

Performance  
Evaluation  
Report

# Uzbekistan: Surkhandarya Water Supply and Sanitation Project



Independent  
Evaluation 

Raising development impact through evaluation

**Performance Evaluation Report**  
August 2018

## **Uzbekistan: Surkhandarya Water Supply and Sanitation Project**

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Independent  
**Evaluation** 

## NOTE

In this report, "\$" refers to United States dollars.

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The guidelines formally adopted by IED on avoiding conflict of interest in its independent evaluations were observed in the preparation of this report. To the knowledge of the management of IED, there were no conflicts of interest of the persons preparing, reviewing, or approving this report.

# Abbreviations

ADB	–	Asian Development Bank
CSA	–	Communal Services Agency ( <i>Kommunhizmat</i> )
CSP	–	country strategy and program
DMF	–	design and monitoring framework
EIRR	–	economic internal rate of return
FIRR	–	financial internal rate of return
IBNET	–	International Benchmarking Network for Water and Sanitation Utilities
LARP	–	land acquisition and resettlement plan
MDTF-WFPF	–	Multi-Donor Trust Fund of the Water Financing Partnership Facility
MHCS	–	Ministry of Housing and Communal Services
MOF	–	Ministry of Finance
O&M	–	operation and maintenance
PCR	–	project completion report
PIU	–	project implementation unit
PMU	–	project management unit
PPER	–	project performance evaluation report
PPP	–	public–private partnership
PVR	–	project completion validation report
RCM	–	resolution of the Cabinet of Ministers
RRP	–	report and recommendation of the President
TA	–	technical assistance
UCSA	–	Uzbekistan Communal Services Agency ( <i>Uzkommunhizmat</i> )
UFW	–	unaccounted for water
WACC	–	weighted average cost of capital
WSS	–	water supply and sanitation

# Glossary

<i>khokimiyat</i>	–	local government
<i>vodokanal</i>	–	district water supply and sanitation agency
<i>makhalla</i>	–	neighborhood community
<i>rayon</i>	–	district
<i>suvokova</i>	–	provincial vodokanal

# Currency Equivalents

Currency unit–sum (SUM)

		<b>At Appraisal</b>	<b>At Completion</b>	<b>At Independent Evaluation</b>
		10 August 2008	30 September 2014	5 September 2017
SUM 1.00	=	\$0.00076	\$0.000422	\$0.000123
\$1.00	=	SUM1,320	SUM2,367.40	SUM8,100

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The team is very grateful to officials met during the field visits in Surkhandarya province, including the provincial *Khokimiyat*, the provincial department of the Ministry of Housing and Communal Services, the provincial *suvokova* and its district branches, as well as the schools visited by the team. The feedback from project beneficiaries who participated in the focus group discussions and the discussions held with staff of the World Bank and the Embassy of Switzerland in Uzbekistan are appreciated.

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# Basic Data

## Republic of Uzbekistan: Surkhandarya Water Supply and Sanitation Project (Project Number 40007-013, Loan 2466, Grant 0131)

Key Project Data	At Appraisal (\$ million)	Actual (\$ million)
Total Project Cost	40.00	39.48
Foreign Exchange Cost	10.25	7.50
Local Currency Cost	29.75	31.98
ADB Loan Amount/Utilization	29.31	29.10
Cofinancing-MDTF-WFPF	1.50	1.50

ADB = Asian Development Bank, MDTF = Multi-Donor Trust Fund, WFPF = Water Financing Partnership Facility.

Key Dates	Expected	Actual
Fact-Finding Mission		18 Jul-3 Aug 2007; 18 Jun-1 Jul 2008
Appraisal		6-15 Aug 2008
Loan Negotiations		22 Sep 2008
Board Approval		3 Nov 2008
Loan Signing		20 Apr 2009
Loan Effectiveness	19 Jun 2009	27 July 2009
Loan Closing	30 Sep 2014	10 Mar 2015

Borrower: Republic of Uzbekistan  
Executing Agency: Uzbekistan Communal Services Agency

Type of Mission	Number of Missions	Number of Person-Days
Fact-Finding	2	129
Appraisal	1	72
Inception	1	21
Review	7	150
Disbursement	1	2
Midterm Review	1	20
Project Completion Review	-	-
Independent Evaluation	1	9

Project Performance Report Ratings	Development Objectives	Implementation
27 July to 31 December 2009	Satisfactory	Less than satisfactory
1 January to 31 December 2010	Satisfactory	Less than satisfactory
1 January to 31 December 2011	Satisfactory	Satisfactory
1 January to 31 December 2012	Satisfactory	Highly satisfactory
1 January to 31 December 2013	Satisfactory	Satisfactory
1 January to 30 September 2014	Satisfactory	Highly satisfactory



# Executive Summary

The Surkhandarya Water Supply and Sanitation Project was designed to improve water supply and sanitation services and improve hygiene through the replacement of aging and deteriorating infrastructure, hygiene promotion, and institutional support. Overall, the evaluation assessed the project successful. The project has supported sector reforms and resulted in beneficiaries receiving an improved level of water supply service by the provincial *suvokova* (water utility). Some targets, such as sustained performance benchmarking, are yet to be fully accrued, and sanitation efforts need to be given greater attention at design and implementation. This evaluation offers three lessons: (i) Performance benchmarking systems must be underpinned by sustained institutional support; (ii) Results for sanitation components suffer when low investment coincides with low priority; and (iii) Targeted support for sector reforms can yield positive results.

