Report Number : ICRR0024937

1. Project Data

Project ID P158146	**Program Name** IN Uttarakhand WSP PforR
Country India	**Practice Area(Lead)** Water

L/C/TF Number(s)	Closing Date (Original)	Total Program Cost (USD)
IBRD-88050	31-Dec-2023	106,000,000.00
Bank Approval Date	**Closing Date (Actual)**	
04-Jan-2018	30-Jun-2025	

	IBRD/IDA (USD)	Grants (USD)
Original Commitment	120,000,000.00	0.00
Revised Commitment	106,000,000.00	0.00
Actual	106,000,000.00	0.00

Prepared by	Reviewed by	ICR Review Coordinator	Group
Chikako Miwa	Fernando Manibog	Avjeet Singh	IEGSD (Unit 4)

2. Program Context and Development Objectives

a. Objectives

The Program Development Objective (PDO) was **"to increase access to improved water supply services in peri-urban areas in Uttarakhand"** (Loan Agreement dated January 22, 2018, Schedule 1, page 5).

The Program sought to achieve two interrelated outcomes: (i) to increase access to improved water supply services, as explicitly shown in the PDO statement; and (ii) to improve policy, planning, and M&E systems for water supply programs, as embedded in the Theory of Change, the Results Framework, and the choice of

PforR instrument (ICR, paragraph 21). Thus, this Implementation Completion and Results Report (ICR) Review will assess the following objectives.

Objective 1: To increase access to improved water supply services in peri-urban areas in Uttarakhand.

Objective 2: To improve policy, planning, and M&E systems for water supply program in peri-urban areas in Uttarakhand.

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

Yes

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

Yes

Date of Board Approval

20-Aug-2019

c. Will a split evaluation be undertaken?

Yes

d. Components

Result Area (RA) 1: Increased access to improved water supply services in peri-urban areas aimed to bring service levels in peri-urban areas up to urban standards, i.e., receiving good quality, pressurized, 135 liters per capita per day (lpcd) designed for continuous supply and 100 percent metered connections, up from the existing 45 percent connected households with 1-2 hours of water supply per day following rural standards of 40 lpcd. Main activities included (i) construction, rehabilitation, augmentation and/or expansion of water supply piped networks and metered services connections with improved tariffs in peri-urban areas delivered. These would be delivered through Design Build Operate (DBO) and Performance-Based Construction (PBC) Contracts for sources, treatment, storage and 350 km of distribution mains; (ii) strengthening of policies on, and planning and monitoring of, water supply services in peri-urban areas; (iii) provision of support to manage the Program; strengthen governance and accountability; carry out technical assessments and sector studies on water supply services in peri-urban services; and build capacity for delivering professional services. The Disbursement Linked Indicators (DLIs) for RA1 were: DLI 1 Number of water connections providing improved water supply services in peri-urban areas; DLI 2: Sustainability of water supply service delivery in peri-urban areas; and DLI 6: Efficiency of water supply service delivery in peri-urban areas (added in the second restructuring in May 2022).

RA 2: Improved policy, planning and monitoring and evaluation (M&E) systems for water supply program in peri-urban areas aimed to strengthen the policy and institutional frameworks governing water supply in peri-urban areas to enhance the capacity of state and local institutions to manage water supply services effectively. Activities included: (i) adoption of dedicated peri-urban water-supply policy and tariff rule; (ii) preparation and cabinet approval of three corridor masterplans; (iii) deployment of a Management Information System (MIS) and citizen-feedback grievance portal and annual performance reporting; and (iv) Gender-focused capacity building. The DLIs for RA 2 were: DLI 3 Improved policy for water supply program

in peri-urban areas; DLI 4 Strengthened M&E systems for water supply program in peri-urban areas; and DLI 5 Number of approved Masterplans for Water Supply in peri-urban areas.

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

Program Cost: At appraisal, the Government's program was estimated to cost US$150.00 million (PAD, paragraph 35). During the restructuring in 2019, the estimate was decreased to be US$132.50 million. At closing, the program's actual cost was US$130.48 million, which was 87 percent of the estimate (ICR, annex 3, page 30). The program cost decreased due to foreign exchange gains arising from the depreciation of the Indian Rupee (INR) against the US Dollar (USD) over the program's seven-year life (ICR, paragraph 10, and the Task Team's Response to IEG's Questions, hereafter, Task Team's Response).

Financing: At appraisal, the program was planned to be financed by US$120.00 million loan from the International Bank for Reconstruction and Development (IBRD) and US$30.00 million contribution from the Government of Uttarakhand (GoUK). During the 2019 restructuring, the financing was revised to be US$106.00 million from IBRD and US$26.50 million from GoUK. At closing, the IBRD loan was fully disbursed, while the actual disbursement from the GoUK contribution was US$24.48 million.

Borrower Contribution: The Borrower, GoUK, planned to contribute US$30.00 million at appraisal. The actual contribution was US$24.48 million.

Dates: The Program was approved on January 4, 2018, and became effective on March 8, 2018. The Mid-Term Review was recorded on November 8, 2021. The Program closed on June 30, 2025, which was 18 months later than the original closing date of December 31, 2023.

The Program had four Level 2 restructurings, as described below.

