



1. Project Data

Project ID P118197	Project Name ALAT-KARAKUL WS	
Country Uzbekistan	Practice Area(Lead) Water	
L/C/TF Number(s) IDA-51890	Closing Date (Original) 31-Dec-2017	Total Project Cost (USD) 73,803,931.89
Bank Approval Date 13-Dec-2012	Closing Date (Actual) 30-Nov-2021	
	IBRD/IDA (USD)	Grants (USD)
Original Commitment	82,000,000.00	0.00
Revised Commitment	81,651,480.75	0.00
Actual	73,803,931.89	0.00

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2. Project Objectives and Components

a. Objectives

The Project Development Objective (PDO) of the Alat and Karakul Water Supply Project (AKWSP) as articulated in the Financing Agreement (FA, page 6) was identical to the one in the Project Appraisal Document (PAD, paragraph 17) and aimed to:

"improve the coverage, quality, and efficiency of public water supply service in the districts of Alat and Karakul in the Bukhara region."



Parsing the PDO. The PDO will be parsed based on the following three objectives under the same objective as follows:

1. To improve the coverage of public water supply service in the districts of Alat and Karakul in the Bukhara region.
2. To improve the quality of public water supply service in the districts of Alat and Karakul in the Bukhara region.
3. To improve the efficiency of public water supply service in the districts of Alat and Karakul in the Bukhara region.

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

No

c. Will a split evaluation be undertaken?

No

d. Components

The PDO was supported by the following four components:

1. Improvement of Water Supply Infrastructure (appraisal cost: US\$101.47 million of which IDA would finance US\$76.85 million, actual cost: US\$81.83 million of which IDA financed US\$72.18 million). This component included the following three sub-components:

1.1. Engineering-design and operational technical assistance services to support the Project Implementing Entity and the PCU Bukhara branch. The project would support implementation in the following tasks: (a) review of the available feasibility study and preparation of optimized preliminary designs; (b) preparation of detailed designs and bidding documents, construction supervision, and reporting; and (c) improvement utility operation, maintenance and management, all through the provision of goods and consultants' services.

1.2. Rehabilitation and expansion of water production and bulk transmission systems. This would be achieved through the carrying out of works and the provision of goods and consultants' services to the following: (a) the construction of a new expanded water treatment plant in Dvoynik, including the rehabilitation of the existing intake and pre-sedimentation ponds; (b) the renewal and expansion of transmission systems including the 24 km trunk line from Dvoynik to Alat-town; (c) the rehabilitation of the 13 km trunk line from Alattown to Karakul-town; and (d) the rehabilitation and expansion of the transmission pumping stations and related water tanks to upgrade the production and transmission capacity to about 49,000 m³ per day.

1.3. Rehabilitation and expansion of urban and rural water networks. This would be achieved through the carrying out of works and the provision of goods and consultants' services to the following: (a) the rehabilitation and expansion of existing water distribution systems in Alat-town and Karakul-town, including treated water tanks, treated water pumping stations, disinfection systems, distribution networks, installation of meters on about 7,200 existing household connections and installation of about 1,600 new household



connections and meters; and (b) construction of new rural water transmission and distribution systems including pumping, storage, networks and metered connections in about 120 of the surrounding villages based on the optimized feasibility study and preliminary design cost estimates.

2. Institutional Strengthening and Capacity Building (appraisal cost: US\$3.23 million, of which IDA would finance US\$2.41 million, actual cost: US\$0.95 million of which IDA financed US\$0.67 million).

This component would address Bukhara Regional Vodokanal (BVK) capacity needs to ensure sustainable management, operations and maintenance of water supply service in the Alat and Karakul service areas, following the merger of Alat District Vodokanal (AVK) and Karakul District Vodokanal (KVK) into a new operating division of BVK. This component included the following four sub-components:

2.1. Institutional strengthening and capacity building. This would be achieved through carrying out of institutional assessments of the capacity, organization and training needs of the Project Implementing Entity to improve its management and operational performance for a sustainable water supply service in the Alat and Karakul districts.

2.2. Strengthening the capacity of utility management and operations staff. This would be achieved through the provision of local and international training on management and technical operations, through the provision of consultants' services and training.

2.3. Strengthening the management and operational capacity of Project Implementing Entity. This would be achieved through the provision of goods, consultants' services and training in the following areas: (a) the establishment of modern procedures and systems, including hardware and software, for billing, collection, customer service, internal auditing, accounting and record keeping; (b) the provision of operations and maintenance equipment and machinery; and (c) the provision of laboratory equipment and supplies.

2.4. Developing a communications strategy. This would include carrying out of public consultations and awareness campaign, consumer satisfaction and gender surveys, through the provision of consultants' services.

3. Studies for Future Investments (appraisal cost: US\$0.38 million of which IDA would finance US\$0.38 million, actual cost: US\$0.20 million of which IDA financed US\$0.20 million). This would include the preparation of a feasibility study of sewerage and on-site sanitation investments needs in the towns and districts of Alat and Karakul, to accompany the increased provision of water supply services, through the provision of consultants' services.

4. Project Management (appraisal cost: US\$2.36 million of which IDA would finance US\$2.36 million, actual cost: US\$0.75 million of which IDA financed US\$0.75 million). This component would support strengthening the Project Coordination Unit (PCU) and its Bukhara branch's Project management, monitoring and coordination capacity, through the provision of goods, consultants' services, including Project financial and technical audits, and Training, and financing of Incremental Operating Costs.

Revised Components. The project components were not revised during implementation.



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

Project Cost. The total cost of the Project was estimated at US\$113.5 million before taxes (US\$137.7 million including taxes). This amount was revised downwards to US\$91.58 million. The actual cost according to the ICR Data Sheet (page 2) was US\$83.73 million.

Financing. The project was financed through an IDA Specific Investment Loan (SIL) of US\$82.00 million. This amount was slightly revised downwards to US\$81.65 million. The actual amount disbursed was US\$73.80 million or 90% of the estimated amount (ICR Data Sheet, page 2). According to the ICR (paragraph 47), the project benefited from cost savings from competitive bidding and slower than expected price development. As a result of this, the project was implemented with lower costs than expected at project entry (ICR, paragraph 47).

