government played an important role of intermediation by bringing the international assistance of the World Bank face-to-face with the day-to-day challenges faced by cities in China, Tianjin in this case. With the formal project linkages established, the central government devolved project responsibility to its delegate officials in charge of local administration in Tianjin, letting them get on with the job, including working directly with the World Bank. While taking a back seat during implementation, the government in Beijing used the project experience to help disseminate the lessons of China’s own urban development experience internationally. One lesson cited in Beijing was the importance of getting the job done and done quickly. Another was the need to give more attention to protecting the urban environment, especially containment of air and water pollution, which has been the case so far. Lessons such as these can be considered part of the positive outcomes of this project experience.

2.50 Government performance—referring here to the highest authority delegated to Tianjin—would have been stronger had it carried out a more thorough project preparation for a solid design to which it could have remained committed—with a better chance of being implemented as agreed. This could, perhaps, have helped avoid the two experiences of restructuring.

2.51 The IEG mission was told by the PMO that shifting Five-Year Plans either at the sector level or at the city level were behind some of the changes made, such as the cancellation of the Shuanglin WWTP and improvement of some road sections as well as the change of the bus depot location. Most of the project was implemented under the same Five-Year Plan, however. The project's nine-year implementation between 2003 and 2012 spanned three of China's Five-Year Plans—the country's principal instrument of its national development strategy. A total of 57 percent of all Tianjin-II disbursements occurred under just one plan, the 11<sup>th</sup> Five-Year Plan (2006–2010) when one would not expect major new policy shifts.<sup>14</sup> Yet it was this plan's period, especially after 2007, that marked the project's greatest implementation difficulties, including the two restructuring experiences. While it is common to experience Bank project activity changes because of rapid local development in China, such changes would raise questions about the local ownership of the original project design agreement.

2.52 This assessment took note that while the project was affected by the shifting of the Five-Year plans at city and sector levels, the government also made efforts to complete all the feasible project activities to maximize the benefits of the project. The government used its own funds to finance several cancelled project activities, as described earlier. It also adopted the project study's recommendation of integrating the management of water supply and sewerage services and is utilizing the information by the project study to prepare an urban transport project to be financed by the Bank. The TMG also did a good job of maintaining the infrastructure built under the project.

2.53 **Implementation Agency Performance – Satisfactory.** Under this heading, the PPAR assesses the performance of agencies at the level of Tianjin itself. These include the Tianjin Construction Commission where the PMO is located as well as the departments that worked with the PMO on the project. These included Tianjin's Finance Bureau; Planning Bureau; Water Conservancy Bureau; Environmental Protection Bureau; Traffic Management Bureau; Public Transportation Corporation; and Urban Council.

2.54 For the most part, the project implementation agencies completed their assigned tasks, especially in building the infrastructure knowledgably and effectively. The IEG mission's field inspection of project investments showed they had been completed to an adequate standard and were all in operation. In the field, the IEG was impressed by the depth and detail of knowledge held by local staff on the particular investments for which they were in charge. It was clear that each facility visited was in the hands of capable cadres. What they generally lacked, however, was a familiarity with the purpose of the Tianjin-II project as a whole. This left them without a clear understanding of how their own facility or plant might

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<sup>14</sup> The last 33 percent of loan disbursement was made under the current 12<sup>th</sup> Five-Year Plan (2011–2015).

contribute to achieving the project's objective. While the responsibility of ensuring that project investments contribute to that achievement lies principally at the management level, the chances of success would probably be enhanced if a plant's technical teams understood better and were committed to the broader goals sought. Management level staff understood this well from their experiences with the earlier Tianjin-I project which helped them become familiar with Bank policies and procedures. Borrower performance (overall) is rated **Moderately Satisfactory**.

## **MONITORING AND EVALUATION**

2.55 IEG agrees with the ICR conclusion that M&E was one of the weakest aspects of the project (ICR, p. 9). The PAD (Annex 1) proposed 12 outcome and impact indicators to measure the achievement of the project. Seven of these indicators intended to measure the efficiency and equity of Tianjin's wastewater service, such as sewerage service coverage (in terms of area and population), the water quality at streams and Bohai Bay, and the volume and unit cost of wastewater collection and treatment, and the finance of the operating companies. Five indicators were designed to monitor the achievement of the efficiency and equity of the transportation system. While the designed M&E framework was quite comprehensive, this assessment noted that M&E lacked indicators to measure the enhanced equity in wastewater management. The indicator on the expansion of wastewater treatment would show the coverage of the service rather than its efficiency. The transport mode sharing of bus transport is a good indicator for the equity of transport system; however, whether the achievement of this indicator could be attributed to the project was questionable.

2.56 During project implementation, only two outcome indicators were kept as key performance indicators (KPI): percentage of wastewater being collected and treated, and traffic mode sharing for the bus system. As discussed above, these two indicators were not good indicators to measure the project's stated objective of enhancing the efficiency and equity of its two chosen subsectors, namely wastewater management and the transportation system. None of the other proposed outcome and impact indicators in the PAD (Annex 1) had been built into the M&E framework for the operation. Such a framework would not be able to sustain claims of some outcomes having resulted from the project. The reported result, such as the increased modal share of transportation going to buses and their increased speeds, for example, cannot be attributed to a project that did not implement its own planned bus priority measures. Broad Tianjin-wide results reported, such as the increasing coverage of wastewater collection and treatment from a baseline of 48 percent of the total wastewater produced to 80 percent, cannot be attributed to a single operation when the scales of the project and of the megacity were so disparate.

2.57 During project implementation, information for the output indicators was consistently collected and used as a basis for monitoring and correcting project implementation. The information on the two KPIs was also collected to reflect the progress toward achievement of the project development objectives. However, information on the 10 other indicators in the original design was not consistently collected and reported, making the M&E an unlikely source for evidence needed to assess the achievement of the project objective.

2.58 The overall rating for the project M&E is **Modest**.

### 3. Chongqing Small Cities Infrastructure Improvement Project

#### Objectives, Design, and Relevance

##### OBJECTIVES

3.1 The objective of the Chongqing Small Cities Infrastructure Improvement Project as stated in the financing agreement was “to support emerging small cities to improve the efficiency and effectiveness of infrastructure service delivery, to accommodate the rapid urban growth” (loan 4794-CHA, Schedule 2).

