



1. Project Data

Project ID P158760	Project Name Jiangxi IRUWSWMP	
Country China	Practice Area(Lead) Water	
L/C/TF Number(s) IBRD-88490	Closing Date (Original) 30-Jun-2024	Total Project Cost (USD) 200,000,000.00
Bank Approval Date 06-Jun-2018	Closing Date (Actual) 30-Jun-2025	
	IBRD/IDA (USD)	Grants (USD)
Original Commitment	200,000,000.00	0.00
Revised Commitment	200,000,000.00	0.00
Actual	200,000,000.00	0.00

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2. Project Objectives and Components

a. Objectives

The Project Development Objective (PDO) of China's Jiangxi Integrated Rural and Urban Water Supply and Wastewater Management Project as articulated in the Loan agreement (LA, page 5) was identical the one stated in the Project Appraisal Document (PAD, paragraph 21) and aimed to:

"(a) increase access to and improve operating efficiency of water supply services, and (b) pilot provision of improved wastewater management, in selected counties in Jiangxi Province."



Parsing the PDO. The PDO will be parsed based on three objectives:

1. To increase access to water supply services in selected counties in Jiangxi Province.
2. To improve operating efficiency of water supply services in selected counties in Jiangxi Province.
3. To pilot provision of improved wastewater management in selected counties in Jiangxi Province.

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

Yes

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

No

c. Will a split evaluation be undertaken?

No

d. Components

The PDO was supported by three mutually reinforcing components that aimed to support integrated urban-rural water and wastewater service expansion:

1. Expansion, Rehabilitation, and Modernization of Water Supply System (estimated cost at appraisal: US\$326.2 million, of which IBRD US\$184.8 million; actual cost: US\$262.93 million, of which IBRD US\$194.86 million). The project was to finance (a) the construction, upgrade, repair, and/or rehabilitation of urban and rural water supply infrastructure including intake works, treatment works, and distribution works such as pump stations, transmission and distribution pipelines and control valves and installation and/or replacement of urban and rural household water service connections and corresponding water meters; (b) design, procurement, installation, and trial operation of a Smart Water Supply Management System; (c) preparation of energy audits of pump stations and water supply and treatment plants, preparation of audit reports, and remedial measures recommended in such reports; and (d) preparation of technical studies designed to inform modernization of rural water supply management in Jiangxi Province.

2. Demonstration of Rural Wastewater Management (estimated cost at appraisal: US\$8.5 million, of which IBRD US\$7.8 million; actual cost: US\$5.35 million, of which IBRD US\$4.64 million). The project was to finance the development of a pilot rural wastewater management scheme in a selected township, including collection networks and household connections, a wastewater treatment plant (WWTP), associated equipment, and related implementation support. It was also to finance studies on rural wastewater management and policy recommendations for provincewide application.

3. Public Engagement and Project Management (estimated cost at appraisal: US\$7.4 million, of which IBRD US\$6.9 million; actual cost: US\$0.43 million, of which IBRD US\$0). The project was to finance public awareness and engagement activities; project management support, including consulting services, trainings, and workshops; establishment and operation of a project monitoring and evaluation



(M&E) system and a project management information system (MIS); and provision of office equipment and vehicles for project supervision and quality control.

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

Project Cost. The total cost estimate for the project at appraisal was US\$366.73 million. The actual cost according to the ICR Data Sheet (page ii) was US\$307.20 million. The difference between the appraisal estimate and the actual disbursed amount was due to a lower than expected counterpart financing amount (see below).

Financing. The project was financed through an IBRD Loan in the amount of US\$200.00 million. The IBRD Loan would be a US Dollar denominated, commitment-linked variable spread loan, based on six-month LIBOR, with all conversion options, and annuity repayment amortization profile. It had a repayment period of 29 years, including a grace period of 6 years. The Loan was fully disbursed according to the ICR Data Sheet (page ii).

Borrower Contribution. The borrower was expected to contribute US\$166.73 million of counterpart funds. The actual amount disbursed was US\$107.20 million (ICR Data Sheet, page ii).

Dates. The project was approved on June 6, 2018 and became effective three months later on September 19, 2018. The Mid-Term Review (MTR) was conducted on March 16, 2022 which was in line with expected date in the PAD on March 11, 2022. The project closed on June 30, 2025 which was 12 months beyond the original closing date on June 30, 2024. According to the Restructuring Paper (paragraph 13) the extension of the closing date was needed to allow for the completion of all outstanding activities, fully disburse project funds, fully achieve all PDO indicators, and allow all environment and social safeguards monitoring to be fully completed and closed. The ICR (paragraph 21) also added that the extension was to "account for COVID-19-related delays, which resulted in lockdowns and site suspensions (about four months), compounded by pandemic-related supply chain disruptions."