- ***Restructuring 1 (August 20, 2019)*** decreased targets of all five PDO indicators, Intermediate Results (IR) indicators 1.1 and 1.2, and DLIs 1 and 2. Restructuring 1 also reallocated DLI amounts based on cost estimates that were revised based on the schedule of rates of the Central Public Works Department (CPWD) that was revised in December 2018 (Restructuring Paper RES37484). This resulted in an increase in the estimated cost by about 15 percent for the schemes proposed under the Program. The simultaneous reduction in targets and increase in costs at Restructuring 1 requires explanation. At appraisal, cost estimates were based on 2016 CPWD schedule of rates. In December 2018, CPWD revised these rates upward, increasing estimated scheme costs by approximately 15 percent (Restructuring Paper 2019, RES37484). Since the total loan amount remained fixed at US$120 million, the higher per-unit cost reduced the number of viable schemes from 26 to 22, and all targets dependent on scheme count (e.g., connections, beneficiaries, and the TSI cumulative score) were revised proportionally downward. This was not a reduction in program ambition per se, but a scope adjustment driven by an exogenous cost shock.
- ***Restructuring 2 (May 5, 2022)*** introduced DLI 6 (energy efficiency and NRW targets), reallocating US$12 million from DLIs 1 and 2. Restructuring 2 also revised Results Framework to (i) add a PDO indicator for sustained service delivery and separate O&M cost recovery indicator; and (ii) revise monitoring protocols and frequency of verification and payments for DLIs.

- ***Restructuring 3 (July 27, 2023)*** extended the closing date by 18 months, revised DLI 6 from energy efficiency threshold to scheme-specific Energy Intensity (EI) benchmarks, and increased the target of PDO indicator for schemes providing sustained water supply services.
- ***Restructuring 4 (November 28, 2024)*** reduced the loan from US$120 million to US$106 million, reflecting foreign exchange gains accumulated over the program period. To align disbursement totals with the reduced envelope, the maximum disbursable amounts for individual DLIs were capped correspondingly.

Split rating: The ICRR concludes that a split rating is deemed necessary as the scope of the Program shrank at the first restructuring that was conducted when the Program disbursed US$ 1million (1 percent of the total disbursement). During the first restructuring, targeted peri-urban areas and targets of three PDO indicators (i.e., Number of people receiving improved water supply services; Number of beneficiaries; and Improved policy, planning, and M&E systems for water supply program) decreased. At the same time, estimated costs increased by 15 percent. The split rating would help to clarify two project performance issues related to project ambition and cost efficiency, pre- and post-restructuring in 2019.

3. Relevance

a. Relevance of Objectives

Rationale

Country and Sectoral Context: India's rapid economic growth and urbanization since 2005 had created significant infrastructure challenges, including in water supply and sanitation (WSS). Approximately 45 percent of households in these areas were connected to piped water supply but received only 1-2 hours of service per day, often at rural standards of 40 litres per capita per day (lpcd). Non-revenue water (NRW) was estimated at over 40 percent, with water losses further compounding the issues of inequitable service delivery. Many households resorted to private bore-wells or tankers, bearing coping costs three to four times higher than the monthly water bill, and reflecting the unmet demand for improved WSS services. The Government of India (GoI) had made substantial investments in WSS through flagship programs that provided financial support for improving services for both urban and rural areas. Peri-urban areas increasingly aspired to urban-level service standards but continued to receive schemes designed to rural norms because they lacked a dedicated policy and committed funding. Water supply services in peri-urban areas are below the Ministry of Urban Development (MoUD) benchmarks for urban areas.

Uttarakhand experienced rapid urbanization, with an 11.6 percent average economic growth and a 42 percent rise in its urban population, outpacing India’s 32 percent. GoUK launched a US$150 million peri-urban water-supply program, and the World Bank supported it by designing this Program-for-Results (PforR) operation with US$120 million in financing. The Program partially financed the state framework and focused on peri-urban areas around four growth corridors that had been largely unattended. The technical, fiduciary, and environmental and social systems assessments confirmed that sector performance constraints were driven primarily by weak incentives for operators to implement meter connections, reduce losses, and manage systems sustainably, rather than by the absence of assets.

Alignment with the Government Strategies: Throughout implementation, the PDO was in line with the strategies of GoUK, which announced this Program as a priority through a Government Order (PAD, paragraph 20). GoUK sustained its commitment to the peri-urban agenda in successive state budgets (FY19-FY25) and adopted a dedicated Peri-Urban Water-Supply Policy and volumetric tariff political commitment (ICR, paragraph 16).

Alignment with the World Bank Group (WBG)'s Assistance Strategies: Throughout implementation, the PDO aligned with the CPF FY18-22 that was extended to cover the Program duration. The Program advanced the CPF objective of improving access in underserved peri-urban areas, addressed a policy vacuum for settlements outside municipal jurisdictions, and aimed to demonstrate a replicable, results-based model for statewide adoption of improved water supply services.

State Capacity and Adequacy of PforR Instrument: The PforR instrument was an appropriate choice for Uttarakhand's specific institutional context. The state's two main sector agencies, Uttarakhand Jal Nigam (UJN) and Uttarakhand Jal Sansthan (UJS), operated under a structurally fragmented model in which UJN constructed schemes and handed them to UJS for operation, creating accountability gaps that neither agency was positioned to resolve independently (PAD, paragraph 12). This fragmentation, combined with weaknesses in strategic leadership, service-delivery orientation, and financial management capacity required performance incentives, rather than input financing, to drive behavioral change. The PforR instrument directly addressed this by linking disbursements to verify service delivery outcomes (ICR, paragraph 4 and PAD, paragraph 18).

In summary, the objectives were closely aligned with the strategies of the Government and WBG. Choosing the PforR instrument was also adequate, based on the state capacity and the development challenges during preparation. Overall, the relevance of objectives is rated high.