Borrower Contribution. The borrower was expected to contribute US\$55.70 million of counterpart funds, of which US\$ 31.5 million in co-financing of project costs before taxes, and about US\$24.5 million in estimated taxes. The actual amount according to the ICR Data Sheet (page 2) was US\$9.92 million or about 18% of the estimated amount at appraisal. The ICR (paragraph 22) noted that the project experienced co-financing delays and issues. However, the ICR did not explicitly explain/discuss the reason(s) for the significantly lower than expected co-financing.

Dates. The project was approved on December 13, 2012 and became effective fourteen months later on February 13, 2014. The Mid-term Review (MTR) was conducted in November, 2015, which was about one year and nine months after effectiveness. The PAD (paragraph 44) stated that a mid-term review of the progress towards achievement of the project objectives would be undertaken in early 2015. This Review finds that the MTR was conducted early relative to other Bank-financed operations, and should have been conducted at least after three years into implementation. The project was expected to close on December 31, 2017. The closing date was extended for about four years (47 months) to close on November 30, 2021. The extension of the closing date was to accommodate various challenges that faced the project including: a prolonged effectiveness period and start-up delays; delays due to sector reforms, institutional changes, and co-financing delays; procurement and contract management issues; and delays associated with the COVID-19 restrictions (ICR, paragraphs 21, 22, 23 and 24).

The project was restructured four times, all Level 2 restructuring, as follows:

1. On November 23, 2017, when the amount disbursed was US\$24.13 million, in order to extend the loan closing date to June 30, 2019 and reallocate funds between disbursement categories.
2. On November 7, 2018, when the amount disbursed was US\$32.56 million, in order to extend the loan closing date to June 30, 2020, reallocate funds between disbursement categories, change the Results Framework (RF), and change the implementation schedule.
3. On May 29, 2020, when the amount disbursed was US\$56.87 million, in order to extend the loan closing date to December 31, 2020 and revise the RF.
4. On December 18, 2020, when the amount disbursed was US\$64.17 million, in order to extend the loan closing date November 30, 2021 and revise the RF.

Rationale for Changes and Implication on the Original Theory of Change (ToC). The above-mentioned changes were justified given the various challenges that the project faced and resulted in implementation



delays as mentioned above. The changes did not involve the revision of the overall structure or underlying objectives of the project and hence did not have an implication on the ToC (ICR, paragraph 20).

3. Relevance of Objectives

Rationale

Context at Appraisal. In Uzbekistan, the water supply and sanitation (WSS) infrastructure suffered from the limited capacity of sector institutions to maintain, renew and expand such assets. In turn, this had resulted in the degradation of access to WSS services (PAD, paragraph 5). Specifically, Alat and Karakul districts faced one of the most precarious water supply situations in the country. Distribution networks covered 23% of Alat district's population and only about 15% of Karakul district's population. Piped water supply was of extreme low quality, with turbid unfiltered water reaching customers discontinuously in the two towns, and a few periurban villages in their immediate vicinity (PAD, paragraph 13). The project aimed to ensure that safe and reliable water service would be provided to urban and rural populations in Alat and Karakul, contributing to human development and social inclusion through improved health and productivity benefits, as well direct creation of local jobs (PAD, paragraph 16).

Previous Bank Experience. The Bank continues to be one the main donors in the sector through financing rehabilitation projects, such as the Water Supply, Sanitation and Health project (1997-2008) for urban and rural water supply in the Karakalpakstan and Khorezm regions, and the Bukhara and Samarkand, the Water Supply project (BSWSP, 2002-2010) for urban water supply. Both projects substantially achieved their infrastructure and service objectives, albeit with delays and quality issues, and uneven institutional outcomes. The Bank also financed the Bukhara and Samarkand Sewerage project (BSSP, 2009), and the Syrdarya Water Supply project (SWSP, 2011), also focused on infrastructure rehabilitations. AKWSP was the fifth loan in Uzbekistan's WSS sector, and the first to combine rehabilitations with substantial development of new coverage.

Consistency with Bank Strategies. At appraisal, the PDO was in line with the Bank's Country Partnership Strategy (CPS, 2012-2015) objective of supporting infrastructure efficiency, economic competitiveness, diversification and social inclusion elements of GOU's medium term development strategy.

At completion, the PDO remained in line with the current Country Partnership Framework (CPF, FY2016–2020). The CPF identified public service delivery under focus area (c), the core action of increasing access and improving the quality of water supply and sanitation services which was highly relevant to the AKWSP. The PDO's was also in line with the CPF's adjustments made in the Performance and Learning Review for FY16–20. The project directly contributed to the Focus Area 2: Reform of selected state institutions and citizen engagement and its Objective 2.3: Improved access to and quality of water supply and sanitation services by combining water infrastructure interventions with utility performance improvements. The project also contributed to Objective 2.4: Strengthened participation in oversight of public service delivery through public consultations and awareness campaigns. Further, the project also contributed to the cross-cutting areas of (a) greater public access and use of data through individual metering, providing access to data on individual consumption per household, and thus contributing to more



accurate and transparent billing; (b) improved gender equality' by targeting women as primary project beneficiaries; and (c) climate change' by improving the sustainable management of water supply services and reducing the vulnerability of water supply infrastructure to climate extremes.

Consistency with Government Strategies. The PDO was in line with Uzbekistan's Development Strategy for 2017–2021. The project directly contributed to Priority Area 4: Development of the Social Sphere. Specifically, Objective 4.3: which highlighted the need for implementing targeted programs to ensure improved living conditions of the population through the improvement of utility services, provision of clean drinking water in rural areas, and introduction of modern cost-effective and efficient technologies. The PDO was also in line with the GoU's Program for the Comprehensive Development and Modernization of Water Supply and Sewerage Systems (2017–2021) which prioritized integrated measures to improve service delivery through continued reconstruction and rehabilitation of infrastructure and adoption of modern technologies, information systems, and automated billing for water systems. Finally, the PDO was also in line with Development Strategy of the New Uzbekistan (2022–2026) which aimed to increase the coverage rate of the population of Uzbekistan with access to clean drinking water to 87% and renew the sewage systems in 32 major cities and 155 regional centers (ICR, paragraph 26).