## Evaluation Purpose and Process

This project performance evaluation report presents the findings of an independent evaluation of the Surkhandarya Water Supply and Sanitation Project in Uzbekistan, supported by the Asian Development Bank (ADB). An independent evaluation mission was conducted in September 2017.

The loan agreement for \$30.0 million from ADB's Special Funds resources and the grant agreement for \$1.5 million from the Multi-Donor Trust Fund of the Water Financing Partnership Facility became effective on 27 July 2009. The grant supported the development of a sector strategy, while the loan supported built infrastructure and all other components. The project was completed in January 2015, and the loan closed in March of the same year, 5 months behind schedule.

This evaluation adopted a mixed methods approach comprising a desk review of project information; discussions with ADB project staff; discussions with state, provincial, and district agencies; a field mission, including visits to four of the seven project districts and the city of Termez; key informant interviews; and focus group discussions with water users.

## Program Rationale

The purpose of the project was to improve the living standards, environment, and public health in selected urban centers of Surkhandarya

province. Since independence in 1991, there has been an increasing need to replace aging and deteriorating infrastructure that has reached the end of its economic life and to improve the quality and coverage of water supply and sanitation services. Outdated sector strategy and planning, inappropriate standards, limited financial resources, and weak institutional capacity were key challenges for the government.

## Expected Results

The project's impact at appraisal was expected to be improved living standards, environment, and public health in urban centers of Surkhandarya. The expected outcome was safe, reliable, inclusive, and sustainable water supply and sanitation (WSS) services, and improved community hygiene for 340,000 people living in the urban centers of the districts of Angor, Jarkurgan, Kizirik, Kumkurgan, Muzrabad, Sariasiya, Shurchi, and the city of Termez. The project comprised five components: (i) strengthening sector strategy and management, (ii) water supply development, (iii) sanitation and hygiene, (iv) capacity development for service delivery, and (v) project implementation assistance. The objective of the grant component was to develop a strategy, road map, and investment program for WSS in Uzbekistan. ADB prepared a project completion report (PCR) in July 2016.

## Performance Assessment

The project was well aligned with ADB and government policies while also supporting sector reforms. It has delivered a significantly improved level of water supply service and is developing the provincial *suvokova* or water utility (known at appraisal as *vodokanal*) and its district branches into a profitable organization. Some targets, such as full metering and sustained performance benchmarking, are yet to be fully achieved, and sanitation efforts needed to be given greater priority.

**Relevance.** The project was closely aligned with ADB and government strategies. The grant component supported the development of a sector strategy and road map, and its recommendations served as a foundation for many subsequent sector reforms. For example, under Resolution of the Cabinet of Ministers No. 306 in 2015, the government adopted a state unified service delivery model, improved the institutional and human capacities of WSS utilities and introduced performance indicators. Government and development partners confirmed the positive influence the strategy has had on sector reforms. The government will need to undertake further reforms to promote public–private partnership (PPP), which is still minimal in the sector. The sanitation component, at less than 3% of the base cost, was too small to contribute meaningfully to the sanitation services part of the outcome statement, which should have been modified accordingly. The small loan value and low priority of the sanitation component likely contributed to the design and operational flaws manifest during implementation. Sanitation, which was of a poor standard in Surkhandarya at appraisal, should have been given much greater attention and its neglect somewhat diminished the project’s relevance. The design and monitoring framework’s overreliance on the performance benchmarking system, which was not well-maintained, resulted in some indicators being difficult to measure. In this view, the project was assessed relevant.

**Effectiveness.** Several project targets remain to be fully achieved, although, most indicators are on a positive trajectory. Safe, reliable, and sustainable water supply, the largest component at 89% of the base cost, was successfully delivered to the

participating urban centers of Surkhandarya province and the network is expanding, although, not yet to the levels of service envisaged. By the end of 2016, some 331,076 people were served by a centralized water supply system in the project towns, slightly under the target of 340,000. While the PCR states that 69,632 households had metered connections, the water utility reports that only 22,244 are metered. Households were receiving between 12 and 23.2 hours of water per day, with an average of 14.5 hours, fewer than the 20-hour target. Focus group discussions reported strong satisfaction with the levels of service, which is much improved from the 6 hours provided pre-project. Institutional indicators, such as the operational ratios of the provincial water utility and its branches, indicate a water utility that is operating profitably and efficiently, although, this evaluation questions the significant reduction in non-revenue water losses (averaging 12%) as these are not verifiable without full household metering or functioning bulk water meters. The important, but small sanitation component (less than 3% of base cost), was less than effective in achieving its outcomes, particularly in the provision of hand-washing facilities in the built toilet blocks. This evaluation assessed the project less than effective in achieving its expected outcomes based on the independent evaluation mission field observations, interviews, focus group discussions with water users, and data provided by the provincial water utility.

