



1. Project Data

Project ID P126813	Project Name Ma'anshan Cihu River Basin Improvement	
Country China	Practice Area(Lead) Urban, Resilience and Land	
L/C/TF Number(s) IBRD-82510	Closing Date (Original) 31-Jan-2019	Total Project Cost (USD) 98,457,689.24
Bank Approval Date 04-Jun-2013	Closing Date (Actual) 31-Dec-2020	
	IBRD/IDA (USD)	Grants (USD)
Original Commitment	100,000,000.00	0.00
Revised Commitment	99,567,260.24	0.00
Actual	99,567,260.24	0.00

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2. Project Objectives and Components

a. Objectives

The project development objective was **"to improve drainage and flood protection capacity in urban areas of Ma'anshan Municipality"** (Loan Agreement page 5 and PAD para 15).

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

No



c. Will a split evaluation be undertaken?

No

d. Components

The project included four components (PAD paras 20 to 26):

Component 1. **Cihu River Rehabilitation and Drainage Improvement** (appraisal estimate US\$101.4 million; actual cost US\$30.2 million). This component included the following sub-components: (a) carrying out rehabilitation works upstream of the Cihu River, including, inter alia, slope protection, embankment strengthening, ecological rehabilitation, greening and rehabilitation of existing service roads; (b) carrying out rehabilitation works on the lower reach of the Cihu River, including inter alia, dredging, slope protection, embankment strengthening, construction and rehabilitation of flood control structures, rehabilitation of existing service roads, ecological rehabilitation, and greening; and (c) rehabilitation of storm water pumping stations in the Ma'anshan City area.

Component 2. **Rehabilitation of Tributaries and Drainage Canals** (appraisal estimate US\$83.3 million; actual cost US\$179.6 million). This component included the following sub-components. (a) rehabilitation of tributary and drainage canals in urban areas of Huashan district; (b) rehabilitation of tributary and drainage canal rehabilitation in the Hitech Zone area focusing on the Jiandan River and Lijianwan River; and (c) upgrading of ponds for use as storm retention basins.

Component 3. **Environmental Management and Monitoring** (appraisal estimate US\$1.4 million; actual cost US\$1.2 million). This component would support (a) design and implementation of a watershed water quality monitoring program; and (b) development and publication of an environmental protection reference document setting forth, inter alia, prevention and mitigation measures for future contamination of water from mining activities and ecological restoration of mined lands.

Component 4. **Capacity Building and Project Implementation Support** (appraisal estimate US\$1.4 million; actual cost US\$0.7 million). This component would finance the establishment of a project management office; support safeguards monitoring; and monitoring and evaluation (M&E) system.

Revised Components

The components were not revised, however, in September 2017, three new project activities were added under Component 2-Rehabilitation of Tributaries and Drainage Canals (unused project resources were also allocated to leverage drainage improvement efforts in the river's middle reach): (a) carrying out a comprehensive treatment work on the upstream tributary river of the Cihu River, including, among others, improvement of tributary river catchment, renovation of rain and wastewater collection pipes, and improvement of other drainage facilities; (b) carrying out a comprehensive treatment work on the midstream tributary river of the Cihu River, including, among others, improvement in the tributary water system and drainage facilities for road networks, and sluices; and (c) carrying out a comprehensive treatment work on the downstream tributary river of the Cihu River, including, among others, improvement of tributaries, gullies, and canals, and renovation of drainage for road works.

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



Project Cost. The actual project cost was US\$224.5 million, slightly higher than the appraisal estimate of US\$210.3 million.

Financing. The actual IBRD disbursement was US\$99.6 million compared to the appraisal amount of US\$100 million.

Borrower Contribution. The actual Borrower contribution was US\$124.5 million, slightly higher than the appraisal commitment of US\$110.0 million.

Dates. The project was approved on June 4, 2013 and became effective on September 24, 2013. It closed on December 31, 2020 after a delay of 23 months. The closing date was extended twice - in September 2017 by 18 months, from January 31, 2019 to July 31, 2020, and in June 2020, by an additional five months, from July 31, 2020, to December 31, 2020.