Level of PDO. The PDO formulation was pitched at an adequate level to address the development problem.

Summary of Relevance of Objectives Assessment. The PDO statement was clear and focused. The PDO was aligned with the current Bank CPF and the GoU priorities for the water and sanitation sector. Therefore, relevance of objectives is rated High.

Rating

High

4. Achievement of Objectives (Efficacy)

OBJECTIVE 1

Objective

To improve the coverage of public water supply service in the districts of Alat and Karakul in the Bukhara region.

Rationale

Theory of Change (ToC). To achieve the stated objective, the project would finance priority investments in the urban and rural water supply sector in Alat and Karakul districts. This included the rehabilitation and expansion of water production and bulk transmission systems. This was expected to reduce breakages of both water transmission mains and distribution networks. The project would also finance the rehabilitation and expansion of urban and rural water networks. This was expected to result in outputs such as the rehabilitation of piped household water connections and the installation of water meters. These activities combined were expected to improve coverage of public water supply service in the districts of Alat and Karakul in the



Bukhara region and increase the number of beneficiaries. Anticipated higher level outcomes included a reduction in water-borne diseases and improved living conditions in Alat and Karakul districts.

The achievement of the PDO was underpinned by three critical assumptions: (i) Alat and Karakul vodokanal would be merged and integrated into the Bukhara vodokanal; (ii) Construction works would be completed about 1.5 years before project closure, which would allow enough time to measure improved reliability of water supply services through operating water meters; and (iii) increased households' willingness to pay for improved service delivery.

The activities in the ToC were directly connected to the stated objective in a plausible causal chain. The stated assumptions were logical and realistic.

Outputs

The following outputs were reported in the ICR (Annex 1) unless referenced otherwise.

- 232,760 direct project beneficiaries (baseline:40,456, target: 232,000, target exceeded) with 50.70% female beneficiaries (baseline: 50.68%, target: 50.70%, target achieved).
- 42,152 new piped household water connections that resulted from the project intervention (target: 35,400, target exceeded).
- 7,400 piped household water connections benefited from rehabilitation works undertaken by the project (target: 7,400, target achieved).
- 49,552 connections had operating water meters (target:42,900, target exceeded).
- 0.10 breakages per km of water transmission mains (baseline: 1.0, target: 0.2, target exceeded).
- 0.29 breakages per km of water distribution networks (baseline: 1.20, target: 0.4, target exceeded).
- The project improved water transmission main and distribution network through financing the construction of 182 km of transmission main (48 km primary trunk main and 134 km secondary trunk main) and 1,342 km of distribution network (ICR, paragraph 30).

Outcome

- Direct project beneficiaries with access to improved water sources reached 232,760 people in Alat and Karakul districts, slightly exceeding the target of 232,000 people. By project completion, the coverage rate increased from 19 to 87% in Alat and Karakul districts. Overall, 130 of 165 rural villages were connected for the first time to a water supply system (ICR, paragraph 29).
- The project improved water transmission main and distribution network through financing the construction of 182 km of transmission main (48 km primary trunk main and 134 km secondary trunk main) and 1,342 km of distribution network (ICR, paragraph 30). The system renewal reduced pipe bursts from 1.0 to 0.1 pipe bursts per km of transmission main (exceeding the target of 0.2) and from 1.2 to 0.29 pipe bursts per km of distribution network (exceeding the target of 0.4). The reduction in pipe bursts reduced physical water losses and service interruptions, and reduced the potential of water contamination (ICR, paragraph 30).
- As a result of the project support, a total of 42,151 households were provided with new household water connections (overachieving the target of 35,400). Also, 7,400 households benefitted from rehabilitated household connections (fully achieving the target of 7,400). In total, 49,552 households



were provided with operating water meters (overachieving the target of 42,900). According to the ICR (paragraph 31) the installation of water meters allowed reliable recording of water usage data and consequently enabled a more accurate and transparent billing process, which was expected to reduce the amount of unbilled water and increases the BST's revenue.

Summary of Efficacy Assessment. The project overachieved its targets related to improved coverage, in terms of direct project beneficiaries and new households provided with new water connections. In addition, the project fully achieved or overachieved all related intermediate results indicators (IRIs) as reported by the ICR (Table 2). Therefore, the efficacy with which the PDO was achieved is rated High.

Rating
High

OBJECTIVE 2

Objective

To improve the quality of public water supply service in the districts of Alat and Karakul in the Bukhara region.

Rationale

Theory of Change (ToC). In addition to the activities geared to support the first objective, the project would support strengthening the capacity of water utility management, ensure that water quality at the source met international standards, and develop the capacity of water utilities to ensure that water is available 24 hours for users. These activities combined would improve the quality of public water supply services. Anticipated higher level outcomes included a reduction in water-borne diseases and improved living conditions in Alat and Karakul districts.

The achievement of the PDO was underpinned by three critical assumptions: (i) Alat and Karakul vodokanal would be merged and integrated into the Bukhara vodokanal; (ii) Construction works would be completed about 1.5 years before project closure, which would allow enough time to measure improved reliability of water supply services through operating water meters; and (iii) increased households' willingness to pay for improved service delivery.

The activities in the ToC were directly connected to the stated objective (improving quality) in a plausible causal chain. The stated assumptions were logical and realistic.

Outputs

The following outputs were reported in the ICR (Annex 1) unless referenced otherwise.

- By project completion on average 98.5% (98% in Alat and 99% in Karakul) of regulatory water samples taken at the source met potable quality standards (baseline: 53%, target: 98%, target exceeded).[VD1] [HW2]
- Water supply service became available 24 hours per day (baseline: 4 hours, target: 20 hours, target exceeded).



- 7.5% of households for whom water was a priority problem (baseline: 85%, target: 20%, target exceeded).