**Efficiency.** At evaluation, two subprojects were selected for economic assessment, Termez city and Muzrabad District, accounting for 55% of all connections. The reason for limiting the analysis was the limited and inconsistent data available from the provincial water utility. The economic internal rate of return for Termez is estimated at 20%. Muzrabad’s economic internal rate of return is estimated at 32%. Process efficiency was generally good and an improvement on previous ADB water supply projects, however, there were delays mainly due to the limited capacity of the national construction supervision consultants. This evaluation assessed the project efficient.

**Sustainability.** All project sites were assessed through desk review. The five water supply systems visited were operating well and were reported by the provincial water utility to be profitable. Staff salaries have increased and are

now competitive with other similar sectors. The structure of the Surkhandarya water supply networks, with district branches reporting to the provincial water utility, appears to be effective and has the capacity to support district networks at an adequate level. The built infrastructure appears sound and includes more energy efficient pumps. Tariffs have been increasing steadily since 2010 and are now uniform across the whole province—these progressive increases in tariffs must be maintained. Termez city is estimated to produce a financial internal rate of return of around 8.1% over the planned 30-year operating life. The financial internal rate of return for Muzrabad is estimated at 5.1%. The continuing staff turnover, still high at 20% in 2017, is a concern for institutional sustainability as it may reduce the impact of training programs. Also, the benchmarking performance efforts under the project have not been sustained. The school toilet construction program is less than likely sustainable. While the buildings are sound, the water supply systems connected to the toilet blocks for handwashing have deteriorated and, in most cases, were either not functioning or obsolete. Schools have improvised by installing temporary handwashing facilities outside the toilet blocks. This evaluation assessed the project likely sustainable.

## Other Assessments

**Impact.** The project has significantly increased the level of service to consumers, the network is expanding and is delivering safe, reliable water. Water-borne diseases have decreased dramatically over the project period, although, it is difficult to attribute this directly to the project. The project impact is assessed significant.

**ADB and Implementing Agency Performance.** ADB provided adequate supervision during implementation and reasonable quality at entry, other than the neglect of sanitation outlined above. The Communal Services Agency and the provincial government implemented the project to an acceptable standard, even though the sector reforms resulted in significant changes to staffing and institutional setup.

## Issues

**Sanitation facilities in project schools in Surkhandarya province are not operating effectively.** The hand-washing facilities built by the project are not functioning properly and are undermining the expected outcomes concerning hygiene behavior.

**The Surkhandarya provincial water utility is not collecting benchmarking performance data systematically.** The Surkhandarya water utility developed valuable benchmarking capability under the project. However, efforts to continue this data collection systematically have not been sustained.

**The enabling environment for PPP in the sector is limited.** The project and the strategy and road map examined PPP involvement in the sector, but no substantial progress has been made to date. The government may need to take further steps to develop the enabling environment for PPP in the sector.

**Communities peripheral to the project's urban settlements continue to have poor water supply provision.** The benefits accrued in the project areas could be extended to additional peri-urban settlements near the water distribution network, where focus group discussions indicated the level of service is still poor.

**Tariffs have been increasing steadily but are still relatively low.** The steady increase in tariffs observed is a positive step; however, water is still relatively cheap in Surkhandarya by international standards, with households reporting that they spend on average around 0.5% of their income on water. In this situation, it is not surprising that around 95% of focus group members would be prepared to pay a tariff that was double the present level, though a few would cut back their water purchases to some degree. There is scope to explore pro-poor block tariffs.

**Government-led coordination of development partners for the sector is not in place.** While informal sectoral networks across development partners are strong, a more formalized government-led mechanism is required now that sector reforms require that individual district

*vodokanals* operate as branches of the provincial water utility.

## Lessons

**Performance benchmarking systems must be underpinned by sustained institutional support.** The Surkhandarya provincial water utility developed benchmarking capability under the project, facilitating performance monitoring, identifying strengths and weaknesses, and allowing problems to be addressed in a timely manner. However, during this evaluation, it was clear that this effort has not been maintained satisfactorily. This may be a consequence of the high staff turnover and loss of institutional knowledge during the establishment of the provincial water utility in October 2015. This experience indicates that without sustained efforts and adequate resources, benchmarking systems remain one-off exercises of limited future value.