##### RELEVANCE OF OBJECTIVES

3.2 Similar to the Tianjin-II project, the Chongqing project did not clearly define the terms “efficiency” and “effectiveness” in the Project Appraisal Document (PAD). Nevertheless, the project development objectives were relevant to the Bank and China’s priority and remain relevant as long as urbanization in China continues. The two themes under the Bank’s Country Assistance Strategy (CAS 2003–2005) for China were: (i) facilitating an environmentally sustainable development process; and (ii) addressing the needs of the poorer and disadvantaged people and regions of the country. Investing infrastructure services in Chongqing small cities was consistent with the themes of the Bank’s CAS. The project development objectives were also in line with China’s 10th Five-Year Plan (2001–2005) which called for improved infrastructure, balanced development of regions, and increased sustainability (chapter 3). The five-year project implementation period witnessed the development of China from a country receiving aid from the International Development Association (IDA)<sup>15</sup> to an International Building and Reconstruction Development (IBRD) country. Yet, the project objectives remain relevant with Bank’s Country Partnership Strategy (FY2013–16) and China’s 12<sup>th</sup> Five Year Plan (2011–2015), which call for a focus on improving the quality of life and enhancing urban environmental services rather than the pace of growth and paying attention to balanced growth. It is expected that the demand for infrastructure services in urbanized areas will continue to grow as long as the urbanization in China continues.

3.3 The project development objectives are also consistent with Chongqing’s long-standing development strategy of promoting more balanced regional urbanization and development. Since 2006, about half a million people moved to the Chongqing urban area every year, which is equivalent to an annual increase of urbanization rate by 2 percent. With such speed of urbanization, Chongqing was and remains one of the most rapidly urbanizing regions of China. In its Eleventh Five Year Plan (2006–2010), the municipality set a development modal of “one circle” (within one hour drive to central Chongqing) and “two wings” (along eastern and western Chongqing). Six cities located in different sub-regions of

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<sup>15</sup> IDA countries are those that had a per capita income less than \$1,205 in 2012 and lack the financial ability to borrow from IBRD.

Chongqing—Wanzhou, Fulin, Jiangjin, HeChuan, YongZhou, and Qianjiang—will be developed into six regional centers to materialize more balanced growth along the two wings.

3.4 The municipal government is fully aware that a development driven by urbanization needs to have two key elements, job opportunities and basic infrastructure service, to be sustainable. The Chongqing municipality has put much effort into changing its economic structure to a more industrialized one in order to create more employment opportunities. During project implementation, the contribution of the secondary industry to GDP has increased from 43 percent to 52 percent, while the contribution of the primary industry had dropped from 12 percent to 8 percent. The municipality also invested massively to address the infrastructure issue. In 2005, the total infrastructure investment in Chongqing was 74.5 billion Chinese yuan (US\$9 billion). The total infrastructure investments in Chongqing increased to 240.4 billion Chinese yuan (US\$40 billion) in 2012, including the budgetary expenditure on transport of 2.54 billion Chinese yuan (US\$400 million). The Bank's project, though its investment scale is small when compared with the government's investment program, is consistent with the development strategy of Chongqing municipality. The project's aim is to address infrastructure services in Chongqing small cities. The relevance of objectives is rated as **Substantial**.

## DESIGN

3.5 The project comprised the following components, involving 10 counties and districts (project activities map attached in Annex B):

1. Water Supply (estimated cost US\$98.2 million, actual cost US\$115.54 million): (i) enhancement of water treatment and network expansion in three areas of Dianjiang; (ii) Songji regional water supply of raw water to Yongchuan city; (iii) Tongguanyi regional water supply scheme supplying 16 towns in water scarce areas in the planned western expansion areas; (iv) enhancement of water treatment and network expansion in two areas of Tongnan; and (v) enhancement of water treatment and network expansion in three small towns located close to Yongchuan city.
2. Flood Protection (estimated cost US\$57.6 million, actual cost US\$82.29 million): (i) flood protection embankments to against serious flood damage in NanChuan and RongChang; and (ii) extension of existing flood protection embankment on the south side of the river in Shizhu.
3. Road Improvement and Construction (estimated cost US\$93.2 million, actual cost US\$133.41 million): (i) construction of a spine road in new development area in Qianjiang; (ii) construction of a 4.6 km Shizhu expressway link road; (iii) construction of an 11 km link road from Chongqing-Chendu expressway to the key secondary city of Tongba; and (iv) construction of a 14.4 km access road to a tourist site in Yubei.
4. Environmental Sanitation component (estimated cost US\$11.1 million, actual cost US\$5.64 million) was to finance public toilet upgrading and reconstruction in Chongqing city.

5. Institutional Strengthening and Training was to fund technical assistance in six areas (estimated cost US\$4.4 million, actual cost US\$15.18 million):

- (i) strengthening finances, management, and operations of utility companies; improving management capacity of parent units of local governments managing these companies, and developing a policy and pricing mechanism for the two regional water supply schemes;
- (ii) carrying out an update of all available water resources and formulating appropriate policies for water resources management, including investigations to establish the availability of ground water in the western areas of Chongqing;
- (iii) supporting initiatives in private sector participation in urban infrastructure services;
- (iv) carrying out a study on the policy for providing public toilets in Chongqing city;
- (v) carrying out independent monitoring of safeguards implementation; and
- (vi) carrying out training and study tours.

3.6 The project was restructured twice, on February 25, 2009 and June 07, 2010. The first restructuring was to reallocate loan proceeds of US\$1.2 million from the unallocated category to finance the preparation of the Chongqing Urban Rural Integration Project (approved in FY10). The second restructuring was to relocate funds among various components because of changes to the original project components during project implementation. The major changes are listed below:

(i) Under Water Supply component:

- The Yongchuan Town Water Supply subcomponent was dropped for lack of counterpart funding.
- The Songji Regional Water Supply subcomponent was expanded to include a new distribution pipeline to meet the new and expanded demand.
- The Tongguanyi Regional Water Supply subcomponent used an alternative route to accommodate geological conditions.
- The Tongnan Water Supply added a new water treatment plant.

(ii) Under Flood Protection component: Detailed geological surveys and soil testing identified some serious engineering problems with foundation designs; though the scope and scale of the road component did not change, the investment cost increased by about US\$23 million for the required additional engineering .

(iii) Under the Environmental Sanitation component, the number of public toilets to be financed was reduced from 235 to 153 because of objections raised about the locations of the toilets by local residents and associated persistent land acquisition and resettlement issues.

(iv) Under the Institutional Strengthening and Training component, two planned studies were dropped.

## **RELEVANCE OF DESIGN**

3.7 The project design was aligned with the project development objectives, focusing on the coverage (understood as effectiveness), reliability, and viability (understood as efficiency) of infrastructure services. More specifically, the water sector activities including the water and raw water supply expansion would increase the coverage and reliability of the water supply; the road expansion and improvement activities would enable more local residents to have access to all season roads network and at the same time reduce the travel time and cost; the flood protection and environmental sanitation would protect the environment to improve the sustainability of the urban areas; and the technical assistance activities would improve the management in the infrastructure services sectors, especially the financial viability of the water supply sector.