Outcomes

- The project improved the quality of public water supply services through supporting the construction of the Dvoynik WTP combined with the rehabilitation and expansion of the Dvoynik water intake structure. The Dvoynik WTP was commissioned in March 2022 with a treatment capacity of 50,000 m³ per day and the capacity to serve up to 0.5 million people in the future (ICR, paragraph 33). The Dvoynik WTP featured a conventional surface water treatment process including the application of primary chlorination. Secondary chlorination was done at the Alat water distribution center (WDC) and water was further distributed to three WDCs, all of which were either rehabilitated or constructed under the project. Water from the WDCs was distributed to Alat and Karakul towns as well as to a total of 37 rural settlement supply areas (SSAs). Water towers (37 in total) were constructed in each rural SSA to support the envisaged 24/7 water supply (ICR, paragraph 33).
- The project financed the construction of three water laboratories, including one laboratory building at the Dvoynik WTP and two laboratories in the administrative buildings of Alat West and Karakul East WDCs. To ensure that water samples met potable quality standards, water quality was monitored through daily samples by the BST at the Dvoynik WTP and Alat West and Karakul East WDCs. According to the ICR (paragraph 34) the sampling was in accordance with an annually agreed schedule (reflecting the frequency of sampling and determined indicators) of the Sanitary Epidemiological Agency (SEA) under the Ministry of Health. The ICR (paragraph 34) reported that by project completion 98.5% of water samples taken at the source met potable quality standards compared to 53% prior to the project, slightly higher than the target of 98%.
- The project improved the reliability of water supply service. According to the ICR (paragraph 35) at the onset of the project, the reliability of water supply for connected households was about four hours per day. This increased to 24 hours per day by project completion, exceeding the target of 20 hours per day. This improvement in reliability was achieved through the reconstruction of the water supply system (ICR, paragraph 35).
- Improved water reliability was further evidenced by the reduction in the number of households for whom water was a priority problem. By project completion, 7.5% of households identified poor water supply (in terms of quality and reliability) as their number one priority among household concerns compared to 85% at the onset of the project, and overachieving the target of 20%. The improved quality of public water supply services was also evidenced by a decrease in the number of customer complaints from 367 complaints during January–March (Q1) 2021 (before commissioning of the WTP), to 111 in January–March (Q1) 2022 (after commissioning). The ICR (paragraph 36) explained that most complaints after commissioning the WTP were made by households that were not connected to the new network, and the remainder were by connected households that reported failures in the water meters.

Summary of Efficacy Assessment. The project overachieved its targets related to the above-mentioned objective (improved quality) in terms of the percentage of water samples meeting potable quality standards, and improved reliability of water supply. In addition, the project fully achieved or overachieved all related intermediate results indicators (IRIs) as reported by the ICR (Table 2). Therefore, the efficacy with which the PDO was achieved is rated High.



Rating

High

OBJECTIVE 3

Objective

To improve the efficiency of public water supply service in the districts of Alat and Karakul in the Bukhara region.

Rationale

Theory of Change (ToC). To achieve the stated objective, the project would strengthen the capacity of the utility management and operations staff, strengthen management and operation capacity of the project implementing entity (PIE), support the BVK participation in the International Benchmarking Networking (IBNET) for water and sanitation utilities, and improve communication and public awareness. These activities would improve performance of public utilities and improve the cash working ratio and reduce non-revenue water (NRW). These activities combined were expected to improve the efficiency of public water supply services in the districts of Alat and Karakul in the Bukhara region and improve the bill collection ratio. Anticipated higher level outcomes included a reduction in water-borne diseases and improved living conditions in Alat and Karakul districts.

The achievement of the PDO was underpinned by three critical assumptions: (i) Alat and Karakul vodokanal would be merged and integrated into the Bukhara vodokanal; (ii) Construction works would be completed about 1.5 years before project closure, which would allow enough time to measure improved reliability of water supply services through operating water meters; and (iii) increased households' willingness to pay for improved service delivery.

The activities in the ToC were directly connected to the stated objective (improving efficiency) in a plausible causal chain. The stated assumptions were logical and realistic.

Outputs

The following outputs were reported in the ICR (Annex 1) unless referenced otherwise.

- By project completion the bill collection ratio reached 83% (baseline:46%, target: 80%, target exceeded).
- An average of 0.59 BVK Cash Working Ratio was reached (baseline: 1.45, target: 0.90, target exceeded). Cash working ratio in Alat was 0.31 and 0.87 in Karakul (baselines were: 1.32 and 1.57 for Alat and Karakul districts, respectively).
- The project supported one water utility (target achieved).
- 283 BVK staff recruited and trained for Alat and Karakul water supply service needs (formally revised target: 283, target achieved).
- Non revenue water (NRW) reached 21% (baseline: 51%, target: 25%, target exceeded).
- BVK participation in IBNET for water and sanitation utilities was not achieved. According to the ICR (paragraph 43) "IBNET was not implemented as the BST already had several MISs, including billing and accounting information systems, that filed the same information and performance indicators as IBNET."



- Six BST and two PIU staff participated in two international study tours to Berlin, Germany, which included a visit Berlin's trade fair for water and wastewater technology suppliers, Berlin's main WTP, mechanical equipment suppliers, and educational institutions (ICR, paragraph 39).