Rating
High

b. Relevance of DLIs

DLI 1
DLI
Number of water connections providing improved water supply services in peri-urban areas

Rationale
This DLI rewarded both expanding water service coverage and maintaining improved service. By tying the largest share of disbursements to verified connections providing continuous supply, DLI 1 shifted the implementing agencies' focus from construction completion to actual service delivery outcomes (ICR, paragraph 23). A connection counted if it delivered improved service to households, commercial, or institutional users. Performance was measured by: (a) new connections that provided at least three months of improved service, and (b) previously counted connections that continued improved service. "Improved

service" meant at least 16 hours per day supply, the Government of India-compliant water quality, average pressure of 12m, and service for at least 300 days per year (except in declared disaster areas).

RA 1's reference to "continuous supply" reflected the Program's long-term aspirational standard of 24-hour service. DLI1's performance measurement represented a measurable transition benchmark toward the aspirational goal. These were not contradictory; because, by the Program close, schemes achieved an average of approximately 19 hours of supply per day (ICR, paragraph 21), demonstrating progress well beyond the DLI threshold and toward the continuous supply standard. The DLI targeted vulnerable populations and supported climate adaptation, while also improving existing services and contributing to climate mitigation by reducing NRW and saving energy through efficient systems. The DLI's result was verified by an Independent Verification Agency. The DLI directly contributed to achievements of Objective 1 through a strong results chain.

Rating
High

DLI 2
DLI
Sustainability of water supply service delivery in peri-urban areas

Rationale
This DLI incentivized year-on-year improvements in system sustainability in peri-urban areas using a composite Total System Improvement (TSI) score. The TSI, ranging from 0 to 3.7 per system, summed four sub-indicators: performance agreements, metering, Operation and Maintenance (O&M) cost recovery, and customer satisfaction. Disbursements were proportional to the aggregate TSI across systems, and any system qualified only if its TSI was at least as high as in the previous year. The DLI was expected to enhance services for vulnerable populations and deliver energy savings through system rehabilitation and Non-Revenue Water (NRW) reduction. This DLI was verifiable and directly contributed to achievements of Objective 1 through a strong results chain. DLI 2 incentivized sustained operational performance across schemes by conditioning disbursements on the cumulative TSI score being no lower than the prior year (ICR, para. 3). However, this design might create a weak incentive for underperforming schemes to improve beyond a low baseline. Thus, the relevance of DLI 2 is rated substantial.

Rating
Substantial

DLI 3
DLI
Improved policy for water supply program in peri-urban areas

Rationale
This DLI incentivized preparing and implementing policy actions to improve peri-urban water supply services, notably consistent application of water connection and volumetric tariff policies. Volumetric tariffs were

defined as charges based on the volume of water consumed as measured by household meters, replacing the prior fixed flat-rate system. Hence, DLI 3 incentivized the political commitment required to enact a volumetric tariff policy. It was expected to yield energy savings by promoting a statewide policy framework that made water services more efficient and cost-effective. The DLI was verifiable and directly contributed to achievements of Objective 2. The DLI targeted an upstream policy action, and it was complemented by an Intermediate Result (IR) indicator to measure the DLI's downstream result (i.e., the IR indicator on the number of schemes that meet 100 percent of O&M cost recovery).

Although the DLI refers to “policy adoption” broadly, the Peri-Urban Water Supply Policy adopted in August 2019 explicitly included a volumetric tariff rule with automatic annual indexation (ICR, paragraph 16). DLI 3 thus served as an indirect but substantive incentive for tariff reform, making Cabinet-level reform a financial condition for disbursement (ICR, paragraphs 16 and 18). However, the link between tariff adequacy and disbursement eligibility was implicit rather than explicit, which limited the DLI's ability to incentivize ongoing tariff enforcement beyond initial adoption. Overall, the relevance of DLI 3 is rated substantial.

Rating
Substantial

DLI 4

DLI
Strengthened M&E system for water supply program in peri-urban areas

Rationale
This DLI incentivized strengthening the peri-urban M&E system, covering design, implementation, information systems, and annual reporting, and aimed to integrate separate Management Information Systems (MISs) of relevant sector agencies including the State Water and Sanitation Mission, the Uttarakhand Peyjal Nigam (UJN), and the Uttarakhand Jal Sansthan (UJS). The DLI also aimed to contribute to energy reduction by making anticipated and actual energy savings more explicit. The DLI's target was achieved in April 2020 and informed evidence-based policy and implementation decisions (ICR, page 22). Overall, the relevance of DLI 4 is rated substantial.

Rating
Substantial

DLI 5

DLI
Number of approved master plans for water supply in peri-urban areas

Rationale
This DLI incentivized preparing strategic long-term water-supply master plans for three growth corridors in Uttarakhand. Disbursements were made for each GoUK-approved plan, up to a target of three. The DLI was linked to adaptation co-benefits by integrating climate-resilience measures into the master plans. The DLI was

verifiable and contributed substantially to achievements of Objective 2. Thus, the relevance of DLI 5 is rated substantial.