Restructuring. The project underwent three Level 2 restructurings in April 2016, September 2017, and June 2020:

- The April 2016 restructuring resulted in reallocation between disbursements categories.
- The September 2017 restructuring increased the end target of the intermediate results indicator (IRI) under Component 2, "Tributary and drainage canals rehabilitated", from 27.0 km to 43.2 km, and added two new IRIs under Component 2 "Total lengths of Sewers constructed" with an end target value of 40 km, and "Wastewater collected per day" with an end target value of 4,000 m³. The restructuring extended the project closing date
- The June 2020 restructuring revised the results framework and extended the project closing date.

Split Rating. The PDO and outcome targets were not revised. The June 2020 restructuring added a PDO-level indicator to measure both outcomes: Satisfaction of beneficiaries of improved drainage service and flood protection capacity (percentage) with an end target value of 90 percent (ICR page 18). This evaluation will not use a split rating methodology.

3. Relevance of Objectives

Rationale

Ma'anshan City and Sectoral Context. Ma'anshan is a prefecture-level city in the Yangtze Delta in Anhui Province in Eastern China, comprising three urban districts and three rural counties. It was ranked as one of China's 20 fastest growing cities. The city developed along the Cihu River, a tributary of the Yangtze. At appraisal, the city was facing several challenges resulting from rapid urbanization and city expansion, including: (a) decreasing level of protection against flooding due to weakened embankments (dykes); (b) frequent inundation in urban areas due to reduced capacity of the Cihu river and its tributaries to drain storm water; (c) inadequately designed urban storm drainage systems; (d) poor water quality in canals and tributaries of Cihu River caused by untreated wastewater and solid waste; and (e) siltation and water pollution in the Cihu River arising from mining activities in the upper reaches of the Cihu River (PAD para 2).



The challenges to the city's drainage infrastructure system was exacerbated by institutional fragmentation. Two separate government agencies were responsible for storm drainage management and planning at the time: the Urban Housing and Construction Bureau was responsible for the system in urban areas, while the Water Resources Bureau was responsible for the less urbanized parts of the city. Consequently, there had been no comprehensive planning for a drainage system that covered the entire municipality and integrating the drainage functions of both the network and the river (PAD para 12).

Alignment with the Country and Ma'anshan City Strategy. The project supported China's 12th Five Year plan (2011-2015) in areas such as restoration of environmental quality of rivers, reversing ecological degradation and strengthening the regulatory framework for environmental management. Ma'anshan Municipal Government (MMG) was adopting an integrated river basin improvement approach based on the Municipal Urban Development Master Plan (2002-2020 - which was updated in 2011) and the Cihu River Basin Ecological Environmental Integrated Rehabilitation Plan. The project would support MMC in the following areas: control key pollution sources; improve environmental conditions and rehabilitate land degraded by mining on a pilot basis; and strengthen city management.

Alignment with the World Bank Strategy. At appraisal, the project was aligned with the key objective of the Country Partnership Strategy (CPS) for the period 2013 -16 "managing resource scarcity and environmental challenges" with a focus on improving environmental management and natural resource utilization. At completion, the PDO remained highly relevant to the World Bank Group - China Country Partnership Framework (CPF) for FY2020–2025. In particular, the project was aligned with the CPF Engagement Area 2 "*Promoting Greener Development*" and objective 2.1 "*Reducing Air, Soil, Water, and Marine Plastic Pollution*"- by effectively reducing unmanaged wastewater discharges into the Cihu River's basin. The project was also aligned with objective 2.4 "*Strengthening Sustainable Natural Resources Management*", by enhancing the capacity of the municipality to sustainably manage flood events in urban areas.

Previous World Bank Experience. The World Bank had extensive experience in supporting river basin management and urban development projects in China. The Guangxi Laibin Water Environment Project in China (P126817) aimed at reducing flood risk and improve drainage in selected areas of Laibin City. The Huai River Basin Flood Management and Drainage Improvement Project (P098078) focused on relatively medium and small size works on the lesser tributaries in the poorer rural areas in the Huai River Basin. The project provided the local population with better and more secure protection against floods and water logging, increase farmland productivity, and reduce property losses in the provinces of Anhui, Henan, Jiangsu, and Shandong. This project was approved in the same year as the Guangxi Laibin project and aimed at addressed similar drainage challenges and flood protection to in urban environment.