Outcomes

- The project supported the water utilities through facilitating the reorganization and merger of the AVK and KVK into the regional BST, fully achieving its target at completion. This merger was to overcome the shortfall of financial and institutional capacity to implement and operate the new water supply facilities in Alat and Karakul (ICR, paragraph 38). All accounting systems, including customers, wages, fixed assets, were transferred to the BST. The ICR (paragraph 38) noted that the GoU adopted an overall country-level strategy which resulted in the establishment of 14 regional Unitary Enterprise Suvokovas (SUE) and two interregional water utilities into which all district vodokanals were integrated. Following this resolution, the new charter of the BST was approved on January 16, 2016, and AVK and KVK were integrated into the BST.
- The project supported capacity building and recruitment of the BST staff to efficiently plan, implement, operate, and maintain the new water supply system. After the merger in 2016, the number of staff to be recruited for O&M of new/reconstructed facilities was 152 (including 118 operations and support staff) in Alat district and 131 (84 operations and support staff) in Karakul district. At completion, 283 BST staff were recruited and trained, fully achieving the target of 283. According to the ICR (paragraph 39) the BST staff received 11 formal training sessions by a local consulting firm and international and local experts. Trainings focused on asset management, accounting, O&M, water disinfection and water quality monitoring, and human resources management, among others (ICR, paragraph 39). [VD1]
- The improved efficiency was evidenced by: 1. the improved billing collection ratio (improved bill collection ratio was defined as the ratio of collected versus issued bills). By project completion, the bill collection rate of the BST's Alat and Karakul division increased from 46.0 to 83.5%, overachieving the target of 80%. In Alat, the bill collection ratio increased from 46 to 84%, and in Karakul the bill collection ratio increased from 59 to 82% over the same period. While the water tariff in Bukhara was increased by more than 100% in January 2021, the achievement of an improved bill collection ratio indicated a high level of willingness of the customers to pay for improved services (ICR, paragraph 40). 2. Improved bill collection ratio resulted in improved BST cash working ratio (cash working ratio was defined as the ratio of cash operation expenses / cash operating revenues). At project entry, the cash working ratio was 1.45, indicating that the BVK had problems recovering the expenses from fee collection. At project completion, the ratio was 0.67, overachieving the target of 0.90 by 153%. The cash working ratio decreased from 1.32 to 0.31 for Alat and from 1.57 to 0.87 in Karakul (overachieving the common target of 0.90). 3. Decrease in NRW (defined as annual volume of water distributed for which bills have been collected (m3) / annual volume of water (m3) produced by the WTP). [VD2] [HW3] NRW decreased from 51% at project entry to 21% at project completion, overachieving the target of 25%. This achievement can be attributed to the construction of the new networks, replacement/rehabilitation of the old distribution network, and capacity building of the service provider (ICR, paragraph 42).

Summary of Efficacy Assessment. The project overachieved its targets related to the above-mentioned outcomes objective (coverage, quality, and improved efficiency) in terms of direct project beneficiaries, percentage of water samples meeting potable quality standards, improved reliability of water supply and improved bill collection ratio, improved cash working ratio and reduced NRW. In addition, the



project fully achieved or overachieved all related intermediate results indicators (IRIs) as reported by the ICR (Table 2). Therefore, the efficacy with which the PDO was achieved is rated High.

Rating
High

OVERALL EFFICACY

Rationale

The project succeeded in improving the coverage, quality, and efficiency of public water supply service in the districts of Alat and Karakul in the Bukhara region. It overachieved its targets in terms of direct project beneficiaries, percentage of water samples meeting potable quality standards, improved reliability of water supply and improved bill collection ratio. In addition, the project fully achieved or overachieved all related intermediate results indicators (IRIs) as reported by the ICR Table 2. Therefore, the overall efficacy with which the PDO was achieved is rated High.

Overall Efficacy Rating

High

5. Efficiency

Economic and Financial Analysis

ex ante

- The economic and financial analysis (EFA) at appraisal did not include an estimation of an economic or financial rate of return for the project.
- The economic analysis at appraisal featured a least cost approach for the justification of this project. The PAD attributed this to low tariffs, poor service and scarce reliable data on produced and distributed volumes, all of which made it difficult to undertake a solid cost benefit analysis of the project (PAD, paragraph 57).
- The cost of the project was relatively high on a per capita basis, at about US\$445/person, as compared to an already high US\$268/person for the Syrdarya Water Supply Project (SWSP). Nevertheless, unlike SWSP, the need for new investments in expansion and for more pumping is higher in Alat and Karakul, which explains the higher per capita cost.
- Financial analysis was conducted (i) to identify the most appropriate project financing and debt allocation/ repayment strategy taking into account that full cost recovery from consumer tariffs is only at



its early stages; (ii) to estimate cost recovery tariff levels and tariff increases and/or potential subsidies required to ensure financial sustainability of the water supply operations; and (iii) to demonstrate that any required tariff increases would be affordable for low-income households (PAD, Annex 8).

ex post

- The economic internal rate of return (EIRR) for the project at completion was estimated at 18% with an ENPV (at 8% social discount rate) of UZS 794 billion, which according to the ICR (Annex 4, paragraph 21) was comparable to the expected returns within the water sector (with median economic rates of return between 15 and 20%).
- At project completion, a cost-benefit analysis was introduced to investigate the impact from project changes to the economic value of the project. Benefits from savings related to residents' time spent, cost of treatment, purchase of tanker water, and health-related benefits were introduced in the analysis. The benefits included were considered a conservative estimate of the total benefits (ICR, paragraph 46).
- Financial analysis of the BST. The financial development of the BST improved due to the significant tariff revision being effective from 2021. This was backed by a positive development in NRW, which is a result of structured efforts to increase fee collection efficiency in Bukhara. As a result, the BST was likely to present positive earnings before financial costs and tax, which was the first time over the last four years. With this development, the BST achieved the financial target set for the cash working ratio of 90% (ICR, Annex 4, paragraph 17).
- Sensitivity Analysis. The robustness of the economic results was tested for impact from a decrease in benefit generation by reduced population growth and higher costs of O&M. Reduction in the population growth rate by 50% reduced the ENPV from UZS 794 billion to UZS 717 billion, and an increase in costs of O&M by 50% reduced the ENPV to UZS 748 billion. The combined case of decrease in benefits and costs resulted in an ENPV of UZS 672 and an EIRR of 17%.
- Other benefits. The project would result in an annual Green House Gas (GHG) emission reduction of around 63,000 tons of CO₂-eq which was estimated from elimination of water boiling at 8 liters per capita per day for the project beneficiary population (ICR, Annex4, paragraph 13).
- Implementation efficiency. The project experienced significant delays related to: start-up delays, co-financing delays, procurement issues, and COVID-19 disruptions. While the original closing date was planned for December 2017 after five years of implementation, the project closed in November 2021 with a four-year delay. The ICR (paragraph 81) identified procurement issues as the "the central cause of delays, affecting the performance of the AKWSP and the other ongoing WSS projects in the portfolio."