The project was restructured once (Level 2 restructuring) when the amount disbursed was US\$168.60 million, in order to extend the closing date from 30 June 2024 by 12 months to 30 June 2025; revise the Results Framework (RF) indicator targets and definitions to better reflect project outcomes based on existing implementation and on-ground information; amend the components costs to reflect the reduction in counterpart funded works; amend the disbursement projections; and implementation schedule to reflect the proposed extension of closing date and implementation.

The restructuring included the revision of two PDO indicators. The PDO outcome wastewater indicator definition was originally defined as 'Volume (mass) of Biological Oxygen Demand (BOD) going into the local environment from untreated wastewater, on an annual basis (baseline 87.9 tons per year; end target 14.6 tons per year), was redefined to 'BOD demand reduced by the sewerage treatment plant, on an annual basis with baseline set to 0 and end target 8.7 tons per year. Also, the target for PDO-level indicator on people with new connections to sewerage systems was revised down from the original target of 28,000 people to 24,000 people. This change reflected a decline in the service population due to out-migration and lower birth rates in the town of Zhajin.

Despite these revisions, a split rating will not be applied because the revised methodology to calculate the BOD indicator was aligned with best practice and more specific to the project supported activity, and the



reduction in sewerage connections reflected realities on the ground. Overall, these changes did not change the scope or ambition of the project.

3. Relevance of Objectives

Rationale

Context at Appraisal. At the time of appraisal (2017–2018), China’s rapid urbanization and rising service standards were exposing persistent rural-urban disparities in basic services, especially in smaller cities, counties, and townships. Jiangxi Province— home to about 45.7 million people, with 70% mountainous terrain and high average annual rainfall (~1,700 mm) — faced pronounced service delivery gaps outside major urban centers. Many rural schemes were small, fragmented, and underperforming, with a number of them drawing water from reservoirs, making dam safety and raw water quality management integral to service resilience. The project aimed to support national and provincial priorities to expand safe, reliable water supply to rural and small urban populations; improve operational efficiency and financial sustainability through Non-Revenue Water (NRW) reduction and O&M modernization; and pilot cost-effective rural wastewater solutions to protect local environments.

Previous World Bank Group (WBG) experience. The WBG and China have developed a robust partnership in the water sector to address policy and institutional issues, testing new approaches. The WBG-supported programs in China focused on addressing difficult development challenges, reinforced by key analytical underpinning based on international best practices. The WBG interventions continue to bring value added in the form of: (i) technical innovation; (ii) leveraging knowledge and financing; and (iii) contribution on delivery of global public goods. This project featured a transformative approach that combined technical innovations and development of cost-effective business model with a high emphasis on generating lessons and being replicated within and outside China.

Consistency with the WBG Strategies. At appraisal, the PDO was in line with the WBG Country Partnership Strategy for China (CPS, FY2013-FY2016). The CPS’s inclusive development pillar (2.3) specifically called for enhancing opportunities in rural areas and small towns by helping local governments design integrated rural-urban development plans and financing small town infrastructure. More broadly, the project responded to the WBG’s twin goals of ending extreme poverty and ensuring shared prosperity by supporting infrastructure improvements in rural and peri-urban areas of Jiangxi.

At project completion, the PDO continued to be in line with the WBG’s Country Partnership Framework for China (CPF, FY2020–FY2025). Specifically, the CPF’s Engagement Area 2: Promoting Greener Growth. The PDO was also in line with the CPF’s objectives on reducing water pollution, demonstrating sustainable practices, and strengthening institutions for natural resource management. The project also met the CPF selectivity filters (addressing global public goods/water security, strengthening policies and institutions, and piloting innovation).

Consistency with the Government Strategies/Priorities. At appraisal, the PDO was in line with China’s Central Government priorities identified under the 13th Five Year Plan (FYP, 2016-2020), particularly with policies that promote the development of rural infrastructure and the expansion of access to safe drinking water in rural areas.



At completion, the PDO continued to be in line with the Central Government priorities identified under the 14th Five Year Plan (FYP), which prioritized safe rural/urban water supply, water conservation, and environmental quality (including rural wastewater management pilots), and with provincial priorities to integrate rural-urban service delivery and reduce pollution in county ecosystems. The project's focus on expanding piped access, lowering NRW, improving O&M efficiency, and piloting township wastewater solutions reflected these policy priorities.

Summary of Relevance of Objectives Assessment. The PDO statement was clear, focused, but slightly ambitious relative to the stated targets. At completion, the PDO continued to be in line with the WBG latest CPF and with the Central Government's priorities outlined in the 14th Five Year Plan (FYP).

Therefore, Relevance of Objectives is rated High.

Rating

High

4. Achievement of Objectives (Efficacy)

OBJECTIVE 1

Objective

To increase access to water supply services in selected counties in Jiangxi Province.