Rating
Substantial

DLI 6

DLI
Efficiency of water supply service delivery in peri-urban areas (added in the second restructuring in May 2022)

Rationale
DLI 6 directly incentivized energy efficiency and NRW reduction, the two largest drivers of O&M costs, thereby reinforcing financial sustainability objectives that DLI 2's TSI composite captured only indirectly (ICR, para. 13). DLI 6 introduced efficiency incentives for NRW reduction and benchmarked Energy Intensity (EI). The 2023 restructuring changed the Disbursement Linked Results (DLR) of energy efficiency under DLI 6 from “the number of water supply systems that maintain a combined energy efficiency of the motor and pump above 65 percent on average” to “the number of water supply systems that maintain benchmarked EI, which is defined as average amount of energy used in kilowatt hour to pump one cubic meter of water (kWh/m3) and is closer to the benchmark for optimal field conditions. This shift (i) tied incentives to the factor that most threatens the power cost component of O&M budgets, often more than 50 percent of expenses; (ii) recognized scheme-specific conditions by benchmarking and rewarding performance within a five-percent band for each system; and (iii) incentivized NRW reductions so that efficiency remained a priority objective. The DLI was verifiable and made major contributions to achievements of Objective 1. Thus, the relevance of DLI 6 is rated high.

Rating
High

OVERALL RELEVANCE RATING

Rationale
The relevance of objectives is rated high, given the objectives' close alignments with the CPF at Program closing, the government priorities, and the state capacity. The relevance of DLIs is rated substantial, based on two highly relevant DLIs and four substantially relevant DLIs. Hence, the overall relevance is rated substantial.

Rating
Substantial

4. Achievement of Objectives (Efficacy)

OBJECTIVE 1

Objective

Original Objective 1: To increase access to improved water supply services in peri-urban areas in Uttarakhand

Rationale

Theory of Change (ToC): The PAD did not explicitly describe a theory of change. The ICR (page 2) provided a ToC based on the Program description and Results Framework at closing. The ToC is generally solid with two streams of activities organized by two results areas; however, the ToC is unclear about: (i) causal relationships among activities, outputs, intermediate outcomes, and outcomes; and (ii) which critical assumptions apply to which results chain. The ICRR reconstructs the ToC of Objective 1 as follows. The ToC envisaged that activities such as augmenting water sources and constructing and rehabilitating facilities for water treatment, storage, pumping, transmission, distribution, and associated network fixtures would lead to outputs such as water supply schemes and water sources being upgraded or installed, and pipelines being installed or improved. The ToC also envisaged that activities such as installing meters and introducing volumetric tariffs would lead to intermediate outcomes such as improving the operation, management, efficiency, and sustainability of the water supply systems. These intermediate outcomes, being combined with Objective 2's results, were envisaged to contribute to outcomes of the increased access to improved water supply services in a sustainable manner in peri-urban areas of Uttarakhand.

The ICR (page 2) provided four critical assumptions for the ToC: (i) timely and effective implementation by GoUK; (ii) adequate capacity and resources for both implementation and O&M phases; (iii) strong community trust and participation; and (iv) commitment by GoUK to address financial shortfalls and improve service delivery. The ToC assumptions were broadly validated during implementation. However, the assumption of timely implementation was only partially realized, as COVID-19 caused an average 17-month construction standstill and IVA mobilization was underestimated by one quarter (ICR, paragraphs 32 and 41).

Outputs and Intermediate Outcomes:

- 108,745 water connections were providing improved water supply services in peri-urban areas, exceeding the original target of 103,244 water connections.
- Sustainability of water supply service delivery in peri-urban areas that was measured in Total System Improvement (TSI) score reached 81.15, not meeting the original target of 96.20 (84 percent of the target). Sustainability measured by TSI score (0-3.7 per system) was sum of performance agreement, metering, O&M cost recovery, and customer satisfaction score (ICR, paragraph 3). Area-wise revenue and cost information was available for 26 peri-urban areas in the Program (PAD, paragraph 62). The original target of 96.20, which was calculated based on these areas (i.e., 3.7 x 26), was not achieved due to the decrease in the number of target areas based on the revised cost estimates (Task Team's Response).
- Customer satisfaction with improved water supply services reached 83 percent, exceeding the original target of 70 percent.

- Time saved by women for water collection reached 2.55 hours per day, exceeding the original target of 0.50 hours per day. The actual achieved is notable; however, the basis of estimation and sampling should be clarified to ensure generalizability across peri-urban contexts.

Outcomes:

- 536,200 people were provided with improved water supply services in peri-urban areas, exceeding the original target of 516,222 people. Improved water service was defined as (i) a minimum of 16 hours per day of continuous water supply; (ii) meeting GoI water quality standards; (iii) water supplied at an average pressure of 12 meters head (1.2 bar); and (iv) provided for no less than 300 days in a year. There was a minor difference between the results measured by MIS and IVA (543,825 and 536,200, respectively) that was attributed to recent beneficiaries added after the IVA's last verification cycle.
    - Of the 536,200 people, 268,100 were women, meeting the original target of 258,111 women.

Access gains and quality improvements were well-evidenced. There were dramatic continuity increases from 1-2 hours to around 19 hours per day in targeted schemes. Moreover, the Program employed a deliberate sequencing of metering, tariff, and service improvement reforms. Meters were installed first, followed by issuance of 'dummy bills' that showed consumers what their volumetric charges would be, while actual billing remained flat. Only after demonstrated service reliability were volumetric tariffs introduced. This sequencing built consumer familiarity with metering and trust in service quality before any financial burden was imposed, reducing resistance and supporting willingness to pay (ICR, paragraphs 18 and 22). The result (i.e., 100 percent O&M cost recovery across all 22 schemes by program close) validated the approach (ICR, paragraph 22). Furthermore, DLI 6, introduced at Restructuring 2, incentivized energy efficiency and NRW reduction. By program close, average NRW decreased from 40 percent to 25 percent, conserving an estimated 1.8 million m^3 of treated water annually, and energy intensity dropped by an average of 4.5 percent, equivalent to 1.6 GWh of electricity saved (ICR, para. 30, Table 1). However, sustainability claims hinge on cost recovery and institutional reforms. The ICR reports O&M cost recovery achieved across schemes and sustained metering/billing, supported by government orders. This data would benefit from disaggregated financial data to corroborate scheme-level cost recovery durability. Overall, Efficacy is rated substantial.