PDO formulation pitched to address a development problem: While there is a clear alignment between the project's development objectives and the Ma'anshan Municipality- and World Bank strategies, the relevance of the objectives is pitched at a level that does not adequately reflect a potential solution to a development problem. A shortcoming here is the lack of clarity in the PDO formulation around what *outcomes* would be achieved through improved drainage and flood protection capacity; i.e., in what ways this was expected to improve peoples' lives. Focusing on "improved drainage and flood protection capacity" alone is not outcome focused and does not help in understanding what development results were expected as a consequence of the project. Impact on people's lives (such as reduced flooding, improved water and air quality, increased property values, health and economic benefits) may be longer term targets but tracking them and identifying them is an important aspect of a successful development operation. Such



expected outcomes are clearly described in the PAD and in the ICR (under efficiency) but are not reflected in the PDO formulation itself.

The relevance of objectives is rated **substantial**.

Rating

Substantial

4. Achievement of Objectives (Efficacy)

OBJECTIVE 1

Objective

To improve drainage capacity in urban areas of Ma'anshan Municipality.

Rationale

The **theory of change** envisioned that project activities such as (a) rehabilitation of storm water pumping stations in the Ma'anshan City area, (b) drainage improvements, and (c) rehabilitation of drainage canals (the project intended to restore the natural storm drainage function of nearly 27 km of tributaries and canals feeding into the Cihu River by rehabilitating embankments, dredging and removing blockages) would result in outputs such as the expansion of wastewater collection and would reduce the flow to the stormwater drainage system. This would reduce the flow of stormwater into the river and tributaries and achieve the objective of improved drainage in urban areas of Ma'anshan Municipality.

Likewise, the project activities such as rehabilitation of tributaries and drainage canals that feed into the Cihu River would improve the sub-catchments' hydraulic performance. Rehabilitation activities include slope protection and embankment strengthening, upgrading of ponds for use as storm retention basins and removal of river blockages. This would result in outputs such as upgraded ponds, strengthening of slopes and embankments, and removal of river blockages.

The improvement in Cihu watershed's drainage capacity was also expected to contribute towards improvement in water quality. To achieve this, the project would design and implement a watershed scale water quality monitoring program and develop manuals for preventing/mitigating measures for future contamination of water from mining activities and ecological restoration of mined lands.

Outputs

- 124.8 square km of area was provided with improved drainage in Huashan District, Xiushan District, Yushan District, Dangtu County, and Cihu High Tech Zone, as targeted.
- 43.58 km of tributaries and drainage canals and two ponds (Lake Pond and Kiln Pond) were rehabilitated, achieving the revised target of 43.2 km and exceeding the original target of 27.0 km. This increased the river basin's water detention capacity to 1,822,116 m³, exceeding the original target of 1,380,000 m³.



- 55.4 km of sewers (along with the sewers built by MMG) were constructed, exceeding the revised target of 40.0 km (there was no original target).
- Three automatic water quality monitoring buoy stations were established along the Cihu River to monitor the five conventional water quality parameters (temperature, pH [acidity/alkalinity], turbidity, oxygen content, and conductivity) and the main pollutant indicators, such as chemical oxygen demand, ammonia nitrogen, and dissolved phosphate. No target was set.
- An Early Warning System (EWS) was created, as planned. This triggers warning signals when threshold values have been passed over as indicators of new pollutant events.
- *Environmental Guideline for Mining Region Upstream of Cihu River of Ma'anshan Municipality* was prepared and disseminated, as targeted.
- O&M training to the Environmental Protection Bureau (EPB) staff was provided (no targets were set). Training course on environmental management was provided to 50 EPB staff (ICR Annex 10).

Outcomes

At project closure, 795,000 people in the sub-catchments along the two sides of Cihu River benefitted from improved drainage, exceeding the target of 639,000 beneficiaries.