Rationale

Theory of Change (ToC). To achieve the outcome of increasing access to water supply services, the project supported expanding and modernizing water supply systems (water intake, water treatment and distribution, and household connections). The expected outputs of the afore-mentioned activities were: commissioning of new/rehabilitated water infrastructure to increase access to water supply. The successful implementation of the project activities would directly contribute to the outcome of increasing access to water supply services. Anticipated long-term impacts were the improvement of public health and welfare in rural/small urban areas.

The achievement of this objective was underpinned by the following critical assumptions: 1. County utilities adopt and consistently use District Metered Area (DMAs), pressure control and smart metering; and enforce O&M plans prior to handover; and dam safety and water quality assurance are maintained where sources are reservoir based, 2. Tariff and subsidy frameworks adequately sustain O&M and replacement needs, especially for waste water pilot; government commits transitional subsidies, consistent with the policy direction, and 3. Energy audits and operation optimization yield the anticipated cost and emissions savings; selected WWTP technology performs to standard under actual flows/loads.

The ToC reflected relevant activities that were directly connected to the stated outputs, and outcome in a plausible causal chain. Also, the stated critical assumptions were logical and realistic.



Outputs/Intermediate Results

- A total of 3,061.05 km of water supply pipelines were completed across seven districts/counties (Dongxiang, Jinxi, Leping, Linchuan, Nanfeng, Xiushui, and Yongxin), exceeding the target of 1,880 km, with all areas starting from a baseline of zero (target exceeded).
- 321,045 smart water meters were installed exceeding the target of 280,000 (target exceeded).
- 99% of customers expressed satisfaction with the quality of water supply services exceeding the end target of 90% (target exceeded).

Outcome

- 796,996 people had new access to piped water supply exceeding the target of 584,198 people (PDO outcome indicator # 1, target exceeded).

Summary of Efficacy Assessment. Increased access to water supply was measured through the number of people newly connected to safe, piped water in project areas, complemented by service quality and reliability improvements captured in intermediate indicators (e.g., customer satisfaction, rural system reliability, and pipeline expansion). The project sequenced network build-out, plant upgrades, and digital service enablement which contributed to improved access for households. The project exceeded all its targets pertaining to intermediate results as well as its PDO outcome target as noted above.

Therefore, the efficacy of the project in achieving this Objective is rated High.

Rating

High

OBJECTIVE 2

Objective

To improve operating efficiency of water supply services in selected counties in Jiangxi Province.

Rationale

Theory of Change (ToC). To achieve the outcome of improving operating efficiency of water supply services, the project supported deploying a smart water system and conduct energy audits, prepare O&M plans, strengthen grievance redress mechanism (GRM), and engage communities and ensure women participation. The expected outputs of the afore-mentioned activities were: improvement in the utility efficiency through reduction of losses and improving energy efficiency, approved and operational O&M plans and GRM, functional system for gender and community participation. The successful implementation of the project activities would directly contribute to the outcome of improving operating efficiency of water supply services. Anticipated long-term impacts was expected to be stronger utility performance and sustained service quality, better local environmental quality and net GHG benefits via energy savings.



The achievement of this objective was underpinned by the same critical assumptions under objective 1. The ToC reflected relevant activities that were directly connected to the stated outputs, and outcome in a plausible causal chain. Also, the stated critical assumptions were logical and realistic.

Outputs/Intermediate Results

- 321,045 smart water meters were installed exceeding the target of 280,000 (target exceeded).
- 30.71% women were participating in the management groups for rural water supply and wastewater services exceeding the target of 26% and compared to a baseline of 19% (target exceeded).
- 7 replication workshops were held with project counties and other non-project counties in Jiangxi Province, and also with other provinces exceeding the end target of 6 (target exceeded). Topics covered included Smart Water Supply Management System, Project Contract Management Capacity, Project E&S Management and Monitoring.
- 100% of grievances were responded to and resolved properly per year exceeding the end target of 95% and compared to baseline of 60% (target exceeded).
- 9 O&M plans were prepared and approved by Water Affairs Group (WAG)/Provincial Water Investment Group (PWIG) for water and wastewater plants and pipe networks constructed or rehabilitated exceeding the original target of 8 and the revised target of 7.
- Collection rate of the combined water and wastewater tariff for households in Zhajin Township-seat was not measured and the 80% collection target was not achieved. The ICR (paragraph 59) explained that "tariff setting in China requires legislative authorization at the national level, rather than the township level, resulting in processes that extend beyond the remit and timeline of an investment project focused on infrastructure and service delivery." This was beyond the control of the project, and therefore this indicator was not achievable.

Outcomes

- 821,350 people were provided with water, sanitation, and hygiene, which was safely managed exceeding the end target of 608,198 (PDO outcome indicator # 3, target exceeded).
- Non-revenue water (percentage of NRW in total water produced) was reduced from a baseline of 42% to 29% at completion, which exceeded the end target of 32% (PDO outcome indicator # 4, target exceeded).
- O&M unit cost of water supply system was reduced from a baseline of 0.633 RMB/m³ to 0.39 RMB/m³ at completion, which exceeded the end target of 0.492 RMB/m³ (PDO outcome indicator # 5, target exceeded).