**Results for sanitation components suffer when low investment coincides with low priority.** The small size of the sanitation component compared to water supply, meant that it had low priority within the project, perhaps explaining its weak design and operation. This experience is similar to that of the sanitation component of the Kashkadarya and Navoi Rural Water Supply and Sanitation Sector Project, and suggests that (i) more attention needs to be given to sanitation components, including continuing hygiene awareness campaigns; (ii) improved designs are needed for school toilet blocks, including reliable water supply for hand-washing and inclusion of full septic tank systems with drainage trenches where suitable land exists; and (iii) schools need support for operation and maintenance.

**Targeted support for sector reforms can yield positive results.** The grant component of this project developed a sector strategy and road map that was successful in supporting necessary WSS reforms nationally. It was not adopted in full, but many of its recommendations were incorporated in subsequent Resolution of the Cabinet of Ministers and Presidential Decrees. Similar projects can leverage their added value to the sector through this kind of targeted support. Sequencing sector reform support in advance of loans may maximize the benefits.

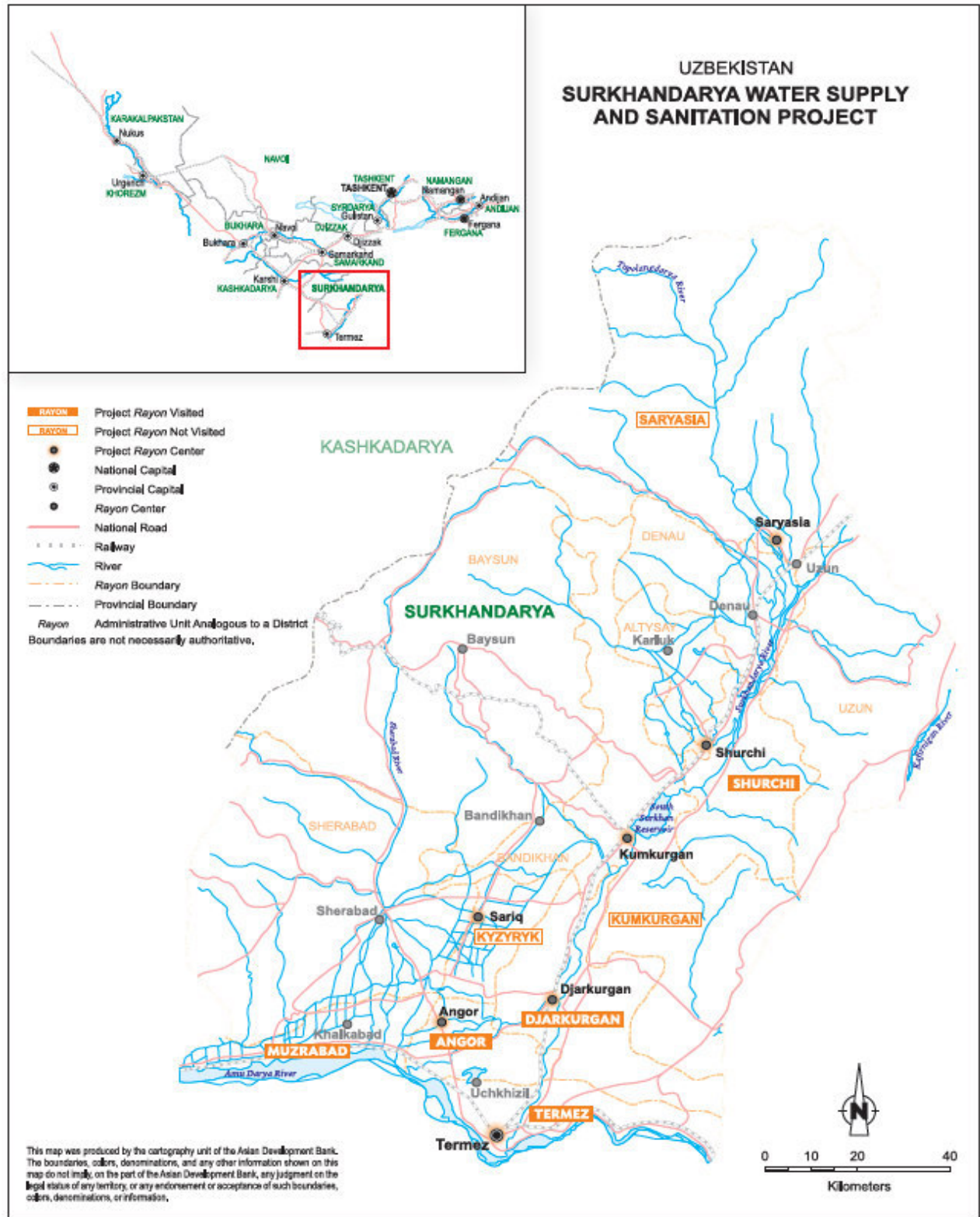
## Recommendations

**Sanitation should be a priority in water supply and sanitation projects, and remedial action in project schools is warranted.** Future ADB-supported WSS projects that include sanitation components should be designed in a meaningful way, have an adequate budget, appropriate technical design, and institutional support to ensure effectiveness and sustainability. Support is needed for the 17 project schools to assess their deficiencies and to rehabilitate the hand washing facilities in the toilet blocks constructed under the project.