With the construction of sewers, the city's wastewater collect capacity increased to 35,000 m³ per day. This is significantly beyond the original target of 4,000 m³, which estimated only World Bank-financed interventions, while the final capacity combines the Bank funded works in the trunk network and secondary sewers and the municipality's funded tertiary sewers and household connections. As the ICR para 37 clarifies, the interventions beyond those financed by the World Bank could not be guaranteed at the time. The increased wastewater collection capacity is expected to contribute to improvement in the drainage system of the Cihu River. The ICR para 38 describes the following expected positive outcomes as a result of separating wastewater flows from stormwater drains: (a) reduction of benthal deposits (removal of around 19,000 m³ of arsenic-contaminated benthal sediment) in the riverbed, which affects the quality of the river water and modifies the riverbed roughness increasing energy losses of flowing water, (b) prevention of algal bloom in the Cihu River, which, besides polluting, also increases energy losses of flowing water, (c) prevention of rapid deterioration of pumping station equipment due to the chemical components in polluted water, and (d) reduction of uncontrolled flow of polluted water giving increased capacity to stormwater.

Rating

High

OBJECTIVE 2

Objective

To improve flood protection capacity in urban areas of Ma'anshan Municipality.

Rationale

Theory of change. The improvements in drainage under PDO 2 would lead to an increased basin capacity to discharge storm peak flows and increased flood protection. In addition, the project activities such as rehabilitation of the Cihu River in the upstream and lower reaches would lead to outputs such as dredging, slope protection, embankment strengthening, greening of surrounding areas, and improved flood control



structures. This would increase the river's hydraulic performance and would result in the achievement of PDO outcome "improved flood protection capacity in urban areas of Ma'anshan Municipality".

The underlying assumptions were (a) that the municipality finalizes rehabilitation of the river middle reach, and (b) that municipal staff has adequate capacity and allocate adequate resources for the operations and maintenance of rehabilitated infrastructure (ICR page 14).

Outputs

- 14.8 km of the river channel in the upper reach (6.8 km) and lower reach (6.2 km), plus a section of its branch Lijianwan (1.8 km) downstream were rehabilitated, slightly exceeding the target of 14.70 km.
- 117,500 m³ of sediments was dredged and removed from the river's bed, including around 19,000 m³ of arsenic-contaminated benthal sediment. The dredging increased the river's canal volume to drain stormwater flows. No target was set.
- As targeted, 5 pumping station were upgraded or rehabilitated. This increased the capacity from 34.1 m³/s before the project to 50 m³/s.
- As mentioned under objective 1, three automatic water quality monitoring buoy stations were established along the Cihu River to monitor water quality parameters.

Outcomes

At project closure, direct project beneficiaries (for both objectives) were 1,457,000, exceeding the target of 1,300,000 beneficiaries. Female beneficiaries were 50% of the total beneficiaries. The ICR reports (para 44) that a survey of 402 beneficiaries (male: 234, female: 268) at project completion found that 94% of these beneficiaries were satisfied with the project outcomes.

The capacity for monitoring water quality was improved. The EWS can analyze water quality data and any changes in the water quality parameters, which allows it to trigger triggers warning signals when threshold values have been passed.

Regarding the sustainability of the improvements in the natural drainage system and environmental condition in the Cihu River Basin, relying on the continuity of the rehabilitation efforts from the government and care of communities, 91 percent of the interviewees conveyed that they agreed (45 percent strongly agreed and 46 agreed).

The flood protection improvement resulted from the combined effect of a higher hydraulic capacity of the Cihu River, upgraded pumping stations, rehabilitated ponds, and reduction of benthal sediments in the river. The flood protection capacity increased to 1-in-10-year storm event in tributaries and channels (drainage area) and to 1-in-20-year storm event in the Cihu River, was achieved. During the rainy season from June to September 2020, storms with higher intensity and duration than the reference values for a 1-in-20-year storm design were registered. As a result of increased flood protection capacity of the Cihu River, the people living in flood-prone areas did not experience any flooding in 2020.

Rating
High



OVERALL EFFICACY

Rationale

The project's overall efficacy is rated high for the related outcomes of improved drainage and flood protection capacity in urban areas of Ma'anshan Municipality were achieved or exceeded.

Overall Efficacy Rating

High

5. Efficiency

Economic Efficiency. The *ex-ante* economic rate of return (ERR) was 14.9% and the benefit cost ratio was 1.67. The PAD (para 35) noted that the economic benefits were: avoided flood damages; land value increase, improvements in environmental amenities, water quality and health; and increases in agricultural productivity in the Cihu River Basin. Flood control benefits were quantified based on historic data and the trend of flood losses over years. Amenity and environmental quality improvements were estimated based on land value increase along the river. Economic costs were capital investments, associated resettlement and environmental mitigation costs, and annual Operation and Maintenance (O&M) costs.