Summary of Efficacy Assessment. The project improved operating efficiency through gains from targeted technical and managerial reforms reinforced by the smart platform. District Metered Areas and pressure management reduced physical losses; smart meters and data systems tackled billing and theft through tightened commercial controls; energy actions lowered power use; together driving down NRW and O&M costs. Also, institutional strengthening—fiduciary discipline, standardized O&M, and the adoption of a management information system ensured sustainability of achievements. Improved efficiency was measured through two relevant metrics: NRW and O&M unit costs, and the project exceeded its end targets for both. The project also exceeded its target for PDO outcome indicator # 3, and targets for IRIs were also exceeded. However, the IRI on tariff collection could not be measured due to reasons beyond the control of the project.



Therefore, the efficacy of the project in achieving this Objective is rated Substantial because without measuring the tariff collection rate a critical element of efficiency was not assessed.

Rating

Substantial

OBJECTIVE 3

Objective

To pilot provision of improved wastewater management in selected counties in Jiangxi Province.

Rationale

Theory of Change (ToC). To achieve the outcome of piloting pilot provision of improved wastewater management, the project supported piloting a wastewater treatment plant with sewer network and household connections. The expected outputs of the afore-mentioned activities was commissioning of Zhajin wastewater treatment plant and sewer network. The successful implementation of the project activities would directly contribute to the outcome of improved wastewater management. Anticipated long term impacts were the same as under Objectives 1 and 2.

The achievement of this objective was underpinned by the same critical assumptions under objective 1 in addition to one more: energy audits and operations optimization yield the anticipated cost and emissions savings; and selected WWTP technology performs to standard under actual flows/loads. The ToC reflected relevant activities that were directly connected to the stated outputs, and outcome in a plausible causal chain. Also, the stated critical assumptions were logical and realistic.

Outputs/Intermediate Results

- 26.45 km of sewerage pipelines completed or rehabilitated exceeding the target of 16 km (target exceeded).
- 25.90 tons/year of BOD were removed in pilot wastewater treatment plant exceeding the revised target of 8.7 tons/year (target exceeded).
- 9 O&M plans were prepared and approved by WAG/PWIG for water and wastewater plants and pipe networks constructed or rehabilitated exceeding the target of 7 (target exceeded).

Outcomes

- 24,354 people had new connections to sewerage systems slightly exceeding the end target of 24,000 but below the original target of 28,000 (PDO outcome indicator # 2, revised target exceeded).

Summary of Efficacy Assessment. The project successfully demonstrated a pilot to test and showcase replicable, sustainable model for rural wastewater management. The project exceeded its PDO outcome target as well as its IRI targets as noted above. Additionally, the operation of the sewage treatment plant in Zhajin was expected to contribute to protecting the integrity of the regional ecosystem by directly reducing the pollutant discharge of local water bodies and improving ecological functions. According to the ICR (paragraph 38) "the quality of treated effluent was confirmed to be in compliance with the applicable national discharge



standards." Treating household and municipal wastewater before release lowers biochemical oxygen demand and nutrient loads, helping prevent eutrophication, protect aquatic habitats, and improve downstream water quality (ICR, paragraph 40).

Therefore, the efficacy of the project in achieving this Objective is rated High.

Rating
High

OVERALL EFFICACY

Rationale

Overall, the project's efficacy in achieving its PDOs is rated High due to overperformance on all outcome indicators and notable institutional and environmental results. The project successfully expanded access to improved water services, delivered notable improvements in service reliability and customer satisfaction, reduced NRW and O&M costs, strengthened institutional capacity, and achieved notable environmental gains in the wastewater pilot. The body of evidence in the ICR is assessed to be valid and supported the assigned ratings.

Overall Efficacy Rating

High

5. Efficiency

Economic and Financial Analysis (EFA)

Ex-ante

- The Project yielded an overall economic rate of return (ERR) of 11% with a Net Present Value of RMB1,842.7 million for water supply investments. The ERR for individual counties varied, ranged between a low of 5.6% and a high of 23.1% indicating the project's strong economic viability.
- The economic analysis was conducted for each participating county, and for the Project as a whole, following a cost-benefit analysis approach typical for water supply investments. Expected benefits would be derived from (a) incremental water sales to increased number of water users; (b) improved water supply service; and (c) improved energy efficiency at water treatment plants and pump station facilities of the water supply systems in the project areas.
- For water supply investments, a financial analysis was conducted to assess the financial viability of the project-supported water supply facilities for "with, and without Project" scenarios. The Project yielded an aggregated financial rate of return (FRR) of 7.2% with a Net Present Value of RMB812.1 million for all



water supply plants. The Project's FRR exceeded the 4% opportunity cost of capital (OCC) for assessing viability of water supply investments issued jointly by the National Development and Reform Commission and the Ministry of Construction on July 3, 2006.