3.8 Of the 10 project districts and counties, eight are within the “one hour economic circle” and are more industrialized and urbanized as compared with the other counties and districts in Chongqing. The other two districts and counties involved in the project are located in less developed eastern Chongqing. For example, in 2007, the urbanization rate in eastern Chongqing was only half of that in Chongqing and the GDP per capita was only 55 percent of that at the municipal level. That said, the two counties involved in the project were strategically important cities in eastern Chongqing. Qianjiang County is a regional center and a leading city in the south wing of eastern Chongqing. Shizhu is less developed, and improving its infrastructure service is critical for development as it is located within the Three Gorge area. Overall, the project supported the rapid urban growth in Chongqing.

3.9 The Chongqing PMO informed the IEG mission that two more criteria were applied in selecting the participating cities: ownership and affordability of the local government, with affordability being the mandatory criterion. To prove strong ownership, the local governments needed to actively seek the Bank’s project and have the capacity, including the human resources and institutional, set up to implement the project. Affordability means that the governments should be able to contribute counterpart funding for the project. The rationale for setting affordability as a mandatory criterion was because the participating local governments would be responsible for the Bank loan repayment. The application of these criteria would ensure that the participating local governments were not only motivated but also could afford the Bank’s project. The relevance of the project design is rated as **Substantial**.

## Implementation

3.10 **Implementation Experience.** Project implementation was off to a good start when the loan was declared effective in February 2006, eight months after approval. Up to the project mid-term review (MTR) in 2009, actual disbursements lagged only about three months behind those planned. This was a notable achievement for local implementing agencies that had no previous experience in working with the Bank. Disbursements slowed somewhat after the MTR, but picked up later. The loan was almost 100 percent disbursed by the original closing date of June 2012.

3.11 What distinguished this project from Tianjin-I and Tianjin-II was that Chongqing's project implementation was mainly the responsibility of second tier local county authorities. Chongqing city-province, along the model of Tianjin's, nevertheless set up a central Chongqing Project Management Office (CMPO) in charge of overall planning and coordination. Project Management Offices at participating city, district, and county levels were also established and deemed responsible for the preparation and coordination of project activities at local level. During field visits to these towns, the IEG mission met with many of the responsible local officials. Their knowledge of their respective project components and candor in acknowledging the problems encountered was impressive. One of the main challenges for them was to become familiar with the policies and procedures of the Bank with whom they had not worked before.

3.12 The project was implemented largely as planned, but there were some changes as explained earlier in this report. The final project cost increased to US\$352.06 million as compared with the estimated cost of US\$265.5 million; the biggest overall increase was in spending on the roads component that rose from an appraisal commitment of US\$93.2 million to final spending of US\$133.41 million by completion because of the required additional engineering during project implementation. The appreciation of the Chinese currency RMB against the US\$ by more than 20 percent contributed to the increased project cost in US\$ amount.

3.13 **Procurement.** As in the Tianjin-II case, the project procurement management also suffered from the "lowest evaluated bid" rule set by the Bank. However, given all the possible problems associated with such a procurement rule and input type of contract management, the project implementation entities and management offices managed project procurement activities relatively well. There were no reports of mis-procurement.

3.14 **Safeguards.** The project was generally in compliance with Bank safeguards. Since the project involved investments that required displacing people from their homes, involuntary resettlement was invoked 10 times. In all cases, the planning of the resettlement and the provision of compensation to those displaced were reportedly compliant with the Bank's own OP 4.12 safeguard policy, although at considerable cost to the Borrower in one particular case.

3.15 This was in Qianjiang district, some 280 km to the east of Chongqing city, where a new 12.8-km road (completion ERR of 14.1 percent) linking two rapidly growing towns (total population 80,000) required the demolition of 175 houses to secure the right of way. Of

their residents, 127 households were resettled quickly, while 48 households did not accept a proposed relocation site. They demanded to be resettled near the project road to which the local authority agreed. Furthermore, the 48 displaced households also demanded that the local government provide all infrastructures for the site, which was a normal request, and build foundations that could take high-rise buildings, which was not a normal request. This would enable the affected families to develop large-scale housing and business properties to rent in what would become a major real estate development funded by the county government at an extra cost of more than US\$1 million. During its visit to the site the IEG mission saw that the foundation work of driving heavy duty piles into the ground was well under way. Displaced households living in temporary housing nearby told the IEG mission that they looked forward to building their new development, moving in, and renting out. The Qianjiang case demonstrates the risks of the Bank's own safeguard being taken too far. Beyond compensating displaced families for their losses, it can provide unintended windfall gains for those few families and businesses that hold out until the end.

3.16 Other than the Qianjiang case, the project involved nine other cases of resettlement affecting 14,158 people at a total cost of about US\$36 million. The ICR provides an unusually comprehensive report of the details of the project's resettlement (ICR Annex 7, pp. 70–73). During field visits to sites affected by project resettlement, the IEG mission heard local officials describe their experiences, which were consistent with the ICR reporting. No case of noncompliance with the Bank's safeguard for involuntary resettlement was reported.

## **Achievement of the Objectives**

3.17 For the purpose of this assessment, the objectives of “supporting emerging small cities to improve the efficiency and effectiveness of infrastructure service delivery, to accommodate the rapid urban growth” will be assessed against each infrastructure sub-sector that the project supported. Specifically, the report assessed the coverage and sustainability of the environmental sanitation service, the effectiveness of roads intervention on transport time and cost, the coverage and social and economic impact of flood protection services, and the coverage, reliability, and financial viability of water supply service.

3.18 **Environmental Sanitation.** In downtown Chongqing, 153 public toilets were improved or constructed. These public toilets are mainly used by local taxi drivers, those residents who do not have a toilet in their apartments, and tourists. As reported by the local media,<sup>16</sup> the 153 toilets built under the project increased the total number of public toilets in the Chongqing urban area by roughly 5-6 percent, to around 3,000. According to the standard set by the Ministry of Housing and Urban-Rural Development that every 2,500 urban population should be served by at least one public toilet in urban area, it is estimated that the 153 public toilets built under the project could provide environmental sanitation service to an additional 380,000 urban residents in downtown Chongqing. The public toilets that IEG mission randomly visited were built in good quality and were maintained in quite clean condition. All the public toilets are considered as public goods and maintained by the Environmental Sanitation Division at the Chongqing Municipal Commission of City

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<sup>16</sup> <http://wsz.cq.gov.cn/zt/qzlx/Detail.aspx?id=22505&clsid=386>.

Administration and Environment; therefore, the sustainability of these environmental sanitation services would be ensured. The officer from the Environmental Sanitation Division confirmed that these toilets are all in use. The project intervention in this sub-sector increased the service coverage and provided free and sustainable environmental services to the urban residents, the project helped to increase coverage of environmental sanitation services, and its contribution is assessed as **Substantial**.