The *ex-post* economic rate of return (ERR) was 18.4% and the benefit cost ratio was 1.97. The ERR were higher than appraisal because the actual cost at completion was lower than the appraisal estimate. Also, the outputs at completion were larger than at appraisal following the restructuring (ICR para 46). In September 2017, there were US\$55 million of unused project resources (due to currency fluctuations, cost overestimate at appraisal, downsized dredging activities, and unused contingent provisions) that were used to carry out additional activities (see section 4 above).

Administrative Efficiency. Despite the two extensions, the project management cost at completion was 52% lower than the appraisal estimate. Procurement delays were caused due to: (a) unclear designs and scoping information in the bidding documents, and (b) delays in acquisition of land and resettlement. In the first couple of years of the implementation period, capacities were particularly weak in technical areas and project management.

Overall, efficiency was **substantial**.

Efficiency Rating

Substantial



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

	Rate Available?	Point value (%)	*Coverage/Scope (%)
Appraisal	✓	14.90	0 <input type="checkbox"/> Not Applicable
ICR Estimate	✓	18.40	0 <input type="checkbox"/> Not Applicable

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

6. Outcome

The relevance of objectives is rated substantial as, while there is a clear alignment between the projects' development objectives and the Ma'anshan Municipality - and World Bank strategies, the PDO was pitched at a level that does not adequately address a development problem. The project's overall efficacy is rated high, as the related outcomes in support of the objectives of improved drainage and flood protection capacity in urban areas of Ma'anshan Municipality were achieved or exceeded. The project efficiency is substantial; it could demonstrate a satisfactory rate of economic return and cost-benefit ratio, but there were minor shortcomings in the project's administrative efficiency. The overall outcome is therefore rated satisfactory.

a. Outcome Rating

Satisfactory

7. Risk to Development Outcome

Government ownership risk is low as at the policy level, the project outcomes will continue to receive support as they align with the Ma'anshan Municipal Government (MMG) environmental priorities and ongoing programs.

Technical risk is low as the project introduced good engineering practices and approaches (for example, the use of hydraulic computer modeling) that other municipalities may adopt into their own projects.

Institutional risk is low as the project's capacity-building activities are adequate for both the municipality agencies and engineering firms to manage the systems for drainage basin management and river water quality monitoring.

Financial risk is low as there are no financial constraints from the MMG to operate and maintain the rehabilitated infrastructure through an outsourcing mechanism, which is included in the fiscal budgets of Ma'anshan Municipality.



8. Assessment of Bank Performance

a. Quality-at-Entry

As mentioned in section 3 relevance, while there is a clear alignment between the projects' development objectives and the Ma'anshan Municipality - and World Bank strategies, the PDO was pitched at a level that does not adequately address a development problem. The project design introduced innovations such as the use of hydraulic modeling software to understand the basin performance in the face of different storm events and design drainage solutions in specific locations. A gender impact analysis was carried during preparation. Risks and mitigation measures were well defined at the appraisal stage. The highest risk was the weak implementation agency's capacity because they had no experience with World Bank-funded projects. The mitigation measures included intensive training and capacity-building activities as well as external support to Project Management Office (PMO) and PIUs. Some fiduciary risks were identified, and mitigation measures were incorporated. Within the Results Framework, a couple of PDO indicators had unclear definitions and measurement methods (see section 9a below).

Quality-at-Entry Rating
Satisfactory

b. Quality of supervision

The ICR reports (para 68) that the World Bank provided consistent support to the PMO and PIUs through technical advice and training on critical aspects of the project design and implementation. For example, the World Bank mobilized a multidisciplinary team of experts on hydrology and hydraulic systems to provide technical advice to the Design Institute and PMO on engineering topics for flood modeling and the design of drainage rehabilitation works. The ICR indicates (para 80) that the ISRs were detailed and provided a candid evaluation of progress and issues with adequate ratings. Safeguards and fiduciary compliance was monitored adequately. The mid-term review allowed the World Bank and the client to draw lessons from implementation to propose adjustments in four critical aspects: project cost estimate, institutional capacity (staffing, training, and financial support), contract management (speed up contract process and reduce disputes with contractors), and sustainability (definition of designated agencies for O&M). The safeguards supervision was adequate. The quality of supervision was **satisfactory**.