- For wastewater management investments, a cost-effectiveness analysis approach was followed as the focus of such investment was to achieve public goods benefits with minimal financial returns.

Ex-post

- The *ex-post* EFA largely followed the same approach as the one at appraisal to ensure consistency and comparability. The overall project EIRR was estimated at 17.93% compared to 11% at appraisal and NPV of US\$351.7 million, and using a 4% discount rate. County-level EIRRs remained robust, ranging from 11.73% to 22.65% at a 4% discount rate—well above the assumed opportunity cost of capital.
- The ICR (paragraph 44) attributed the better EIRR at completion primarily to: (i) lower capital costs by approximately 19% compared to appraisal due to competitive procurement, and (ii) higher-than-expected climate benefits from energy efficiency and CO₂ reductions.
- The aggregate FIRR was estimated at 7.30% which still exceeded the 4% benchmark, despite more modest tariff increases and slightly higher than expected operating costs.
- Wastewater investments were delivered on a least-cost basis, with the pilot plant requiring a 35% tariff adjustment or a small annual operating subsidy, which were both anticipated at design and consistent with the public-goods nature of rural wastewater services.

Implementation/Administrative Efficiency. The project closed on June 30, 2025 which was 12 months beyond the original closing date on June 30, 2024. This extension was mainly to account for account for COVID-19-related delays, which resulted in lockdowns and site suspension. The project delivered large-scale service expansion and measurable efficiency gains at a cost substantially below appraisal expectations, while exceeding most outcome targets. Also, competitive procurement reduced capital expenditures by about 19% relative to appraisal, which according to the ICR (paragraph 42) was achieved "without compromising scope or quality." However, in some counties contract acceptance and payment processes were slow, mainly for the last payment to the contractors. Also, progress across counties was uneven, with some lagging due to local capacity constraints and the client's lengthy auditing process (ICR, paragraph 55).

Summary of Efficiency Assessment. The overall project EIRR at completion was estimated at 17.93% compared to 11% at appraisal, and using a 4% discount rate. The aggregate FIRR at completion was estimated at 7.3% slightly exceeding the appraisal estimate at 7.2%. While the project experienced a 12 months delay, this was mainly due to reasons beyond the control of the project. Lastly, the project achieved measurable efficiency gains at a cost substantially below appraisal expectations, while exceeding most outcome targets.

Therefore, Efficiency is rated 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	✓	11.00	0 <input checked="" type="checkbox"/> Not Applicable
ICR Estimate	✓	17.93	0 <input checked="" type="checkbox"/> Not Applicable

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

6. Outcome

Relevance of Objectives was rated High. Overall Efficacy was rated High. All PDO outcome targets were exceeded. The project successfully expanded access to improved water services, delivered notable improvements in service reliability and customer satisfaction, reduced NRW and O&M costs, strengthened institutional capacity, and achieved notable environmental gains in the wastewater pilot. Efficiency was rated Substantial. The overall project EIRR at completion was estimated at 17.93% exceeding the 11% estimated at appraisal. However, the project experienced some delays and procurement challenges.

Based on the assigned ratings for the three Outcome criteria (i.e. Relevance of Objectives, Efficacy, and Efficiency), the Outcome of this project is rated Highly Satisfactory.

a. Outcome Rating

Highly Satisfactory

7. Risk to Development Outcome

The following two risks could potentially impact the Development Outcome:

1. Financial risk. This relates to the sustainability of O&M (especially for the wastewater pilot), and the enabling policy environment for rural sewerage tariffs. If the wastewater tariff policy remains unaddressed and no compensating budget support is provided, the wastewater pilot may operate sub-optimally or intermittently, reducing BOD removal and sewer connections' sustainability. This would partially erode the second PDO dimension (piloting improved wastewater management). This can be mitigated by maintaining provincial support arrangements (PWIG oversight, subsidy mechanisms where needed), with clarity on budget backstopping for the wastewater pilot until the sewerage tariff policy is in place.

2. Institutional risk. This relates to the limited capacity of some local agencies. Although institutional capacity has improved under the project, there are still moderate risks related to the ability of local agencies to sustain operations, maintain infrastructure, and manage technical aspects of water supply and wastewater treatment. Continued capacity building, technical support, and robust M&E systems are needed to ensure



long-term sustainability.