Summary of Efficiency Assessment. While the project experienced a four year delay, implementation was completed at a lower cost than anticipated at appraisal. The project also managed to connect 7,000 additional individual households, which "was partly made possible by cost savings from competitive bidding and price development (ICR, paragraph 47)." These additional households added positive economic value to the project and partially reduced the negative impact from the project delays. Finally, with an ex post economic internal rate of return (EIRR) estimated at 18%, and when global co-benefits of greenhouse gas (GHG) reduction from energy savings were included the EIRR was 19%, the project EIRR compares favorably to the median EIRR of WSS projects as noted above. 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		0	0 <input type="checkbox"/> Not Applicable
ICR Estimate	✓	19.00	100.00 <input 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. The project succeeded in improving the coverage, quality, and efficiency of public water supply service in the districts of Alat and Karakul in the Bukhara region. It overachieved its targets in terms of direct project beneficiaries, percentage of water samples meeting potable quality standards, improved reliability of water supply and improved bill collection ratio. Efficiency was rated Substantial. The project was completed at a lower cost than anticipated at appraisal, and the ex post economic internal rate of return (EIRR) was estimated at 18%, which compared favorably to the median EIRR of similar WSS projects.

Based on a High rating for both Relevance of Objectives and Overall Efficacy and a Substantial rating for Efficiency, the outcome of the project is rated Satisfactory.

a. Outcome Rating

Satisfactory

7. Risk to Development Outcome

The ICR discussed the following two risks that could potentially impact the development outcome of the project:

1. Technical risk related to the infrastructure works, quality of works, and the technology used. These aspects were assessed during the last implementation support mission, and deemed to be adequate and operated by trained staff (ICR, paragraph 85). However, the transmission line suffered from a technical design flaw related to the pipe diameter, where increasing the pipe diameter from 700 to 800mm would have resulted in 50% pump energy savings. According to the ICR (paragraph 85) while this error cannot be adjusted, designing the transmission line and pumping station for future projects need to be done simultaneously to optimize operating and investment costs.

2. Institutional risk related to the capacity of the Bukhara Regional State Unitary Enterprise's (BST) in terms of operational and financial performance. While the capacity of the BST improved, there are still



gaps in capacity and utilities still struggle to attract and retain skilled employees (ICR, paragraph 86). The BST and the Bukhara region are expected to receive support through the Asian Infrastructure Investment Bank-funded 'Water Supply and Sanitation Project for Bukhara Region' (approved on April 3, 2020), which will continue capacity building for the BST, and finance the scale-up of a smart metering program and the installation of a Supervisory Control and Data Acquisition (SCADA) system (ICR, paragraph 86). Also, the BST and the sector more broadly will also benefit from the national-level interventions under the Water Services and Institutional Support (WASIS). These interventions include: a national water metering program and a sector monitoring and benchmarking system; medium-term planning and tariff setting procedures; an energy efficiency financing facility; and sector professional development and capacity-building activities for the Ministry of Housing and Communal Services (ICR, paragraph 86).

8. Assessment of Bank Performance

a. Quality-at-Entry

- **Strategic Relevance and Approach.** AKWSP was the fifth Bank-financed operation in Uzbekistan's WSS sector, and the first to combine rehabilitations with substantial development of new coverage. The PDO focused mainly on improving coverage and quality and used utility efficiency and consolidation as entry points for a more ambitious reform agenda (ICR, paragraph 55). The PDO was in line with the Government's priorities for the water sector and in line with the Bank's strategies for the country (see section 3 for more details).
- **Technical Aspects.** The project design sought to establish financial and operational sustainability of investments and services implemented by promoting institutional development and improved water supply service levels. However, the project's preparation experienced delays and setbacks due to suboptimal scoping and incomplete feasibility study.
- **Implementation Arrangements.** Implementation benefitted from existing implementation arrangements and procedures established under previously implemented Bank projects. However, the technical designs of the infrastructure had major deficiencies and the feasibility study was incomplete at effectiveness. However, procurement and fiduciary decisions were kept centralized which limited the BST's autonomy as active decision-maker (ICR, paragraph 57).
- **Fiduciary Aspects.** However, procurement and fiduciary decisions were kept centralized which limited the Bukhara Regional State Unitary Enterprise's (BST)'s autonomy as active decision-maker (ICR, paragraph 57).
- **Risk Assessment.** Three main risks areas were identified at appraisal related to stakeholder, implementing agency and project-related risks. The project had an overall risk rating of substantial, and governance and capacity were both areas of high and substantial risk, respectively. According to the ICR (paragraph 58) "mitigation measures were effectively used throughout implementation." These included: trainings on fiduciary aspects to the BST and Project Coordination Unit (PCU) and regular monitoring visits by the project team and rigorous review systems. However, implementation suffered from procurement-related delays despite the mitigation measures. Also, weakness in human resource capacity impacted the project performance and contributed to implementation delays (ICR, paragraph 65).
- **M&E Arrangements.** M&E design was adequate and the Results Framework (RF) included relevant indicators to track progress toward achievement of the objectives and test the links in the



ToC. However, baseline data and some target values on operational and financial efficiency were estimates and could only be realistically set (ICR, paragraph 72).

Summary of Quality-at-Entry (QAE) Assessment. Despite that the project was the fifth Bank-financed project in the water sector, procurement arrangements continued to be problematic. At effectiveness, the technical designs of the infrastructure had major deficiencies and the feasibility study was incomplete. Also, BST could have benefited from the provision of additional technical expertise to mitigate capacity weaknesses. Overall, QAE suffered from significant significant shortcomings that contributed to implementation delays. Therefore, QAE is rated Moderately Unsatisfactory.