Quality of Supervision Rating
Satisfactory

Overall Bank Performance Rating
Satisfactory

9. M&E Design, Implementation, & Utilization



a. M&E Design

The PDO indicators were: (i) population benefitting from improved drainage; (ii) area provided with drainage services; (iii) restoration of storm drainage system for Ma'anshan; (iv) direct project beneficiaries. Except for the project beneficiaries, these are output-focused indicators. There were a few shortcomings: (a) three PDO indicators (restoration of storm drainage system for Ma'anshan, area provided drainage services, and direct project beneficiaries) had unclear definitions and measurement methods, which caused lack of clarity about the type of data that had to be collected for M&E. For example, the 'Restoration of storm drainage system for Ma'anshan' indicator, the definition of which was unclear, was initially measured by the PMO through a simplified method based on historic data and recent rain monitoring data with lower accuracy compared to a hydraulic computing model—the methodology which the World Bank intended to be used. This affected the accuracy for the initial calculations of project beneficiaries and the economic analysis (ICR para 59); and (b) several relevant activities such as the construction of roads, bridges, and pathways were not measured by the Results Framework.

b. M&E Implementation

The implementation of the M&E was slow during the initial years. The Project Implementing Unit (PIU) did not satisfactorily collect and analyze all the necessary data and information for proper monitoring and project indicators were not updated up to the World Bank standard. After the mid-term review, the PMO and the Project Management Consultancy (PMC) were assigned the responsibility for M&E. A new PDO indicator "Satisfaction of beneficiaries of improved drainage service and flood protection capacity", and two intermediate indicators were added during the restructuring in September 2017- total length of sewer constructed and wastewater collected per day. M&E improved and the PMO, with support from the PMC consolidated the data and prepared semiannual progress reports. The overall quality of M&E reports was satisfactory. The details of measurement procedures for three PDO indicators were put in place. A beneficiary satisfactory survey was conducted at project completion.

c. M&E Utilization

The ICR reports (para 74) that the M&E data enabled the World Bank task team and the PMO to monitor implementation progress and achievements. The PMC consolidated and made available monitoring data to inform the discussions during supervision missions, including during discussions on restructuring. The PMO reported to the PLG which used the M&E tool to advance project progress. Data also informed Implementation Status and Results Reports and other project documents. The monitored environmental management and social aspects of the project implementation also dealt with issues and problems as they arose. The ICR states that (para 74), the satisfactory completion of the project can, at least in part, be attributed to the effective utilization of the M&E system of the project.

M&E Quality Rating

Substantial

10. Other Issues



a. Safeguards

The project was classified as **Environmental Category "B"** and two safeguards policies were triggered: Environmental Assessment OP/BP 4.01 and Involuntary Resettlement OP/BP 4.12.

Environmental Safeguards. The PAD (para 52) reports that an Environmental Impact Assessment (EIA) was carried out and an Environmental Management Plan (EMP) was prepared to determine the mitigation measures, environmental monitoring program and necessary institutional arrangements as well as capacity development. Both volumes (1 & 2) of the EMP were disclosed on December 11, 2012.

The ICR reports (para 75) that the project complied with the environmental safeguards policies. The external environmental consultant monitored the implementation of EMP and confirmed that the EMP was implemented adequately. One issue that was observed was the use of ferns and other plants to remove arsenic from the contaminated benthal sediment in 2019 and that method was found to be ineffective. This was resolved through the transportation of the contaminated soil to the newly completed landfill site in Ma'anshan (ICR para 76).

Social Safeguards. The project triggered the Involuntary Resettlement Policy (OP/BP 4.12) because of the need of land acquisition for roads and tributaries rehabilitation works. The PAD (para 47) noted that the project would require the permanent acquisition of 119.2 hectares of land, including 83.6 hectares of collective land and 35.6 hectares of state owned lands. Land acquisition was envisioned to affect 552 families and a population of 1714. A Resettlement Action Plan (RAP) was prepared and was disclosed in Ma'anshan on October 30, 2012 and in the World Bank's InfoShop on December 11, 2012.