Rating
Substantial

OBJECTIVE 1 REVISION 1

Revised Objective
Revised Objective 1: To increase access to improved water supply services in peri-urban areas in Uttarakhand (Objective 1's statement stayed the same but the associated PDO indicators' targets were reduced during the first restructuring in 2019)

Revised Rationale
The ToC for Objective 1 Revision 1 was the same as that for Objective 1.

Outputs, intermediate outcomes, and outcomes achieved for Objective 1 Revision 1 were the same as those for Objective 1, except for the following.

Outputs and Intermediate Outcomes:

- 108,745 water connections were providing improved water supply services in peri-urban areas, exceeding the revised target of 87,757 water connections, which was reduced by 15 percent from the original target of 103,244 connections.
- Sustainability of water supply service delivery in peri-urban areas that was measured in Total System Improvement (TSI) score reached 81.15, slightly missing the revised target of 81.40, which was reduced by about 11 percent from the original target of 91.2.
- 20 schemes met 100 percent of O&M cost recovery, exceeding the target of 16 schemes. This indicator was added during the second restructuring.
- 21 water supply systems maintained efficiency of water supply service delivery, meeting the target of 20 systems. This indicator was added during the second restructuring.

Outcomes:

- 536,200 people were provided with improved water supply services in peri-urban areas, exceeding the revised target of 436,800 people, which was a 15 percent reduction from the original target of 516,222 people.
    - Of the 536,200 people, 268,100 were women, exceeding the revised target of 218,400 women. The target for women beneficiaries was reduced from 258,111 to 218,400 at Restructuring 1, as a proportional adjustment to the overall beneficiary target reduction driven by scope contraction (Restructuring Paper 2019, RES37484). However, the final achievement of 268,100 women served exceeded the original target. This calls into question the necessity of the target reduction for this specific indicator.

The program's financial sustainability indicator was defined as 100 percent O&M cost recovery, consistent with the O&M policy outlined by GoI and the ongoing subsidies of GoUK to water service operations (PAD, paragraph 23). By the Program closure, all 22 schemes achieved full O&M cost recovery (ICR, paragraph 22). This was a notable achievement in a sector where UJS previously recovered only 53 percent of operating expenses (PAD, paragraph 62). However, the program's financial sustainability framework did not establish a pathway to capital cost recovery, meaning utilities remain dependent on government financing for future infrastructure renewal. This is a limitation of the program's sustainability design, though it reflects broader sector constraints rather than a Program-specific shortcoming. Efficacy is rated high, based on overachievements in access and O&M cost recovery. The reductions of targets during the restructuring were justified by foreign exchange gains, as described in Section 2.e.

Revised Rating
High

OBJECTIVE 2
Objective
Original Objective 2: To improve policy, planning, and M&E systems for water supply program in peri-urban areas in Uttarakhand

Rationale

ToC: Based on the ICR (page 2), the ICRR reconstructs the ToC for Objective 2 as follows. The ToC envisaged that activities such as updating water supply policies including tariff policies, developing master-plans, installing a digital M&E system, and providing capacity strengthening training for women staff would lead to outputs such as master-plans being approved, annual report on water service performance in peri-urban areas being published, and digital M&E system being operationalized. These outputs were envisioned to contribute to intermediate outcomes such as improved water supply policies being in effect, M&E system being improved, and capacity of female stakeholders on water supply programs in peri-urban areas being strengthened, further contributing to the outcomes of Objective 2. A critical assumption for the ToC was: effective use of systems that result in time savings (ICR, page 2). The critical assumption was framed as an outcome rather than a prior assumption.

Outputs and Intermediate Outcomes:

- Volumetric tariffs and water connections policies were implemented in all targeted peri-urban areas, meeting the original target.
- Implementation of the M&E systems was reviewed, and required changes and future needs were identified, meeting the original target. Future needs identified were: (i) continuation of the M&E system beyond the Program closure that was addressed by a government order to continue the institutional arrangement of M&E beyond the closing date of the World Bank Program; and (ii) scale-up M&E to other systems across all urban and rural schemes in the state that was addressed by the new program being developed by the Government with the World Bank support (Task Team's Response).
- 3 masterplans for water supply in peri-urban areas were approved, meeting the original target. The masterplans guided the CAPEX, tariff reviews, and other policy and planning improvements (ICR, page 22).
- 3 annual reports (i.e., each report covering the period up to March 2022, 2023, and 2024) on water services performance in peri-urban areas were prepared and published, meeting the original target (Task Team's Response).
- 39 training programs for women to enhance their capacity for involvement in water supply program activities were conducted, exceeding the original target of 30. The training programs targeted a broader set of audiences, including sector agency staff within UJN and UJS, female volunteers and elected representatives at the community level, and women in community-based groups, and were designed to build women's agency at both the institutional and community levels (Task Team's Response).