8. Assessment of Bank Performance

a. Quality-at-Entry

- **Strategic Relevance and Approach.** The PDO was in line with the Government priorities and the WBG strategies (see section 3). This Project aimed to address development challenges through a transformative approach that combined technical innovations and development of a cost-effective business model with a high emphasis on generating lessons and being replicated within and outside China.
- **Technical and Financial Aspects.** The project design reflected a realistic and focused PDO, but targets were slightly ambitious. The project aimed to enable improved quality, affordable, and equal access to basic water supply and wastewater services in less urbanized areas of Jiangxi province. The design included relevant activities that were adequately sequenced to allow successful scale-up. The PAD included a detailed EFA that provided an adequate justification of the project investments.
- **Social and Gender Aspects.** The total number of beneficiaries under the Project were expected to be 2.26 million people in seven counties, of which about 1.11 million were expected to be women. Most of these beneficiaries were vulnerable groups, such as the poor and senior citizens. The project design emphasized advancing gender equality within rural water supply and wastewater management.
- **Environmental and Fiduciary aspects.** The design reflected adequate environmental aspects. However, there were some challenges with fiduciary aspects as the project experienced some procurement delays during implementation.
- **Implementation Arrangements.** Project implementing units within the Provincial Water Resources Department (PWRD), and within the PWIG coordinated management and implementation of the Project. Project Management and Implementation included five levels at the provincial level. Coordination of project implementation across multiple levels proved challenging. The ICR (paragraph 64) noted that "some local Project Management Offices (PMOs) lacked experience with World Bank procedures, leading to non-standardized acceptance of works and delays in contract settlements and payments."
- **Risk Assessment.** The overall risk rating of the project was rated Moderate. Five main risk areas were identified relating to the technical design of the Project, institutional capacity for implementation and sustainability, fiduciary, environment and social safeguards, and stakeholders risk. While risk identification was thorough and reflected adequate mitigation measures, some risks were underestimated. For example, the complexity of multi-county coordination, which resulted in delays and the need for project restructuring.
- **M&E Arrangements.** A professional and independent institute was selected by the Provincial Project Implementing Unit (PPIU)/Provincial Water Investment Group (PWIG) to manage the project's M&E. The M&E design reflected a simple RF that included adequate indicators to capture both quantitative and qualitative aspects. While indicators were adequately aligned with



the PDO, the M&E framework included indicators that later required revision to reflect realities on the ground.

Summary of Quality at Entry (QAE) Assessment. The project design reflected a realistic and focused PDO which was in line with the Government priorities and the WBG strategies, but targets were slightly ambitious. The design included relevant activities that were adequately sequenced to allow successful scale-up. However, the design could have benefited from further verification of the enabling policy environment at the national level that supported the implementation of rural wastewater tariff. The design reflected adequate social, environmental and gender aspects. However, fiduciary aspects could have benefited from more attention as the project experienced procurement challenges. Implementation arrangements were complex and coordination of project implementation across multiple levels proved challenging. Risk identification was thorough and reflected adequate mitigation measures, but the risk related to the complexity of multi-county coordination was underestimated. This resulted in delays and the need for project restructuring. M&E arrangements were adequate and the RF reflected relevant indicators that were connected to the PDO. However, some indicators required revision to reflect realities on the ground.

On balance, QAE is rated Satisfactory.

Quality-at-Entry Rating Satisfactory

b. Quality of supervision

- The project faced several challenges during the implementation period including the COVID-19 pandemic, severe floods, and global supply chain disruptions, all of which contributed to construction suspensions and delays. COVID-19 triggered an approximately four-month suspension of construction and slowed start-up across counties, causing an early disbursement lag and pushing back implementation timelines.
- The World Bank conducted 13 supervision missions and 5 technical missions over the implementation period. There was one task team leader change during the project. The Bank team composition was adequate, comprising a multidisciplinary team of water specialists; environmental, social and financial management specialists; and contract management and dam safety experts.
- Supervision missions systematically reviewed environmental and social safeguards, financial management, and procurement processes. The project team also ensured that corrective actions were taken where needed, such as verifying compensation payments for temporary land acquisition in Jinxi County and monitoring compliance with environmental management plans at water treatment plants.
- The project implementation benefited from the Bank's close engagement with the Provincial Project Management Office and county-level PMOs. This allowed timely identification of implementation bottlenecks, such as delays in contract execution and construction progress and the provision of actionable recommendations to accelerate project activities.
- The World Bank also provided contract management training to the officials of the provincial and county PMOs to accelerate the Government's internal auditing and contract payment approval processes. The supervision process also emphasized institutional strengthening and stakeholder



engagement, including organizing replication workshops, training sessions, and technical assistance for PMOs and PIUs. These efforts enhanced local capacity for project management and contributed to the sustainability of project outcomes.

Summary of Quality of Supervision. The World Bank provided regular supervision, technical guidance, and demonstrated flexibility to address external shocks. The World Bank team successfully addressed complex challenges such as procurement delays, contract management issues, and the impacts of COVID-19 and severe flooding. The World Bank also maintained adequate oversight of fiduciary, environmental, and social safeguards, ensuring compliance with all relevant covenants. Lastly, the project implementation benefited from capacity building and knowledge provided by the Bank through replication workshops and technical assistance.