**3.19 Roads and Bridges.** There were 37.92 km of roads and 10 bridges that were constructed in four districts and counties: Qianjiang, Shizu, Tongnan, and Yubei. The IEG mission visited the project roads and bridges in Yubei District and Qianjiang District. The visual check of Yubei roads and bridges found that some steel rods in reinforced concrete on the balustrade of one bridge were already exposed and rusting, though the bridge was completed just four years ago. It was not clear to the IEG mission whether the current poor status of the bridge balustrade was due to insufficient post construction maintenance or poor quality construction. In Qianjiang, 10 km of road were completed and put into use; however, the bridge was still at its final stage of construction and the client attributed the delay to the change of engineering design and contract renegotiation. It is a bit worrisome that the bridge was yet to be finished, and the project was already closed. It was not clear whether there is any post-project arrangement to ensure that the Bank's investment will still produce a piece of high quality infrastructure.

**3.20** Shorter transport time and better connections are the direct benefits brought about by the project's roads and bridges activities. Qianjiang Road, which links two towns, Zhengyang and Zhangjiaba, helps decrease the travel time between Zhengyang and the 319 expressway (a distance of 1.3 km) from one hour (no direct road prior to the project walking over hilly area) to three to five minutes. The traveling time on the Qianxian class 2 road (11.5 km) improved by the project was shortened from 20 minutes to seven minutes. Shuzhu Road, a 4.6km link road between Nanbin Town and the Dianjiang-Lichuan Expressway reduced the travel time to just a 10-minute drive, as compared to the one hour journey over a rough 15 km track before the project. Tongnan Road, the 10.4 km link road connecting Tangba with the Chongqing-Suining-ChengDu Expressway provides vehicular access with a journey time of just 3-5 minutes, replacing a two hour walk. Yubei Road together with the bridges built under the project, reduced travel time from Caoping to Tongjing (10.14 km) from 40 minutes before the project to 10 minutes afterwards. The IEG mission observed limited impact of the project roads on the local economic development. The local officers reported more tourists are now coming to Tongjing hot spring area and the vendors selling fruit to travelers along the project road said that their daily income increased more than tenfold after the opening of Yubei Road. In summary, there is evidence that the project road investments increased connection and accessibility and reduced transport time and transport cost. There is less clear evidence of the project's social and economic impact. The project's contribution to the improved roads services is assessed as **Substantial**.

**3.21 Flood Protection.** Three flood protection activities in three counties—RongChang, , NanChuan, and ShiZhu—were completed under the project, and 19.1 km of flood embankment were built to a 20-year standard. In RongChang County, 200,000 local residents are now protected from annual flooding. In NanChuan and ShiZhu, altogether 300,000 local populations are now being protected, resulting in substantial social and economic cost

savings. In RongChang, the flood protection work has transformed the area into a more developed commercial and residential center. The local officers informed the IEG mission that the value of the properties along the river banks rose by 300 percent to around US\$1,000 per square meter today. There is no quantified information on the economic and social development stimulated by the flood protection work in NanChuan and ShiZhu. The general judgment is that the development benefit might not be as big as the one in RongChang County because the overall development in RongChang is more advanced. The IEG mission visited the flood protection activity in RongChang County—8.2 km of flood embankment, 7 km of roads along the river banks, and three bridges were completed to a high standard and are well-maintained. The sustainability of flood protection work should be ensured. The project's contribution in flood protection sub-sector is assessed as **Substantial**.

**3.22 Regional Raw Water Supply.** Two regional raw water supply plants, TongGuanYi and SongJi, were built under the project. The IEG mission visited this plant and took note that the plant is in operation without any major problems observed or reported. The plant has a dedicated power supply through its own transformer plant next door, and there were no reports of interruption of operations because of lack of power. This plant receives water drawn from the Yangtze River at an intake 20 km away. It sends the water to three separate water treatment plants 10–20 km away. These two plants are providing raw water to the water supply plants downstream which could further provide treated water to the residents and industries located in 16 towns that were short of water prior to the project; altogether about 1.2 million local people benefit from a more reliable water supply. The reliability of water service is improved as well. The service satisfaction ratio of water supply users for Yongchuan Town under the Songji Water Supply system increased from 75 percent at appraisal to 98 percent at project completion. Regarding the financial viability, the tariff of the raw water was set by the municipal government, currently at 0.6 yuan/ton (US\$ 0.1/ton), which was not high enough to make the raw water supply companies completely financially viable.

**3.23 Water Supply.** TongNan County and Dianjiang County water supply plants were built. The IEG mission visited the TongNan water supply plant, which was completed in 2010 and is now in full operation with a capacity of 20,000 ton/day. The operation includes collecting water from a service canal 2 km away, passing it through filtration and chlorination, and monitoring water quality in real time. The IEG site visit noticed signs of inadequate maintenance, such as rusting steel installations which need painting and some leakage from the pumping equipment. The two water supply plants alleviate the water supply shortage issue in the project area. They provide reliable drinking water to an additional 100,000 local residents, which is equivalent to about 20 percent of the local residents in the two counties' urban area. Unaccountable water loss was reduced by 20 percent for the Tongnan Water Supply at project completion, evidence of increased efficiency of water supply service. Industries also benefited from the project. For example, the water demand of 20,000 tons a day by the Chongqing MinFeng Agriculture Chemistry Corporation could not be met until the TongNan water supply plant was built under the project. Regarding financial viability, at project closure, Dianjiang and TongNan water supply companies were able to be financially self-sustained after the water tariffs of these two areas were increased to RMB 2.53yuan/ton (US\$0.4/ton) and 2.70 yuan/ton (US\$0.45/ton), respectively. The contribution

of project's intervention on enhanced raw water and water supply service is rated as **Substantial**.

## **Efficiency**

3.24 The implementation of the project showed an efficient use of Bank resources. Altogether 97 percent of a US\$180 million Bank loan was disbursed over the seven-year period intended. By comparison, the Tianjin-II project disbursed 98 percent of a US\$150 million Bank loan over a nine-year period, two years longer than planned.

3.25 The ICR for this project is to be commended for its comprehensive and candid reporting of the internal economic rates of return (EIRR) of all the main components accounting for about 95 percent of all project costs. The ICR's candor is commended for reporting that the overall EIRR for the project as a whole at completion was 10.1 percent, compared with the equivalent at appraisal of 12.8 percent.

3.26 At completion, the EIRRs of the three water supply investments were only 8.8 percent (compared with 12.5 percent at appraisal), when benefit estimates were based on the tariff paid. Such a result indicates that an additional tariff adjustment is needed to ensure economic viability of these important water investments. At the same time, it must be recognized that tariff increases may be more difficult to enforce when they affect a large number of people especially in less developed areas. The Chongqing government is sensible about a water tariff increase. For example, the raw water tariff was set by the municipal government rather than by the county or district government. Currently, the current raw water tariff set by the municipal government is not sufficient to ensure the financial viability of these raw water companies; therefore, the municipal government is subsidizing these companies.