**Performance benchmarking in water utilities needs sustained support to be effective.** It is recommended that future WSS interventions by ADB in Uzbekistan review the benchmarking system and data management generally in all provincial water utilities and develop an implementation plan to fill gaps and ensure sustained support.

**Coordination among development partners, providing interventions in water supply and sanitation, needs to be enhanced.** While consultation during project design and implementation was sound, ADB should support government-led coordination to prevent overlap of interventions and develop complementary synergies in the context of the newly established water utility and sector reforms.

# Map



## Introduction

1. Uzbekistan's water supply and sanitation (WSS) infrastructure was designed and constructed under the central planning regime of the former Soviet Union. However, since independence in 1991, there has been an increasing need to replace aging and deteriorating infrastructure that has reached the end of its economic life and to improve the quality and coverage of WSS services.

2. The Government of Uzbekistan requested the assistance of the Asian Development Bank (ADB) to support the strengthening of WSS planning and management at the national level and improving WSS services at the provincial level. The key challenges for the government were an outdated sector strategy, inappropriate standards, limited financial resources, and weak institutional capacity.

### A. Evaluation Purpose and Process

3. This project performance evaluation report (PPER) will provide insights to help improve the design and effectiveness of future ADB water supply and sanitation projects. The findings and lessons drawn from the evaluation will feed into the forthcoming Country Partnership Strategy Final Review Validation for the Republic of Uzbekistan programmed for delivery in 2018. Since Uzbekistan became a member of ADB in 1995, the water and other urban infrastructure and services sector has comprised over 12% of cumulative lending, grant, and technical assistance approvals.<sup>1</sup>

4. The project was completed in January 2015 and the loan closed in March of that year, 5 months behind schedule. An ADB project completion report (PCR) mission visited Uzbekistan in March 2015 and prepared a report, which concluded that the project was successful based on field visits and consultations with the implementing agency and the provincial water utility and its district branches (the operators of the water supply systems—the *vodokanals*). The PCR was published in July 2016 and assessed the project to be highly relevant, effective, efficient, and likely sustainable.

5. This PPER was prepared based on primary and secondary data collected using a mixed methods approach. An independent evaluation mission was undertaken in September 2017, around 14 months after the publication of the PCR. In completing the PPER, the views of ADB's Central and West Asia Department and Uzbekistan Resident Mission were considered. The mission consulted with the Ministry of Housing and Communal Services (MHCS) and *Kommunhizmat*, the ministry's Department of Communal Services (CSA). It also consulted with officials from the Ministry of Finance (MOF) and development partners in Uzbekistan (the World Bank Country Office and the Swiss Cooperation Office).

6. The mission visited Surkhandarya province to collect primary data through interviews with the Surkhandarya Provincial Government and the Surkhandarya Provincial Water Utility and its district branches. Subproject outputs of built infrastructure, including new and rehabilitated boreholes, pumping and treatment facilities, and reservoirs, were inspected in four district capitals (Angor, Jarkurgan,

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<sup>1</sup> ADB. 2017. *Asian Development Bank Member Fact Sheet—Uzbekistan*. Manila. In ADB, urban water projects are covered by the Water and Other Urban Infrastructure and Services Sector.

Muzrabad, and Shurchi) and Termez city (see Map). The mission also held focus groups with water users in four project towns and in two settlements not covered by the project.<sup>2</sup>

## B. Expected Results

7. The Surkhandarya Water Supply and Sanitation Project was intended to lead to improved living standards, environment, and public health in 7 districts of 13 Surkhandarya provinces—Angor, Jarkurgan, Kizirik, Kumkurgan, Muzrabad, Sariasiya, and Shurchi—and its capital city, Termez. The project comprised five components: (i) strengthening sector strategy and management, (ii) water supply development, (iii) sanitation and hygiene, (iv) capacity development for service delivery, and (v) project implementation assistance. Impact targets included that 90% of the population would be provided with safe and reliable water supply for at least 20 hours a day by 2020 and waterborne infections per 100,000 children under 14 years in Surkhandarya would be reduced by 40% by 2020. Thus, the primary focus of the project was improved water supply, which was intended to reach 340,000 urban residents by project completion under component 2, budgeted at 89% of the project's base cost.