Quality-at-Entry Rating
Moderately Unsatisfactory

b. Quality of supervision

The project was implemented under a challenging institutional environment and faced COVID-19 related delay, among other challenges. The project experienced several changes in sector legislation and regulation, and procurement authorization (ICR, paragraph 62). The Bank conducted 18 implementation support missions over the course of the operation (ICR, paragraph 83). The project implementation benefitted from having four of the five Task Team Leaders (TTLs) based in the region. According to the ICR (paragraph 83), this allowed close support for implementation activities and enabled the project's progress, particularly during the last two years of implementation. The Bank team raised implementation issues with senior government officials through portfolio meetings as well as high-level visits of the Bank's senior management.

The Bank team were proactive in restructuring the project to allow enough time to complete activities and achieve the PDO. The ICR (paragraph 83) highlighted that the fourth restructuring was critical to allow for the full completion of works. The ICR (paragraph 83) also noted that the extended project implementation period facilitated a sector dialogue with the government and supported the reform agenda through analytical work. This also resulted in the preparation of a new programmatic engagement through the Water Services and Institutional Support (WASIS) project, which has national reform interventions at its core

However, the team could have used the restructuring to better align the RF indicators with the institutional changes and drop some of the output indicators that were irrelevant to the client.

Summary of the Quality of Supervision Assessment. The Bank team were proactive in restructuring the project and brought critical expertise to enable the successful completion of the project, particularly in the last two years. Despite significant delays, the Bank team successfully guided the project to achieve the PDO. Therefore, Quality of Supervision is rated Satisfactory.

Overall Bank Performance is rated Moderately Satisfactory.



Quality of Supervision Rating

Satisfactory

Overall Bank Performance Rating

Moderately Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design

- The PAD did not include a Theory of Change (ToC) or results chain. Nevertheless, the ICR included an ex-post ToC that was constructed based on the PDO, the project activities and the results indicators as reported in the PAD. Overall, the ToC in the ICR reflected the relation between the project inputs, outputs, outcomes and long-term outcomes.
- The PDO was assessed through four PDO outcome indicators: 1. Direct project beneficiaries, which reflected coverage; 2. Regulatory water samples meeting potable quality standards and 3. Reliability of water supply service, where indicators 2 and 3 measured improved quality, and 4. Improved bill collection ratio measured improved efficiency. The four outcome indicators were relevant and directly linked to the three elements of the PDO (coverage, quality and efficiency). The indicators were measurable and had baseline data, and the original targets were reasonable.
- The RF also included 11 intermediate results indicators (IRIs). Most IRIs were relevant and linked to the stated activities and helped to track the achievement of the outcomes and test the links in the ToC. The IRIs were measurable, included baselines (where relevant) and had reasonable targets. However, some IRIs baseline data and targets were not accurate and represented estimates (ICR, paragraph 72). This included baseline data and target values on operational efficiency (for example, on water production and consumption, in the absence of a Supervisory Control and Data Acquisition system and water meters) and on financial efficiency (for example, 'BVK cash working ratio', and NRW).
- Overall, M&E design was adequate despite some minor shortcomings.

b. M&E Implementation

- M&E arrangements included (a) the establishment of an MIS at the BST level, with responsibility for data collection and transferred to the PIC and (b) annual customer satisfaction surveys (CSSs), to be conducted by the PIC.
- According to the ICR (paragraph 73) M&E data were "collected and analyzed in a methodologically sound manner." The PIC through site visits collected data and reported by the BST to the PCU and the Bank in semiannual progress reports. However, the proposed MIS was not implemented as the BST already had several MISs in place. This included a billing system with a customer database and an accounting system, in place, which were used to track achievement toward improved financial efficiency (ICR, paragraph 73).
- The annual Customer Satisfaction Surveys (CSSs) were only implemented in 2016 and 2021 due to the delayed initiation of the civil works. A final CSS was implemented by the BST in October



2021 when the water supply system was still under testing and commissioning. This did not allow the CSS to capture the project's full impact on improved services.

- Overall, M&E implementation was successful with minor weaknesses.

c. M&E Utilization

- According to the ICR (paragraph 74) M&E utilization allowed to inform project management and decision-making. M&E data were used to alert the World Bank and the GoU of the risk of not achieving the PDO's, and consequently helped to justify repeated project extensions.
- The ICR (paragraph 74) noted that the project restructurings could have been used to update indicator wordings following the institutional changes and drop indicators for activities that were not of interest to the client.

Summary of M&E Quality Assessment. M&E design was relevant and included adequate indicators to track the project progress as well as the achievement of the PDO. Implementation was successful and M&E utilization informed management and decision-making. Therefore, the Quality of M&E is rated Substantial despite minor shortcomings.

M&E Quality Rating

Substantial

10. Other Issues

a. Safeguards

The project was assigned an Environmental Category B (Partial Assessment). Three safeguard policies were triggered under the project: Environmental Assessment (OP/BP 4.01), Involuntary Resettlement (OP/BP 4.12), and Projects on International Waterways (OP/BP 7.50). The project activities were likely to generate minor and temporary site-specific environmental impacts (e.g., dust pollution, construction noise, vibrations and waste generation), impacts of accidental pollutant discharge in water/groundwater, impacts on soil and air quality, traffic interferences and occupational risks, as well as possible temporary effects to the local vegetation (trees) or landscape (PAD, paragraph 75). An Environmental Impact Assessment (EIA), an Environmental Management Plan (EMP), and a Resettlement Framework Policy (RFP) were prepared and consulted in Alat and Karakul districts and publicly disclosed in 2012.

The ICR did not include an explicit statement on safeguard compliance, but stated that "the project closed with a Moderately Satisfactory rating, with no pending issues (paragraph 78)." Environmental and social safeguards management benefited from the Bank-supported trainings. However, there was no central oversight of safeguard compliance since environmental and social safeguards specialist positions at the central and regional PCU level remained vacant. This, in turn, contributed to reporting delays and gaps in supervision (ICR, paragraph 79).

Compliance with Environmental Safeguards. According to the ICR (paragraph 77) "environmental issues were addressed to preclude the occurrence of any adverse effects on humans and the environment." However, there were some recurring shortcomings related to: low priority given to occupational health



and safety measures, gaps in documentation and record-keeping, and varying degrees of implementing corrective actions and recommendations.