Outcomes:

- Improved policy, planning, and M&E systems were implemented in 22 peri-urban areas, not meeting the original target of 30 peri-urban areas (73 percent of the target).

The following outcomes were not captured in the Results Framework, hence without any formal target.

- Institutional reform: The performance-based contracts such as DBO/PBC contracts linked up to 40 percent of O&M payments to pressure, continuity, and energy benchmarks, and set a new state standard. For the DBOs, performance was incentivized with 80 percent payment on scheme commissioning, and 20 percent over three years based on service quality. In addition, mandatory

electronic government procurement (e-GP) for all contracts above INR 2 million, introduced via the PAP, began to be applied across the Public Works Department.

- Sustainability: A dedicated O&M Cell was established, beyond the closing of the Program, with costs to be supported by scheme revenues rather than external grants to institutionalize the practice of utility revenues remaining within the water sector, allowing for cross-subsidization where needed. This ensured continued functioning of the SPSU and Field Implementation Units (FIUs) which were renamed as Maintenance Units (MUs) under UJN and UJS.

The Program contributed to implementation of improved policy, planning, and M&E systems, as well as rolling out performance-based contracts and e-GP and establishment of MUs in UJNs and UJS. On balance, although the target of the PDO indicator was not fully met, the intended outcomes were substantially achieved. Thus, the achievement of the original Objective 2 is rated substantial.

Rating
Substantial

OBJECTIVE 2 REVISION 1
Revised Objective
Revised Objective 2: To improve policy, planning, and M&E systems for water supply program in peri-urban areas in Uttarakhand (Objective 2's statement stayed the same but the associated PDO indicator's target was reduced during the first restructuring in 2019)

Revised Rationale
The ToC for Objective 2 Revision 1 was the same as that for Objective 2.

Outputs, intermediate outcomes, and outcomes achieved for Objective 1 Revision 1 were the same as those for Objective 1, except for the following.

Outputs and Intermediate Outcomes:

- Percentage of women staff employed by sector agencies increased from 2 percent in the baseline to 22 percent as the actual, exceeding the target of 20 percent. Targeted training programs and a revised human resources policy raised the shared of women staff (ICR, page 22).

Outcomes:

- Improved policy, planning, and M&E systems were implemented in 22 peri-urban areas, meeting the revised target of 22 peri-urban areas, which was a 27 percent reduction from the original target of 30 peri-urban areas.
- 22 schemes began to provide sustained water supply services for at least one year with a minimum of 16 hours of supply per day for at least 300 days over a course of a year, exceeding the target of 20. This indicator was revised during the third restructuring.

Considering the solid achievements demonstrated above, the achievement of Objective 2 Revision 1 is rated high. The reductions of targets during the restructuring were justified by foreign exchange gains, as described in Section 2.e.

Revised Rating
High

OVERALL EFFICACY

Rationale
Achievements of both Objective 1 and Objective 2 are rated substantial. Thus, the efficacy before the 2019 restructuring is rated substantial.

Rating
Substantial

OVERALL EFFICACY REVISION 1

Revised Rationale
Achievements of both Objective 1 and Objective 2 are rated high. Thus, the efficacy after the 2019 restructuring is rated high. The scope had to be adjusted for exogenous reasons, hence it was not an internally determined reduction in ambition.

Revised Rating
High

5. Outcome

	Original Objectives	Revised Objectives
Relevance of Objectives	Substantial	
Efficacy		
Objective 1	Substantial	High
Objective 2	Substantial	High
Overall Efficacy	Substantial	High
Outcome Rating	Satisfactory	Highly Satisfactory

Outcome Rating Value	5	6
Amount Disbursed (US$ million)	1	105
Disbursement Percentage	0.9	99.1
Weight Value	0.045	5.946
Overall Outcome Rating	Highly Satisfactory (0.045 + 5.946 = 5.911, rounding up to 6)	

Outcome Rating
Highly Satisfactory

6. Risk to Development Outcome

Financial risk: The financial sustainability of the metering system might face risks from tariff and energy-price fluctuations, which could undermine cost recovery and reduce compliance motivation (ICR, paragraph 52). These risks were partially mitigated by efficiency improvements and the provision in the tariff order that permits automatic annual indexation (ICR, paragraph 52).

Institutional capacity risk: UJS might face a potential skills gap, as 38 percent of its engineers approach retirement within five years (ICR, paragraph 52). The risk was partially mitigated by a human resource (HR) plan allocating 64 technical posts and joint training; however, success hinges on sustained budget discipline. Dedicated staff and protected funding for peri-urban areas, backed by government order, might help further reduce the risk.

Climatic risk: Climate variability may pose a risk to water source yields, though no water table decline has been observed across the program's 22 schemes (ICR, paragraph 52). The risk was partially mitigated by installing groundwater level monitors in all tube wells and developing a State Climate Action Plan; however, unpredictable hydro-climatic conditions remained an external threat that could necessitate costly source upgrades.

Other stakeholder ownership risk: Metered billing has improved payment compliance and consumer trust, but any change in approach might risk reversing this progress (ICR, paragraph 52). The risk was partially mitigated by a government order to maintain current systems; nevertheless, gender-balanced HR policies and clear communication around any future billing changes might further mitigate the risk.