8. Other outputs related to the development of a strategy and road map under component 1—Strengthening of Sector Strategy and Management. Component 3—Sanitation and Hygiene—would develop improved sanitation practices and positive hygiene behavior among schoolchildren to prevent disease and ensure maximum health benefits from the improved infrastructure services. Safe drinking water would be provided to all schools in the project towns under the water supply component and new latrines constructed in at least 17 schools. However, at 3% of project budget, the level of commitment was low. Component 4—Capacity Development for Service Delivery—would improve management capacity and efficiency, foster professionalism and develop a better customer orientation to improve services among the *vodokanals*. Component 5—Project Implementation Assistance—would provide project management support to the project management unit (PMU) and the project implementation unit (PIU) in implementing the project.

## C. Technical Assistance Project Objectives

9. A grant of \$1.5 million was approved on 20 April 2009, intended to support the project.<sup>3</sup> It was funded by the Multi-Donor Trust Fund of the Water Financing Partnership Facility (MDTF-WFPF) and designed to partly fund components 1 and 4. The grant funded consulting services (including sector strategy development, capacity development, and study tours) and the provision of equipment and materials. The major objective of the technical assistance (TA) was to develop a strategy, road map, and investment program for WSS in Uzbekistan for the period 2012 to 2020.

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<sup>2</sup> The independent evaluation mission to Surkhandarya province was accompanied by Ministry of Housing and Communal Services (MHCS) staff and, while their support was appreciated, under their direction Independent Evaluation Department's time in the field was restricted, ostensibly due to security concerns. While these concerns were accepted at face-value, this restriction on fieldwork should have been made clear after the request for mission concurrence so that IED could plan its work accordingly.

<sup>3</sup> ADB.2016. *Completion Report: Surkhandarya Water Supply and Sanitation Project in Uzbekistan*. Manila.

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# Design and Implementation

## A. Rationale

10. At appraisal, it was estimated that the coverage of the water supply network was 82% of the total population (88% of the urban population and 79% of the rural population).<sup>4</sup> However, this high level of network coverage masked critical deficiencies in the actual level of service provided. Households were only supplied with water between 6–16 hours a day in the urban areas and 2–10 hours a day in rural areas. Sewerage system coverage was also low, estimated at 51% of the population; however, most of the systems were not functioning properly. Rural and urban populations not served by a centralized system used pit latrines near their homes. Nonperforming (deteriorating and leaking) infrastructure coupled with regular power interruptions and lack of revenue resulted in a vicious cycle that undermined the government’s ability to improve the quality and reliability of WSS services.

11. The provision of safe, reliable, and affordable WSS services to the population is a key challenge for the country if sustained economic growth is to be achieved. The government had set ambitious WSS targets, i.e., 100% water supply coverage in most urban areas and 85% in most rural areas. This was estimated to require an investment of around \$1.4 billion for the rehabilitation of existing infrastructure, and twice as much to achieve sector coverage targets. However, there were several challenges, including the need for urgent institutional reforms to address weak institutional capacity and limited financial resources for operation and maintenance (O&M).

12. At appraisal, the Uzbekistan Communal Services Agency or *Uzkommunhizmat* (UCSA)—now CSA—the executing agency, had overall responsibility for improving WSS services in the country but had limited staff and capacity. The main independent controls were on water quality by the Ministry of Health, and financial accounting by the MOF. Local governance issues were managed by local governments (*Khokimiyats*), whose functions included the management of local public utilities. While decentralization of WSS services officially occurred in the 1990s, it was never supported by relevant institutional measures or sufficient financial, technical, and management capacities within the local governments. In practice, key management and financial issues remained with the central government. WSS services were provided mainly by provincial *vodokanals* and their subsidiary district *vodokanals*, which were subordinate to the local governments. These *vodokanals* deal directly with the customers, read meters issue bills, collect payments, and operate the infrastructure. The *vodokanals* were independent of one another, with different tariffs and applying varying standards and practices. Salaries of *vodokanal* staff were low compared to other communal services, and a major difficulty was retaining qualified staff.

13. At the time of project design in 2008, WSS services were afforded priority by the Government of Uzbekistan in recognition of their importance as a contributor to the health and welfare of its citizens. This was highlighted in the government’s Welfare Improvement Strategy and Poverty Reduction Strategy Paper, 2008–2010, which set out a strategy for improving living standards, including upgrading and expanding water supplies.<sup>5</sup>

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<sup>4</sup> ADB. 2008. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the Republic of Uzbekistan for the Surkhandarya Water Supply and Sanitation Project*. Manila.

<sup>5</sup> Government of the Republic of Uzbekistan. 2007. *Welfare Improvement Strategy of Uzbekistan: Full Strategy paper for 2008–2010*. Tashkent.



14. In common with other urban and rural centers, the water supply systems in the district capitals of Surkhandarya province were in poor condition. They were in urgent need of rehabilitation following under-funding and limited maintenance during the period since independence from the Soviet Union in 1991. Over the same period, the growth of towns had led to a need to expand and infill water distribution networks. At the same time, government saw the need to reform the management and operation of WSS according to market economy principles. While reforms were underway, both the government and ADB saw the need to develop a strategy to assist the government to define the optimal development path. Table 1 lists all previous and ongoing ADB WSS projects in Uzbekistan.