Compliance with Social Safeguards. The project did not result in large-scale resettlement activities and most of the works were carried out within the existing facilities or along roadways (ICR, paragraph 78). Temporary impacts on four farms were compensated in accordance with the Environmental and Social Management Plan. A project-level Grievance Redress Mechanism (GRM) was set up to address any complaints. Most complaints were related to connection issues and rehabilitation of roads after the construction works. According to the ICR (paragraph 78) "no complaints related to environmental and social safeguards were received."

b. Fiduciary Compliance

Financial Management (FM). FM suffered from systemic weaknesses across much of the country portfolio related to: inadequate capacity of public sector accounting, poor financial reporting and audit arrangements, and weak internal controls and legislative oversight. The project also faced challenges including: late submission of interim unaudited financial reports, late submission of audited project financial statements, and delayed documentation of expenditures incurred (ICR, paragraph 80). In addition, the PCU was chronically understaffed and faced high staff turnover during most of the implementation period, and there was a lack of experienced specialists in the market to implement international financial institutions-funded projects. As a result, the project FM was noncompliant with the Bank's financial management requirements. FM performance improved towards the end of the project as the PCU's staffing arrangements and overall capacity gradually improved. The ICR (paragraph 80) noted that the "project closed with a Moderately Satisfactory rating, with no pending actions."

Procurement. The project suffered from procurement related delays. Despite Bank trainings, full compliance with the Bank's policies and procedures (in terms of integrity and transparency of the processes) remained weak across the sector. According to the ICR (paragraph 81) "procurement was often the central cause of delays, affecting the performance of the AKWSP and the other ongoing WSS projects in the portfolio." Procurement weaknesses during implementation included: inadequate implementation arrangements for procurement and low procurement staff capacity; slow procurement processes including evaluation of tenders; and prolonged procurement and contract approval procedures. Also, procurement was negatively impacted by internal government restructurings and changes in the authorizing environment, lengthy customs clearance procedures for imported equipment and materials, and delays in government co-financing. All these issues had an adverse effect on the overall project implementation schedule (ICR, paragraph 81).

Overall, procurement under the project was implemented in accordance with the Bank's procurement and consultant guidelines and in accordance with the provisions of the Financing Agreement, and all signed contracts were successfully completed. The ICR (paragraph 81) reported that the project closed with a Moderately Satisfactory rating and had no pending procurement issues.



c. Unintended impacts (Positive or Negative)

The ICR did not report on this.

d. Other

None.

11. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Satisfactory	Satisfactory	
Bank Performance	Satisfactory	Moderately Satisfactory	Quality at Entry suffered from significant shortcomings.
Quality of M&E	Substantial	Substantial	
Quality of ICR	---	Substantial	

12. Lessons

The ICR included five lessons. The following three are emphasized with some adaptation of language:

1. Combining a programmatic approach toward incremental sector changes combined with robust sectoral work may strengthen the potential for successful public sector reforms.

Public sector reforms take time, and one has to be realistic about timing and achieving results. Sector reforms also requires strong country ownership combined with tailored Bank-support to the pace of reform in the country. This has implications for the lending instruments that best support public sector reforms. Through this project and the Bank’s engagement in Uzbekistan more generally, sustained support was achieved through a series of interventions with a number of credits/loans linked to the Government’s medium-term investment program. This approach was successful in achieving gradual sector improvements in the short term and a more ambitious intervention in the long term. Support through modest and selective entry points such as efficiency can show partial success and these can also form the basis for later progress, even in difficult areas such as public service reform.

2. If project readiness is ensured during the preparation phase, project delays may be avoided or at least reduced. This project experienced several delays, some of which are rooted in the preparation phase. Ensuring project readiness will expedite awarding of contracts so that projects can begin immediately, leading to accelerated disbursements and achievement of project outputs on time and within budget. Initial implementation delays can be reduced by completing more works during project preparation such as (a) preparation of request for proposal for consulting services, (b) approval of feasibility studies by the Government, (c) preparation of tender documents



for the first contract packages, and (d) advanced actions for the procurement of consulting services or construction contracts.

3. If energy efficiency needs is considered at the design stage of projects, it may lead to more climate friendly and sustainable interventions. Energy use is significant in the WSS sector and can often be the single largest energy using sector in a municipality due to pumping requirements. To develop energy-efficient projects, for water system upgrades, energy audits at the design stage need to be carefully considered to provide a better understanding of a facility's baseline energy use and help identify additional energy-efficient design elements, and to take into account municipal budgets and operating costs and a municipality's carbon footprint. While the project benefited from energy-efficient technologies, such variable speed pumps, a technical design flaw was uncovered on the transmission line, which would have resulted in 50% pump energy savings by increasing the pipe diameter (from 700 to 800 mm).

13. Assessment Recommended?

No

14. Comments on Quality of ICR

Quality of Evidence. The ICR benefited from the data collected by the M&E system, which enabled tracking the progress of activities and assessing the achievement of the PDO.

Quality of Analysis. The ICR provided clear linking between evidence and findings and used the evidence base to serve the arguments under the different sections, in particular the discussion on outcomes.

Lessons. Lessons reflected the project experience and were based on evidence and analysis.

Results Orientation. The ICR included a comprehensive discussion on the achievement of the PDO. The discussion was adequately balanced between reporting on the achievement of outcome indicators and what the project actually achieved on the ground.

Consistency with guidelines. The ICR successfully used the available data to justify most of the assigned ratings. Discussion of outcomes was adequate. The efficiency analysis provided good justification on the validity of the project investments.

Conciseness. The ICR was well written and provided comprehensive coverage of the implementation experience and candidly reported on shortcomings. However, reporting on safeguards did not include an explicit statement on compliance. Finally, the ICR Data Sheet (page ii) stated the date of the MTR as December 4, 2014, while the ICR (Footnote #37) stated the MTR was in November 2015.

Overall, the Quality of the ICR is rated Substantial, but with minor shortcomings.



a. Quality of ICR Rating
Substantial