The PMO had established a grievance redress mechanism (GRM) for the project. The ICR notes (para 75) that the affected persons did not use the GRM for issuing complains as all land acquisition and resettlement issues were proactively resolved through public participation and frequent consultations.

The ICR reports (para 75) that the project complied with the social safeguards policies. The project acquired 56.25 and 1.31 ha of collective and state-owned lands (about 64 percent were cultivated lands), respectively, affecting 534 families and a population of 1,309. Independent consultants were hired to monitor RAP implementation. Annual reports were submitted, albeit with delays. During the project implementation, all land acquisition and resettlements were resolved effectively and timely within the affected villages and townships.

b. Fiduciary Compliance

Financial Management (FM). The ICR notes (para 78) that the project complied with the World Bank's FM procedures and guidelines. During the first two implementation years, three interim financial reports were delayed slightly. Since 2014, six project audit reports were submitted in a timely manner, were unqualified (i.e. had clear audit opinion) and were of acceptable quality.

Procurement. The ICR notes (para 77) that the project complied with the World Bank's procurement procedures and guidelines. The Project Management Office (PMO) and the Project Implementation Unit



(PIU) had designated staff responsible for procurement. In addition, a procurement agent and an external consultant were hired to assist them. Procurement delays were caused due to: (a) unclear designs and scoping information in the bidding documents, and (b) delays in acquisition of land and resettlement.

c. Unintended impacts (Positive or Negative)

d. Other

11. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Satisfactory	Satisfactory	
Bank Performance	Satisfactory	Satisfactory	
Quality of M&E	Substantial	Substantial	
Quality of ICR	---	Substantial	

12. Lessons

The following lessons in the ICR stood out as important and relevant to other projects and are presented here with some editing:

- Flood control measures, drainage service, and water environmental improvements can be effective when approached from an integrated river basin management perspective.** In this project, the design of rehabilitation works for the tributaries and main river and recovery of water retention capacity was based on hydraulic computer modeling of the whole basin drainage system. For example, the definition of the capacity of upgraded pumping stations was articulated with the expected gain in hydraulic capacity from the rehabilitation of tributaries, main river, and ponds. Likewise, the improvement of the river water quality (owing to reducing untreated wastewater discharges) was coordinated with complementary measures to control future contamination (water quality monitoring system).
- The alignment of project outcomes with the municipality’s long-term development objectives is dependent on the availability of the municipality’s planning instruments.** This project greatly benefited from the Ma’anshan city urban master plan, the Cihu River Basin Ecological Environmental Integrated Rehabilitation Plan, and municipal drainage plans. Without such plans, river basin rehabilitation is commonly approached as a stand-alone project with no articulation with other development objectives of other plans.



- **The use of information technology (IT) offers opportunities to strengthen the capacity of government agencies in charge of river environmental protection.** The use of a digital platform for real-time monitoring of river water quality coupled with an Early Warning System (EWS) provided the Environmental Protection Bureau (EPB) with a new and efficient way to monitor and control the degradation of the Cihu River Basin water quality. Through the digital integration of monitoring data on water quality and wastewater pollution sources, analysis of water quality status, and a water pollution modeling platform, the EWS enabled the EPB to detect and respond to pollution events in real time.

13. Assessment Recommended?

No

14. Comments on Quality of ICR

The ICR is well prepared and complies with the Bank guidelines for ICR preparation. The ICR is results-oriented and presented relevant evidence in a manner that is consistent with the project's theory of change and supports attribution of project outcomes to the project's own interventions. The ICR is sufficiently quantitative and efficient in its presentation of data. The lessons about integrated river basin approach, project outcomes alignment with the municipality's long-term development objectives, and the use of information technology (IT) to strengthen the capacity of government agencies in charge of river environmental protection - have broad relevance and applicability to other Bank projects.

There are a few shortcomings: (i) there are some instances where the ICR claims impacts but does not provide evidence; and (ii) it could have been more concise (31 pages).

Overall, the quality of ICR is **substantial**.

a. Quality of ICR Rating

Substantial