Therefore, the Quality of Supervision is rated Satisfactory.

Based on the ratings assigned for QAE and Quality of Bank supervision, the Overall Bank Performance is rated Satisfactory.

Quality of Supervision Rating

Satisfactory

Overall Bank Performance Rating

Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design

- The PAD did not include a ToC since it was not yet required by the Bank at appraisal. Nonetheless, the ICR (Annex 6) included a ToC that outlined the connections between project activities, outputs, intermediate outcomes and outcomes in plausible causal chains. This Review outlined a ToC for each objective based on the detailed project description in the PAD and the ToC reported in the ICR.
- The PDO was measured through four PDO outcome indicators: 1. People with new access to piped water supply (number); 2. Non-revenue water (percentage of NRW in total water produced); 3. O&M unit cost of water supply system (RMB/m³); and 4. People with new connections to sewerage systems. These outcome indicators were adequately aligned with the PDO, measurable, and had baselines where relevant. The outcome indicators covered quantitative, including access to piped water, reliability, customer satisfaction, NRW, O&M costs, and wastewater connections. This was complemented by intermediate outcome indicators (IRIs) that captured qualitative aspects such as reliability, customer satisfaction.
- The RF included 11 IRIs to track the progress of the project activities towards achieving the PDO. The IRIs were relevant, measurable and connected to the stated activities.
- M&E design emphasized baseline surveys, annual beneficiary scorecards, and regular reporting by an independent institute, ensuring triangulation and attribution.



- Overall, M&E design reflected an RF that adequately tracked the progress towards achieving the PDO through relevant indicators that covered both quantitative and qualitative aspects. However, at design, the M&E framework included indicators that later required revision and one that proved unachievable under the prevailing policy environment (see below).

b. M&E Implementation

- Data collection was carried out on semiannual and annual basis, leveraging MIS platforms, field surveys, and third-party monitoring for social and environmental safeguards and project M&E. According to the ICR (paragraph 59) "most indicators were tracked and reported on time, with high data quality for physical outputs and service improvements."
- However, there were occasional delays in consolidating data from multiple counties, leading to lagged recognition of investments in the MIS and delayed payments to contractors. Also, there were isolated inconsistencies in social monitoring reports, particularly in early stages, which were later addressed through improved protocols and training.
- The intermediate indicator on O&M plans was revised from 8 to 7 when the Huangtong water treatment plant was cancelled due to noncompliant source water quality, and the BOD indicator was redefined with an updated baseline and end-target to reflect measured influent/effluent conditions in the Zhajin pilot. Also, the intermediate indicator on "collection rate of the combined water and wastewater tariff for households" could not be achieved due to the absence of an enabling national policy on rural sewerage tariffs. The ICR (paragraph 59) explained that "tariff setting in China requires legislative authorization at the national level, rather than the township level, resulting in processes that extend beyond the remit and timeline of an investment project focused on infrastructure and service delivery."
- Overall, M&E implementation was effective, but with some shortcomings. The project could have revised the "tariff collection indicator" to track preparatory steps within the project's control (e.g., completion of tariff studies, draft policy proposals, stakeholder engagement milestones). The ICR (paragraph 59) correctly emphasized that "aligning M&E indicators with the institutional and policy environment would have enabled credible performance measurement and avoided penalizing the project for reforms that require policy instruments outside the project's scope."

c. M&E Utilization

- M&E utilization was evident in informing management decisions. This was demonstrated in reallocating funds after the cancellation of the Huangtong township water treatment plant because the proposed source did not meet applicable water quality standards, focusing supervision on lagging counties, revising targets and technical designs based on mid-term review findings, and scaling up successful pilots (for example, smart water supply systems and wastewater management in Zhajin).
- Additionally, beneficiary feedback and safeguard monitoring informed course corrections and improved social outcomes. The M&E system also supported adaptive management during COVID-19.



Summary of M&E Quality. The M&E design reflected an RF that adequately tracked the progress towards achieving the PDO through relevant indicators that covered both quantitative and qualitative aspects of the project. However, the M&E framework included indicators that later required revision and one that proved unachievable (tariff collection) under the prevailing policy environment. M&E implementation was effective overall. The project generated reliable data to track physical outputs and service improvements. While some indicators were correctly revised during implementation, the project could have also revised the "tariff collection indicator" to track preparatory steps within the project's control. M&E utilization was evident as the project data informed management decisions and were used in the ICR itself.

On balance, M&E Quality is rated Substantial despite some shortcomings pertaining to some indicators.