**Table 1: Previous and Ongoing ADB Water Supply and Sanitation Projects**

Project	Population Benefiting from Investment Measures	Investment Amount Including Government Contribution (\$ million)	Implementation Period
Urban Water Supply Project	451,000	72.4 (34.9)	2002–2007
Western Uzbekistan Rural Water Supply Project	701,637	46.7 (17.3)	2003–2011
Kashkadarya and Navoi Rural Water Supply and Sanitation Sector Project	245,345	34.1 (11.1)	2007–2011
Surkhandarya Water Supply and Sanitation Project	340,000	39.5 (8.3)	2009–2015
MFF Tranche 1: “Modernization of Damkhodja interregional trunk mains with connection of district centers of Navoi and Bukhara provinces. Reconstruction of wastewater systems of Termez city”	Up to 3,000,000	60.0	2009–2017
MFF Tranche 2: “Rehabilitation of water supply and sewerage system of Kokand and Andijan cities and water supply.”		140.0	2010–2016
MFF Tranche 3: “Rehabilitation and construction of sewerage networks in Andijan city. Improvement of water supply in settlements of Djizzak and Khorezm provinces and the Republic of Karakalpakstan.”		58.0	2011–2016
MFF Tranche 4: “Rehabilitation of sewerage treatment facilities and rehabilitation and/or construction of sewerage networks in Fergana and Margilan cities of Fergana province.”		42.0	2013–2018
Djizzak Sanitation System Development Project		85,000	95.6 (15.6)
Tashkent Province Water Supply Development Project	260,000	143.8 (22.9)	2016–2022

MFF= multitranches financing facility.

Source: Asian Development Bank project documentation.

15. The project followed other ADB-supported initiatives (Table 2). The project built on the experience of the Urban Water Supply Project, which upgraded water supplies in the cities of Djizzak, Gulistan, and Karshi. The project was assessed successful with significant impact by its PCR and validation of PCR (PVR). The later projects were both in the rural sector and, thus, reflected ADB’s Country Strategy and Program (CSP) at the time. They improved or installed water supply systems in district capitals and rural settlements. They were assessed successful by their PCRs and PVRs. However, PVR downgraded both of the rural water supply projects from the “highly relevant” ratings given by PCR. The Kashkadarya and

Navoi Rural Water Supply and Sanitation Sector project's relevance rating was reduced due to weaknesses in the design of the sanitation component—to some degree also experienced in the current project.

**Table 2: Independently Evaluated Performance of ADB's Program in Water Supply and Sanitation since 2001**

Loan	Project	Approval Date	Total Cost (\$ million)	Total Loan (\$ million)	PVR Rating
1842	Urban Water Supply	2001	66	36	Successful relevant, effective, less efficient, likely sustainable
1903	Western Uzbekistan Rural Water Supply	2002	65	38	Successful relevant, less effective, efficient, likely sustainable
2208	Kashkadarya and Navoi Rural Water Supply and Sanitation	2005	36	25	Successful relevant, effective, efficient, less likely sustainable

PVR = project completion report validation report.

Source: Asian Development Bank (Independent Evaluation Department).

## B. Formulation

16. The Surkhandarya Water Supply and Sanitation Project was prepared under project preparatory TA with a final report submitted in August 2007.<sup>6</sup> The TA assessed a wider project—the Djizzak and Surkhandarya Rural WSS Project, but prior to appraisal, Djizzak was dropped and Termez city was added. In the view of the independent evaluation mission, the resulting project was preferable since (i) Termez city's WSS urgently needed upgrading; (ii) the greater geographic focus was desirable, simplified management, and allowed a focus on building provincial capacity and capability; and (iii) Djizzak city was already being upgraded under the Urban Water Supply project. Appraisal also reduced the number of schools from 90 planned schools during the TA to 17 schools. This was perhaps a less positive change as the component became relatively insignificant—a factor which may have contributed to design and operational difficulties. It is notable that Kashkadarya and Navoi Rural Water Supply and Sanitation Sector Project also suffered from deficiencies in its sanitation component, with limited allocation of resources compared to the target and a reduction of the number of schools assisted from 170 schools to 38 schools. The Surkhandarya Water Supply and Sanitation Project's design could perhaps have learned more lessons from Kashkadarya in relation to school sanitation, which may have led to an improved outcome for this component.

17. The strategy prepared under the TA was intended to (i) review and develop the National Water Supply Development Plan, 2000–2010, (ii) analyze the status of the sector in relation to major performance indicators, and (iii) review and further develop the existing development plan for sewerage and wastewater treatment. It supported the preparation of a long-term WSS sector strategy and road map. The strategy report was completed in June 2012. The independent evaluation mission received a Russian and English version, which were not identical versions; for example, the Russian version contains 12 annexes that are not included in the English version reviewed. The report contains useful recommendations and suggestions, many of which have been adopted by the government and applied in the development of legislation, for example, the Resolution of the Cabinet of Ministers (RCM) No. 306.