3.27 The IEG mission was particularly surprised by the EIRR of only 7.1 percent for the Rongchang County flood protection works to contain the Laixi River along 8.2 km of its banks during its 20-year floods. During its field visit, the mission could see that the river embankments were well constructed and the river itself had been dredged for improved flow. The IEG mission also learned that several hundred properties now protected from flooding had seen their value increased fourfold—from US\$250/m<sup>2</sup> before the project to US\$1,000/m<sup>2</sup> afterward—thanks to the project's flood protection. Had increased property values been used to legitimately measure project benefits, since they represent the (new) occupiers' willingness to pay for the improvements, the EIRR, no doubt, would have been considerably higher. Instead, the ICR used the savings from the repair of flood damage and the costs of interrupted business to measure benefits. Naturally, providing more security by offering protection against a 20-year flood increases the cost of the investment, while the benefits of flood damage avoided over the life of the investment may not increase to the same extent. Overall, the project's flood protection investments yielded EIRRs of 10.2 percent at completion, compared with an appraisal estimate of 12.1 percent.

3.28 The project's road investments had a stronger economic performance, yielding EIRRs of 11.3 percent at completion, against an appraisal estimate of 13.5 percent. Reduction in vehicle operating costs (VOC), as is conventional in these cases, were used to measure

benefits. In the specific case of the Yubei Road, the completion EIRR was only 7.1 percent (against an appraisal EIRR of 11.9 percent). One reason was a cost increase of 50 percent. Another was the light traffic on the road that was evident during the IEG mission visit to this site. In addition, IEG noted other problems with this activity, such as the poor maintenance of the 890 m road bridge, as mentioned in the previous section.

3.29 The rather modest reported project efficiency, i.e., lower than estimated EIRRs, has two possible causes—candor in reporting and the conservative estimation of the project benefits, such as in the RongChang flood protection and the water supply investment case. It is reasonable to expect much higher EIRRs if the social and economic benefits are taken into account. The efficiency of the project is rated as **Modest**.

## Ratings

### OUTCOME

3.30 The Chongqing small cities infrastructure project focused on the priority infrastructure needs of Chongqing's secondary cities to support the urbanization in Chongqing. Such focus is consistent with the country and the Bank's strategic priorities which seek balanced and sustainable development. The project activities on roads, environmental sanitation, flood protection, and water supply were relevant to project development objectives. At project completion, there was evidence that the project investments provided the most needed infrastructure services in the project areas and increased infrastructure service coverage and reliability to accommodate the growing population in the local cities. In some cases, the project investments prompted local economic development with immediate effect. The project resources were used efficiently, but the economic analysis did not produce high EIRRs, both because of the cost overrun of some road activities and the conservative estimate of some of the project benefits, such as those for flood protection work. Insufficient maintenance of project infrastructure is common with this project. The overall outcome is assessed as **Moderately Satisfactory**.

### RISK TO DEVELOPMENT OUTCOME

3.31 Involving smaller and financially weaker local governments increases the risk that the operation and maintenance of the infrastructure provided by the project may not have adequate financial input. For the water sector in particular, the project results show that there is a need to adjust raw water tariffs to ensure the viability of investments in this sector. It is not certain that the necessary tariff increases will be viable in these county- and district-level jurisdictions.

3.32 Another risk to the development outcome in rapidly growing and urbanizing China is that the capacity of project infrastructure may be quickly exhausted. The IEG mission itself saw the risk of this when visiting the TongGuanYi Raw Water Plant, which was built in 2008 and operating at 50 percent of its full capacity. IEG learned, however, that demand is growing at 30 percent per year, meaning that its full capacity will be exhausted by 2016. Local officials told IEG that plans are being prepared to double the plant's capacity, but IEG

did not perceive a sense of urgency to act now in order to be prepared for that imminent event.

3.33 The risk to development outcome is rated **Significant**.

#### **BANK PERFORMANCE**

3.34 **Quality at Entry – Moderately Satisfactory.** The project was well designed for focusing on priority infrastructure needs of Chongqing’s secondary cities, notably in the sectors of water supply, flood protection, and roads. The selected components reflected the priorities set by the local authorities.

3.35 On the other hand the project did not articulate its development objectives. The project did not offer clearly defined concepts of efficiency or effectiveness hence leaving the stated project development objectives open to interpretation, which consequently made project evaluation difficult. The results framework did not address these matters directly, leaving a monitoring gap between the project implementation and the achievement of the project development objectives. The team could have done a better job by clearly defining the “efficiency” and “effectiveness” aspects of the project and preparing a better M&E framework to monitor the achievement of the project development objectives.

3.36 **Quality at Supervision – Moderately Satisfactory.** Project supervision by the Bank was conducted from the Beijing office, allowing regular contact with implementing agencies in the field. This particularly benefited local level county and district governments that were working with the Bank for the first time. This was particularly useful for local officials to familiarize themselves with Bank procedures for procurement and disbursement. On the other hand, because of the many activities scattered in 10 counties, cities, and districts and the limited supervision budget available, it was impossible for the Bank team to visit all the project sites at each supervision mission, leaving some implementation issues unattended. For example, during field visits to the Qianjiang 10 km road and bridges, the IEG mission noted delayed and incomplete bridge work of which the Bank project team was not fully aware.

#### **BORROWER PERFORMANCE**

3.37 **Government Performance – Satisfactory.** The government refers to the Chongqing Municipal Government and the implementation agencies at the local government level. The municipal government was fully committed to the project and had taken measures to support the project. It financed a fully staffed and permanent Project Management Office (PMO) to support the project. Counterpart funding was ensured at a substantially increased amount; for this specific project, the actual project cost was \$90 million higher than the estimated. The municipal government together with the local governments increased their counterpart funding from the originally committed US\$84.5 million to US\$176.97 million. In addition, the government ensured full compliance with Bank rules and policies even at high cost to the Borrower. The Chinese Borrower at all levels usually cares about the relationship with the Bank and is willing to go extra miles to meet the Bank’s requirements. The Chongqing municipality was especially so in dealing with this project. One example is the resettlement

of project affected persons (PAPs) in Qianjiang County, as described in the earlier section. The government invested an additional \$US1 million to satisfy this group of PAPs. The overall rating for Chongqing Municipal Government is **Satisfactory**.

3.38 **Implementing Agency Performance – Moderately Satisfactory.** The implementation agencies refer to the Chongqing PMO and the local agencies responsible for the specific project activities. The Chongqing PMO is experienced as it has been coordinating the preparation and implementation of other Bank-financed projects in Chongqing. For this specific project, the PMO was a focal point between Chongqing municipality and the Bank, coordinating and providing guidance and daily support for the preparation and implementation of the project which had five components and 14 sub-activities in 10 counties and districts. The project was closed on time, and no big issues or noncompliance with the Bank's policies were reported. The local agencies were responsible for completing the project activities located in their domain. For those local agencies that had no much experience with the Bank before, dealing with the project was not an easy task. There were delays in the execution of some large contracts because of the lack of coordination between the resettlement action plan and civil works management. As stated in the previous section, the project activities were completed with mixed quality, and there are signs in many places of inadequate maintenance.