7. Assessment of Bank Performance

a. Quality-at-Entry
The Bank team delivered a thorough, results-oriented design that pioneered Performance-Based Contracts (PBCs), Operations and Maintenance (O&M) contracts, and related innovations. The Program was strategically relevant, technically robust, and institutionally well-embedded, with comprehensive Environmental and Social Systems Assessment (ESSA), fiduciary, and technical assessments, and a

candid risk assessment, although mobilization timelines for the Independent Verification Agent (IVA) and PBC contract bidders were underestimated. Fiduciary and safeguard actions were embedded in the Project Action Plan (PAP) from the outset, and poverty and gender dimensions were mainstreamed through disaggregated indicators and a time-use study in the Results Framework. Implementation readiness was mostly adequate, with bid documents completed prior to Board approval, counterpart funding secured in the FY2018/19 state plan, and a High-Level Empowered Committee chaired by the Chief Secretary established to fast-track inter-departmental clearances (ICR, paragraph 33). On the other hand, the appraisal cost estimates, based on rates two years prior to the revised CPWD schedule, introduced an upward cost risk that could have been more conservatively managed at entry. Overall, the operation entered implementation with a clear results chain and strong borrower ownership. Thus, overall, the quality at entry is rated satisfactory with minor shortcomings.

Quality-at-Entry Rating
Satisfactory

b. Quality of supervision
Supervision was proactive, development-focused, and consistently candid, maintaining quarterly missions (totaling 13 implementation support missions from 2018 to 2025) even during the pandemic and processing four restructurings within six weeks of borrower request. Two Task Team Leader (TTL) transitions were managed through structured handovers that preserved momentum, and specialized support, including Chennai-based IT specialists for dashboard redesign and bi-weekly virtual clinics after the Mid-Term Review (MTR), filled critical client capacity gaps. Through the Quality Infrastructure Investment (QII) Trust Fund, the World Bank also mobilized experts for on-the-job training in leak detection and standard operating procedures, strengthening the capacity of Uttarakhand Jal Nigam (UJN) and Uttarakhand Jal Sansthan (UJS) in areas including revenue recognition, write-offs, and maintenance fund utilization. Aide-mémoires systematically identified bottlenecks, including Independent Verification Agent (IVA) delays, Environmental and Social (E&S) issues, and tariff risks, and tracked corrective actions through Implementation Status Reports (ISRs). The IVA, a critical verification mechanism in PforR operations, experienced a one-quarter delay in its first annual cycle due to contract mobilization delays (ICR, paragraph 41). The Bank resolved this and the IVA subsequently completed five annual verification cycles, and data protocols were progressively refined to enhance credibility (ICR, paragraph 14). This was a minor supervision shortcoming that was adequately managed and did not affect the integrity of disbursement decisions. Supervision resources were front-loaded at 42 staff-weeks in the first two years, with the skill mix adjusted as challenges emerged, including additional E&S and procurement specialists in 2020. A key differentiator, noted by borrower interviewees, was the Bank's collaborative approach, that is, co-creating solutions rather than prescribing them. Thus, overall, the quality of supervision is rated satisfactory.

The Bank performance is rated satisfactory, based on satisfactory quality at entry and during supervision.

Quality of Supervision Rating
Satisfactory

Overall Bank Performance Rating
Satisfactory

8. M&E Design, Implementation, & Utilization

a. M&E Design
The ToC was clear and reflected in the Results Framework. The PDO was supported by SMART indicators, most tied directly to DLIs, ensuring measurement accuracy through built-in incentives. A key design innovation was the Total System Improvement (TSI) score, which captured sustainability more holistically than simple coverage metrics. The Program also embedded robust M&E features from the outset, including statistically sound sampling protocols, a Management Information System (MIS) linking Supervisory Control and Data Acquisition sensors to a public dashboard and grievance portal, and fully automated data flows that minimized manipulation risk. Gender-disaggregated indicators and a digital grievance-redress metric were integrated into the MIS from the start.

b. M&E Implementation
The Independent Verification Agency (IVA) completed five cycles with consistently low error rates, within tolerance, and operated efficiently enough to preserve civil-works cash flows even during the COVID-19 pandemic. The only notable drawback was a one-quarter delay in the first verification cycle due to a late contract, which was resolved through re-phasing. The Program introduced ten measurable service delivery parameters tied to operator payments, along with volumetric tariffs and cost recovery mechanisms for the first time, incentivizing both infrastructure delivery and service quality. Independent verification ensured accountability, and social/behavior change campaigns promoted efficient water use, yielding cost and time savings. The 2022 restructuring added a continuity-over-a-year PDO indicator to conserve the original service definition, strengthening attribution to sustained service quality. Later Implementation Status and Results Reports (ISRs) reported IVA-verified counts and noted where MIS tallies exceeded verified values, reflecting transparency on verification status and data limitations during update cycles.

c. M&E Utilization
M&E utilization went well beyond reporting, becoming a genuine management tool. The real-time dashboard informed daily operations, contractor penalties, and staff evaluations, with pressure alarms alone reducing low-pressure complaints by 42 percent between 2020 and 2023. MIS evidence also shaped Bank supervision, with ISR ratings and aide-mémoire action plans consistently drawing on dashboard data. The system enabled GoUK to monitor water losses and energy efficiency for the first time, yielding annual energy cost savings of 11 million Indian rupees (INR) and cumulative NRW-related savings of INR 56 million. It also supported timely project restructuring and drove faster responses to performance gaps.

The strong M&E design enabled adequate implementation and utilization of the M&E system. Hence, the M&E quality is rated high.