M&E Quality Rating

Substantial

10. Other Issues

a. Safeguards

- **Environmental Category and Safeguards.** The Project was classified as an environmental Category B (Partial assessment) as the major impacts were expected to be site-specific and temporary. The project triggered four environmental and one social safeguard policies: Environmental Assessment (OP/BP 4.01), Natural Habitats (OP/BP 4.04), Physical Cultural Resources (OP/BP 4.11), Safety of Dams (OP/BP 4.37), and Involuntary Resettlement (OP/BP 4.12). An Environmental Impact Assessment (EIA), a social assessment (SA), a Beneficiary Participation Manual (BPM), and an Environmental Impact Assessment (EIA) were prepared to meet the World Bank and national requirements.
- **Compliance with the World Bank's safeguard policies.** According to the ICR (paragraph 63) "the project complied with all applicable and triggered safeguards policies." The project implemented an Environmental Impact Assessment (EIA), Environmental and Social Management Plan (ESMP), and regular external environmental monitoring reports. Nine of the project's ten dams were rehabilitated and all met World Bank safety standards. While maintenance and emergency plans were satisfactory, limited data analysis capacity due to technical staff shortages would require continued support from local government. Social compliance was monitored through third-party evaluations and regular reporting. The project acquired 22.7 hectares of land permanently and temporarily used about 200 hectares for pipeline construction, exceeding initial RAP estimates. The ICR (paragraph 63) reported that compensation was paid to the affected persons. A multi-level GRM was established, accessible at the village, township, county, and project levels, and according to the ICR (paragraph 63) "all complaints received (mainly about construction noise or temporary land use) were resolved satisfactorily."

b. Fiduciary Compliance



- **Financial Management (FM).** All required financial statements and interim reports were submitted on time, and no significant issues were identified in audits (ICR, paragraph 64). FM performance was rated Moderately Satisfactory in the final ISR.
- **Procurement.** Procurement processes closely following World Bank and national regulations. Post-procurement reviews and audits identified no significant issues. However, there were some delays in making final payments to some contractors, due to incomplete paperwork and complex audit requirements. Overall, procurement was well managed and competitive, supported by regular audits and strong oversight. Procurement performance was rated Satisfactory in the final ISR.

c. Unintended impacts (Positive or Negative)

None were reported in the ICR.

d. Other

None were reported in the ICR.

11. Ratings

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

12. Lessons

The ICR included three lessons which are emphasized with some adaptation of language:

1. To enable innovation and efficiency, implementation arrangements could benefit from a centralized institutional arrangement. The project implementation experience demonstrated that a centralized management facilitated harmonized standards, rapid troubleshooting, and knowledge sharing, which would have been challenging in a more fragmented institutional setup. The project’s governance structure— anchored by a single provincial PMO (Jiangxi Water, a 100% subsidiary of PWIG) with county-level companies— minimized implementation issues and enabled the successful rollout of a smart water system. Future operations should consider a central PMO model with clear delegation to county units and standardized technical specifications.



Establishing a provincial knowledge hub can further support onboarding and capacity building for subsequent phases.

2. To enable operating efficiency and sustainability, smart, layered water management need to be deployed early in operations, alongside the development of physical infrastructure. The three-layer smart water platform, extensive smart meter rollout, and network emulation/District Metered Area design helped drive down NRW and boost reliability— showing that digital tools, when integrated with physical upgrades, can measurably improve performance.

3. To ensure effective implementation of M&E, the Results Framework need to reflect indicators that are under the direct control of the project. The pilot wastewater component included an indicator for the collection rate of combined water and wastewater tariffs for households in Zhajin Township. However, by project closing, the collection rate remained at the baseline level (0%), as no wastewater tariff was set or collected by the national government. Policy reforms requiring higher-level government action—such as the establishment of new tariffs or regulatory changes—which are beyond the direct control of the project, particularly IPFs, and should not be included as part of project's results framework. Other remedial measures to address this include technical assistance, tariff studies, and stakeholder engagement should be included in the M&E design.

13. Assessment Recommended?

No

14. Comments on Quality of ICR

- **Quality of Evidence.** The evidence base in the ICR was adequate to assess the project outcomes.
- **Quality of Analysis.** The analysis of the project achievements benefited from reliable data generated by the project's M&E system. The analysis of outcomes was balance reflecting the project achievements against its outcome targets and what was achieved on the ground.
- **Internal Consistency.** Various parts of the ICR were internally consistent and logically linked and integrated.
- **Lessons.** Lessons reflected the project experience and were based on evidence and analysis.
- **Consistency with guidelines.** The ICR used the standard structure defined in the Guidelines and used available evidence to justify the assigned ratings.
- **Conciseness.** Overall, the ICR was well written, concise yet thorough.

Summary of Quality of the ICR Assessment. Overall, the ICR was well written. It candidly reported on the project shortcomings, and provided a thorough assessment of project outcomes. The ICR reflected relevant lessons and noted key events that impacted implementation. Most sections were concise and reflected relevant information.

Therefore, the Quality of the ICR is rated High.



a. Quality of ICR Rating
High