3.39 The overall rating for the implementation agencies is **Moderately Satisfactory**.

## MONITORING AND EVALUATION

3.40 The likelihood of successful monitoring and evaluation of this project was compromised at the outset by an incomplete results framework (PAD, p. 19) that used a different formulation of the objective from that introduced earlier in that report (PAD, p. 2) as well as from that in the loan agreement (Schedule 2). Eleven of its 15 performance indicators call generically for evidence of the intended result without specifying what that evidence should be or how it should be gathered and measured. Of these 11, the four outcome indicators did not indicate how progress toward improved efficiency and effectiveness of infrastructure service delivery, the project's objective, would be measured. Nor was the results framework built around baseline measures or target values of the indicators. To be useful in guiding project implementation and for follow-up, the results framework should have specified the variables for data collection and analysis that could demonstrate project progress in delivering outputs and achieving its objectives. Against this backdrop, little was achieved in the M&E design, though tracking the project outputs was detailed and incorporated in the M&E of this project.

3.41 The ICR reports (ICR, p. 23) nevertheless that a computer-based M&E system, linked to a project management information system, was developed early during project implementation, which enabled the timely reporting of implementation progress. At the site visit, the local entities responsible for project implementation at the local level were able to provide the IEG mission with information on the outcomes and impacts of specific project activities implemented in their city, county, or district. However, there was no comprehensive M&E system in use to determine progress toward achieving project objectives. The M&E of the project is rated as **Modest**.

## 4. Lessons

- **Great care is needed in project preparation and appraisal to ensure that all proposed interventions are feasible.** In the case of the Tianjin-II project, some originally designed components and activities, such as the Dagunanlu interchanges and the water reuse activities, were cancelled or modified because the feasibility studies showed that these activities were not feasible. The changes led to project restructuring and implementation delays. The Bank projects should have more thorough and solid project appraisal including the detailed feasibility studies.
- **A well-phrased and clearly defined project development objective statement and a comprehensive M&E framework is a key step towards a results-focused Bank operation.** Both the Tianjin-II and Chongqing small cities project face similar challenges of PDOs that are not clearly defined and non-comprehensive M&E framework, making it difficult to monitor and assess the project implementation progress towards achieving the development objectives. IEG's interaction with task team leaders across the Bank suggests that phrasing an accurate and relevant PDO appears to be a common challenge; more support to the project teams is needed in this area.
- **By continuing to tailor its services and instruments to the more localized needs and capacity of the Borrower, the Bank can maintain the effectiveness of its support.** The interaction with local officers in Tianjin and Chongqing suggested that there is still strong demand for the Bank's support in urban development in China. However, in more developed urban areas like Tianjin, demand is mainly for the Bank's innovation and knowledge rather than the Bank's financing. For less developed urban areas like the secondary cities in Chongqing, the Bank's financing and project management experiences with special attention to environment and vulnerable groups are very much appreciated.
- **While the Bank's engagement has supported the development in China, its prolonged internal decision-making processes may decrease its competitiveness in helping address fast-paced changes.** In the case of Tianjin-II, the project implementation often could not keep up with local development, resulting in the cancelation of project activities. Such an experience is quite common across the Bank's projects in China. Inefficiency on the Bank side is often cited by the borrower and the Bank's TTLs as the main reason. The Chinese borrower suggested that the Bank could become more efficient though simplifying the procedures and granting TTLs more authority so that the TTLs could make more timely decisions to accelerate project implementation.

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## Annex A. Basic Data Sheet

### SECOND TIANJIN URBAN DEVELOPMENT AND ENVIRONMENT PROJECT (LOAN 4695) - P040599

#### Key Project Data (amounts in US\$, millions)

	Appraisal estimate	Actual or current estimate	Actual as % of appraisal estimate
Total project costs	334.00	312.90	85
Loan amount (IDA)	150.00	147.25	98
Grant (GEF)	8.20	8.19	100
Cofinancing	-	-	-
Cancellation	-	-	-

#### Cumulative Estimated and Actual Disbursements

	<i>FY03</i>	<i>FY04</i>	<i>FY05</i>	<i>FY06</i>	<i>FY07</i>	<i>FY08</i>	<i>FY09</i>	<i>FY10</i>	<i>FY11</i>	<i>FY12</i>	<i>FY13</i>
Appraisal estimate (US\$M)	1.5	10.5	15.2	21.2	36.2	66.2	121.2	145.2	150.0	150.0	
Actual (US\$M)	1.5	10.5	15.2	21.2	30.7	42.0	71.7	99.9	134.8	147.2	
Actual as % of appraisal	100	100	100	100	85	63	59	69	90	98	
Date of last disbursement:											

#### Project Dates

	Original	Actual
Concept Review	4/16/2002	4/16/2002
Appraisal	12/23/2002	12/23/2002
Board approval	05/20/2003	05/20/2003
Effectiveness	03/10/2004	03/10/2004
Closing date	06/30/2010	06/30/2012

## Staff Time and Cost

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	Number of staff weeks	US\$, thousands (including travel and consultant costs)
<b>Lending</b>		
FY98	0	15.40
FY99	0	22.66
FY00	5.14	18.59
FY01	13.49	59.59
FY02	51.59	237.60
FY03	52.02	223.85
FY04	0.20	1.41
<b>Total</b>	<b>122.44</b>	<b>579.01</b>
<b>Supervision/ICR</b>		
FY04	18.20	105.25
FY05	15.17	57.78
FY06	16.21	60.80
FY07	22.43	74.78
FY08	19.70	81.06
FY09	16.08	78.39
FY10	14.41	82.86
FY11	16.69	74.88
FY12	9.11	80.61
FY13	2.83	13.44
<b>Total</b>	<b>150.83</b>	<b>709.85</b>

**Task Team Members**

Names	Title	Unit	Responsibility/ Specialty
<b>Lending</b>			
Songsu Choi	Task Team Leader (2004-2008)	EASIN	TTL
Suhail Jme'an	Task Team Leader/Senior Financial Analyst (2008-2012)	EASIN	TTL
Greg J. Browder	Lead Water and Sanitation Specialist (2004-2008)	LCSUW	
Vellet E. Fernandes	Program Assistant	EASIN	
Boping Gao	Roads Engineer/Consultant	EASIN	
Jianjun Guo	Senior Procurement Specialist	EAPPR	
Anne K. Harrison	Temporary	ISGPS	
Shunong Hu	Senior Water Engineer	EASCS	
Eddie Ke-Siong	Hum Infrastructure Engineer/Consultant	EASIN	
Urvaksh D. Patel	Operations Specialist/Consultant	EASIN	
David I	Sr. Financial Management Specialist	EAPFM	
Haixia Li	Sr. Financial Management Specialist	EAPFM	
Xiaoping Li	Senior Procurement Specialist	AFTPC	
Zhefu Liu	Senior Social Development Spec	EASCS	
Shomik Raj Mehndiratta	Lead Urban Transport Specialist	LCSTR	
Edouard Henri Motte	Wastewater Engineer/Consultant	EASCS	
Xin Ren	Environmental Specialist	EASCS	
Jiang Ru	Senior Environmental Specialist	EASER	
John Smithson	Institutional Specialist/Consultant	EASCS	
Chongwu Sun	Senior Environmental Specialist	EASCS	
Hardy M. Wong	Solid Waste Engineer/Consultant	EASCS	
Guangming Yan	Urban Specialist	EASCS	
Yan Zong	Transport Specialist	EASCS	
Youlan Zou	Consultant	EASCS	
Mariana Montiel	Legal Counsel		
Zhuo Yu	Financial Management Specialist		
Bekir Onursal	Environmental Specialist		
Hubert Nove- Josserand			
Rodney Strickland			