M&E Quality Rating
High

9. Other Issues

a. Safeguards

Environmental: Environmental compliance was broadly satisfactory, with early issues resolved promptly and no residual concerns at closing, according to the Implementation Status and Results Reports (ISRs). A 2019 trench-shoring violation by a contractor in Mehuwala triggered an immediate works stoppage and corrective measures, including mandatory method statements, daily photo checklists, quarterly audits, and the hiring of two environmental engineers at the State Program Support Unit (SPSU). From 2020 onward, all contractors complied. A 2023 independent audit confirmed full adherence to spoil-disposal procedures, and water quality sampling met Bureau of Indian Standards (BIS) 10500:2012 standards in 98 percent of 1,664 samples taken between 2021 and 2024.

Social: Social safeguards were managed effectively through regular training and oversight of Project Implementation Units (PIUs) and contractors, according to the ICR (paragraph 45). All land requirements (0.47 hectares in total) were met through voluntary donations, so no involuntary resettlement occurred. The Project Affected Persons (PAP) framework ensured labor protections including insurance; compliance audits in 2022 and 2024 found Personal Protective Equipment (PPE) usage above 95 percent and gender-segregated sanitation at every site, with no instances of child labor or unpaid wages. The Program established a multi-tiered Grievance Redress Mechanism (GRM) with a digital component embedded in the Management Information System (MIS) for recording, tracking, and publicly displaying complaint resolution.

b. Fiduciary Compliance

Financial management: Fiduciary compliance was strong throughout, with the overall risk rating improving from Substantial at approval to Moderate by the final Implementation Status Report (ISR). GoUK's Financial Management System (GPFMS) platform generated 28 on-time Interim Unaudited Financial Reports (IUFRs), and all statutory audits from FY2018–24 received unqualified opinions. The only ineligible expenditure (i.e., US$24,000 incorrectly charged for a vehicle purchase) was reimbursed to the Designated Account in January 2021. The Program Operations Unit (PMU) developed revenue write-off policies to manage early-phase collection risks, and a subsequent government order authorizing the use of scheme revenues for operations and maintenance, with budgetary support for shortfalls, helped ensure long-term sustainability. The Program also strengthened the accounting functions of Uttarakhand Jal Sansthan (UJS) and Uttarakhand Jal Nigam (UJN) through reforms designed to endure beyond closing.

Procurement: Procurement performance improved steadily over the course of implementation. A 2020 post-review identified two non-competitive shopping contracts, prompting the Bank to require a policy mandating electronic Government Procurement (e-GP) for packages above INR 2 million, subsequently codified in the October 2023 Program Operations Manual (POM) revision. All 22 contracts, valued at

US$99.74 million, were awarded through National Competitive Bidding, attracting an average of 5.3 bidders, with no mis-procurement declared and a clean 2024 post-review.

c. Unintended impacts (Positive or Negative)

No unintended impact was reported by the ICR.

d. Other

---

10. Ratings

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

11. Lessons

The ICR (paragraphs 53-56) presented four lessons. Three of them are cited below with rephrasing.

Aligning institutional accountability with service areas can sustain service delivery. Under the Program, by breaking from the traditional model (where Uttarakhand Jal Nigam (UJN) built assets and Uttarakhand Jal Sansthan (UJS) operated them, thus creating accountability gaps), each agency was assigned full responsibility for specific schemes, backed by service-level agreements, defined Key Performance Indicators (KPIs), and annual performance reviews. Monitoring based on Internet of Things (IoT) and Supervisory Control and Data Acquisition (SCADA) reduced coordination delays, while results-based payments tied to verified KPIs aligned financial incentives with service reliability rather than physical completion. GoUK institutionalized this "one agency, one service area" model through executive orders, offering a scalable blueprint for states seeking to transition from construction-driven to service-driven utilities.

M&E can drive behavioral change when designed as a management tool. When designed as a management tool rather than a reporting mechanism, Monitoring and Evaluation (M&E) can drive meaningful behavioral change. The Program's IoT sensors, digital dashboards, and customer scorecards provided real-time visibility into service quality and Non-Revenue Water (NRW), enabling field teams to track their own performance rankings and fostering healthy competition across divisions. Independent Verification Agent (IVA) validation and public disclosure through a state dashboard strengthened both institutional and citizen accountability, resulting in shorter repair times

and more data-driven decision-making. The M&E system is now being replicated, demonstrating that combining real-time monitoring with independent verification and transparency can institutionalize accountability in service delivery.

Sequencing tariff and metering reforms around demonstrated service improvements can strengthen willingness to pay. Rather than imposing tariffs upfront, the Program first installed meters and issued dummy bills to familiarize consumers, then demonstrated reliable service, and only then introduced volumetric tariffs with indexation, as described in Section 4. Communication campaigns reinforced the message by highlighting how reliable supply reduced household coping costs, improving payment compliance and reducing resistance to reform. At the institutional level, ring-fenced scheme-level revenues and performance-based contracts incentivized operators to reduce energy use and Non-Revenue Water (NRW), offering a practical and replicable roadmap for cost recovery that maintains public trust.

12. Assessment Recommended?

No

13. Comments on Quality of ICR

The ICR presents a coherent results chain and consistent ratings across relevance and efficacy. Evidence is credible and transparent, drawing on a sector MIS and Independent Verification Agent (IVA) verification, with clear distinction between MIS and IVA-verified counts and gender-disaggregated reporting. The ICR is candid about COVID-related delays and data limitations, and addresses cross-cutting themes (gender, inclusion) and customer satisfaction. The Program's task team provided supplemental information for clarification in response to IEG's questions. Overall, the ICR’s quality is rated substantial.

a. Quality of ICR Rating

Substantial