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Hoi-Chan Nguyen

Richard Scurfield      Peer Reviewer: Transportation

David Hanrahan      Peer Reviewer: Environment

Alex McPhail      Peer Review: Sewerage and Finance

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**CHONGQING SMALL CITIES INFRASTRUCTURE IMPROVEMENT PROJECT (LOAN 4794) – P081161**

**Key Project Data (amounts in US\$ million)**

	Appraisal estimate	Actual or current estimate	Actual as % of appraisal estimate
Total project costs	264.50	263.28	99.5
Loan amount (IDA)	180.00	175.09	97.3
Grant (IDA)	8.4	8.6	100
Cofinancing	-	-	-
Cancellation	-	-	-

**Cumulative Estimated and Actual Disbursements**

	<i>FY04</i>	<i>FY05</i>	<i>FY06</i>	<i>FY07</i>	<i>FY08</i>	<i>FY09</i>	<i>FY10</i>	<i>FY11</i>	<i>FY12</i>	<i>FY13</i>
Appraisal estimate (US\$M)	2.9	14.5	52.7	110.8	127.5	154.4	175.8	180.0		
Actual (US\$M)	2.9	14.5	52.7	110.8	127.5	156.1	168.0	175.1		
Actual as % of appraisal	100	100	100	100	100	101	96	97		
Date of last disbursement:										

**Project Dates**

	Original	Actual
Concept Review	9/11/2013	9/11/2013
Appraisal	02/03/2005	02/03/2005
Board approval	06/21/2005	06/21/2005
Effectiveness	02/28/2006	02/28/2006
Closing date	06/30/2012	06/30/2012

**Staff Time and Cost**

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD '000 (including travel and consultant costs)
<b>Lending</b>		
FY03	4.91	59.74
FY04	23.89	147.07
FY05	48.28	340.58
<b>Total:</b>	<b>77.08</b>	<b>547.39</b>
<b>Supervision/ICR</b>		

FY06	4.89	47.92
FY07	7.10	48.56
FY08	9.00	65.09
FY09	11.93	63.13
FY10	9.38	74.26
FY11	11.34	68.56
FY12	6.73	38.19
FY13	2.6	41.59
<b>Total:</b>	<b>62.97</b>	<b>447.30</b>

### Task Team Members

Names	Title	Unit	Responsibility/ Specialty
<b>Lending</b>			
Tom Zearley	Task Team Leader	EASUR	Overall
Andres Liebenthal	Safeguards Sector Coordinator	EASUR	Safeguards
Dan Gibson	Social/Resettlement Advisor	EASUR	Social & Resettlement
Lixin Gu	Environmental Specialist	EASUR	Environment
Margaret Png	Legal Specialist	LEGEA	Legal
Xiaofeng Li	Program Assistant	EACCF	Project Support
Peishen Wang	Environmental Specialist	EASES	Environment
Chaogang Wang	Resettlement Specialist	EASES	Resettlement
Mei Wang	Economist	EASPR	Economic
Zhentu Liu	Procurement Specialist	EAPCO	Procurement
David I	Financial Management Specialist	ECPCO	Financial
Chandra Godavitarne	Municipal Engineer	Consultant	Engineering
Dahong Li	Safeguard Specialist	Consultant	Safeguards
Patrick McCarthy	Financial Specialist	Consultant	Financial
Rod Stickland	Transport Specialist	Consultant	Transport
Xuemei Guo	Team Assistant	EACCF	Project Support
<b>Supervision/ICR</b>			
Xin Chen	Operations Analyst	EACCF	Operation Support
Yi Dong	Sr Financial Management Specialist	EASFM	Financial
Boping Gao	Consultant	EASIN	Transport
Daniel R. Gibson	Lead Social Development Specialist	ECISOQ	Social

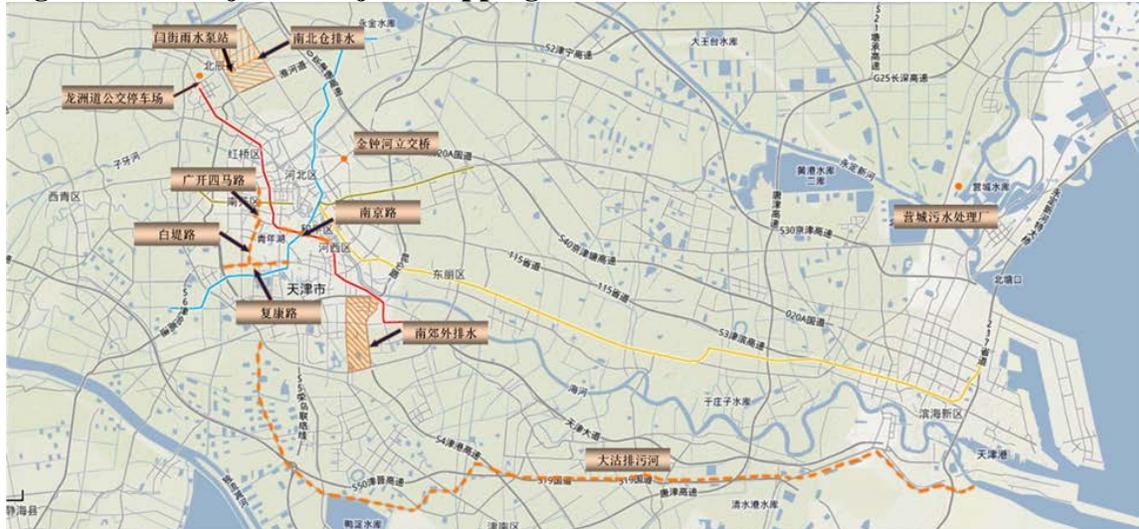
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Dahong Li	Consultant	FEUUR	Environment
Zong-Cheng Lin	Senior Social Development Specialist	EASCS	Social and Resettlement
Xujun Liu	Consultant	EASIN	Procurement
Zhentu Liu	Senior Procurement Specialist	EASR2	Procurement
Ian P. J. Nightingale	Lead Procurement Specialist	OPSOR	Procurement
Margaret Png	Lead Counsel	LEGLE	Legal
Chongwu Sun	Senior Environmental Specialist	EASCS	Environment
Peng Sun	Consultant	EASCS	Bidding Document Review
Chaogang Wang	Senior Social Development Specialist	SDV	Social
Haiyan Wang	Senior Finance Officer	CTRLN	Financial
Peishen Wang	Consultant	EASIN	Environment
Dawei Yang	Consultant	EASTS	Procurement
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Paul Kriss	Lead Urban Specialist	EASCS	TTL
Ji You	Urban Specialist	EASCS	TTL
Thomas L. Zearley	Consultant	MNADE	Project Adviser
Zhun Zhang	Consultant	EASCS	Institution

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## Annex B. Project Mapping, Photographic Evidence, and Learning

**Figure B.1. Tianjin-II Project Mapping**



**Figure B.2. Baidilu (NanKai district) before Project (Water Accumulated up to 40cm for more than Eight Hours during the Raining Season)**



### Learning through on-the-job project experiences

An important question applicable to all Bank-financed operations, arising with increased frequency in China is what Bank and Borrower learn through their collaboration. It is a particularly pertinent question to pose in the context of an expanding and more prosperous China. It has been apparent for some time that the Chinese government does not need the Bank's money to fund its own development. Its own resources are more than enough for that. Today, China lends more to developing countries than the World Bank itself does. In that case, can learning itself be one of the drivers behind this collaboration? Certainly, Chinese

officials working on Bank-financed projects often told the IEG mission that the experience helped them learn more about managing development within a market economy model. But, with 35 years of market-economy experience today, 33 of those with the Bank, what kind of learning may be going on today? From the perspective of the projects reviewed here, this section brings together evidence that the mission gathered of learning by the Chinese side and by the Bank too.

China learning from the Bank: The IEG mission found many project interlocutors in the cities spontaneously highlighting that they had learned a lot from working on the Bank-financed projects. Most of these affirmations were generic, so the mission probed with more inquiries about exactly what had been learned. A response given more than once was learning about “management concepts”, which included but not limited to: rigorous economic analysis to avoid the common over-design issue in China; emphasizing sustainable development concept by granting enough attention to environmental and cultural protection; FIDIC (International Federation of Consulting Engineers) type of input contract management; and, ensuring high technical standard by using international consultant services, etc. In addition, finance officials in both Tianjin and Chongqing told the IEG mission that they were always on the look-out for how they could improve their own procedures for procurement and disbursements following the Bank model, without necessarily adopting the Bank policies in these areas in full.

Another “management concept” reportedly learned was giving more importance to on-site reviews of works in progress by supervising officials. Previously, according to IEG interlocutors, the Bank managers would rarely make visits to project sites, a responsibility left entirely with the project teams. Local officials in Chongqing were impressed by the efforts of World Bank missions to make site visits, including one by the Bank’s regional vice president of East Asia, who visited flood protection works some 200 km from Chongqing city.

As development policy and urban management in China shifts to secondary cities and small towns, the appetite and scope for learning expand. This was particularly clear from the experience of the Chongqing Small Cities project. The Bank itself, in shifting its focus from the main urban centers toward secondary cities also brings opportunities for learning to local staff of second-tier local authorities keen to learn about procurement, financial management, human resource management and asset management, operation and maintenance that their counterparts in large cities may have already learned long ago (ICR, p. 16).

Rather than relying on the Bank to do this directly but ad hoc through individual operations in the country, China and its provinces need a more systematic approach to learning commensurate with the enormous scale of their urban development needs. Such an approach could take advantage of the knowledge of experienced officials of larger cities, by enabling them to share it with their counterparts in smaller cities. Helping to design and organize such a systematic approach would be an area in which the Bank could offer substantial assistance.

Experiences such as these reported in the project cities confirm the view of central government officials that Bank-financed projects provide valuable on-the-job training for local professionals. According to officials in Beijing, the Bank’s comparative advantage in

this lay in its ability through the projects to deploy high quality international professionals in China. With these in mind, local officials in Tianjin told the IEG mission that they would like the Bank to bring in more “advanced” projects, not necessarily complex ones, which they believed would be more likely to involve new knowledge and learning opportunities.

The IEG mission heard from Bank staff about what they believed to be a possible constraint on learning by the Chinese side, however. While Chinese officials were very open to learning about new ideas, incorporating the new knowledge into the policy process could be difficult especially if it involved implementation delays in the short run.

The Bank learning from China<sup>17</sup>: During its discussions with Bank staff and consultants working on China from headquarters or the Bank country office in Beijing, the IEG mission heard examples of learning by the Bank itself through its operational collaboration in China. They included the current Urbanization Study being carried out in partnership with China’s State Council. Rather than an example of one learning from the other, this is a case of joint research and learning.

One staff member noted that the Bank can learn a lot from China on the planning side of urban investments. What the Bank did learn was not always made clear, however. One example was how the lack of synergies on the China side to ensure that funding was always available when needed showed the importance of aligning financial management with investment planning. This is probably, however, more a question of confirming existing knowledge than learning something new, since such an alignment should already be in the tool kit of all operational staff of the Bank.

Bank staff also spoke about what they had learned from China about poverty reduction, where China has achieved more than any other country in the world. IEG’s Bank interlocutor noted that the Bank learned that direct poverty alleviation cannot be achieved through cash grants alone. More important is to connect poor people to the economy to help them engage in markets—access to jobs, and sending their goods to the market, for instance. Currently, IEG was told, all poor people in China now live within three hours’ access to a major road. The Bank is currently in the process of documenting the 100 best cases of poverty reduction in China, with a view to disseminating knowledge about this experience.

On the Chinese side, officials in Beijing told the IEG mission that the Bank-financed projects in China offered Bank staff opportunities to learn about China itself, although they felt that much knowledge of this kind may not be readily applicable elsewhere in the world. Knowledge of the rising challenges of the urban environment in Chinese cities and how to deal with them might be an exception. Some officials also felt that the Bank should learn from China on how to be more efficient. Project implementation could often not keep up with local development, resulting in the cancelation of project activities, as in the case of the Tianjin II project.

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<sup>17</sup> Several Bank interlocutors were surprised by IEG asking the question about what the Bank had learned from China. It was as if they assumed that the learning could only be in the opposite direction, namely China’s learning from the Bank.

## **Annex C. List of Persons Met**

### **Bank Staff**

Binyam Reja, lead transport specialist, EASCS

Gerald Paul Ollivier, Senior infrastructure specialist, EASCS

Ji You, Urban Specialist and the TTL for Chongqing small town project, EASCS

Maggie Xin Chen, Operations analyst, EACCF

Mara K. Warwick, Operations manager, EACCF

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