<sup>6</sup> ADB. 2006. *Technical Assistance to Republic of Uzbekistan for Preparing the Djizzak and Surkhandarya Rural Water Supply and Sanitation Sector Project*. Manila

## C. Cost, Financing, and Executing Arrangements

18. At project appraisal, the total project cost, including interest charges and contingencies, was estimated at \$40.00 million, comprising \$10.25 million in foreign currency and \$29.75 million in local currency. The ADB loan was envisaged to finance \$30.00 million (75.0%) of the total project cost to cover the foreign exchange cost of \$9.90 million, including \$0.70 million for interest and other charges during construction, and \$20.10 million of the local currency cost of components 2, 3, and 5. The MDTF-WFPF grant was envisaged to finance \$1.5 million (3.7%) of the total project cost to cover the foreign exchange cost of \$0.60 million and \$0.90 million of the local currency cost of components 1 and 4. The government, including district governments, financed the remaining local currency costs of \$8.50 million equivalent (21.3%). The actual project cost at completion amounted to \$40.00 million. ADB financed \$29.70 million (75.1%) through the Asian Development Fund and \$1.50 million (3.8%) from MDTF-WFPF, while the government financed \$8.30 million (21.1%).

19. The UCSA was the executing agency and had overall responsibility for project coordination, implementation, and liaison with government agencies and ADB. By the time of evaluation in 2017, UCSA had been renamed CSA and absorbed into the new MHCS. The PMU set up for the previous ADB-supported WSS projects was used and would have benefited from its previous experience in ADB projects. However, the CSA experienced a significant turnover in staff with the change of government and its incorporation into the MHCS, with the consequence that it was not possible to interview any original member of the PMU tasked with implementing the project. An inter-ministerial project steering committee was established for the project, and authorized to approve subproject feasibility and appraisal reports, yearly financing plan, and implementation arrangements. However, this committee did no longer exist at evaluation. The committee was chaired by the first deputy prime minister and convened four times during project implementation.

20. At the provincial level, the Surkhandarya Provincial Government was the implementing agency. A PIU was established in Termez in May 2009 and was responsible for day-to-day project implementation management at the local level. Its major responsibilities included (i) participating in project planning, detailed design, and bid evaluation; (ii) coordinating activities of consultants and contractors; (iii) overseeing construction activities; (iv) coordinating resettlement; (v) monitoring the social, gender, and environmental impacts of project activities; (vi) supervising local capacity-building activities; and (vii) preparing and consolidating subproject accounting, auditing, and monitoring reports for submission to the PMU. At the community level, PIU established a consumer representative and project support group for each of the nine subprojects.

## D. Consultants and Scheduling

21. TA consultants undertook the initial project design. Review of their final report indicates satisfactory performance, despite the later change in design, mentioned in Technical Assistance Report of the project. Implementation consultants were recruited between December 2009 and August 2010 to assist with detailed design, project implementation, and strengthening of sector strategy and management.

22. A total of 568 person-months of consulting services for 51 international and 517 national consultants were estimated to be required for project management, water resource planning and management, WSS engineering, wastewater management, environmental assessment and management, hydrogeology, financing and accounting, social assessment and safeguarding, and institutional development and support. Several activities under all five components were delayed due to late consultant recruitment. The PCR indicates that project implementation assistance was provided between month 9 (April 2010) and month 52 (July 2014); however, the total number of person-months was not evident.

23. The project management consultant was engaged from April 2010 to April 2014 and assisted the PMU and PIU. A wide range of consultant services were engaged. Most performed satisfactorily, though the project management consultant faced some difficulties due to the recruitment of 11 individual project supervision consultants. In retrospect, recruitment of a supervision firm could have simplified implementation supervision. A hygiene promotion consultant was engaged in August 2011, 2 years behind schedule, thus, delaying the implementation of hygiene promotion activities in all 17 project schools.

## E. Outputs

24. Planned and achieved outputs and outcomes are listed in Appendix 1, which identifies achievements against the project's design and monitoring framework (DMF).

25. **Component 1: Strengthening of sector strategy and management.** This component produced a water sector strategy and road map, which was finalized in 2012. Although after the project period, the most significant changes in the sector were promoted by the RCM No. 306, which improved the regulatory framework for WSS, promoted professional training, and established a unified territorial WSS organization. The RCM promoted full metering, including branch mainline metering where feasible.<sup>7</sup> Further major change has occurred under Presidential Decree Nos. 1517 and 2900 in March 2017, with the replacement of UCSA by the new MHCS, which has three divisions: water supply & sewerage, accommodation, and heating with only WSS moving across from UCSA. The WSS division is referred to as *Kommunkhizmat* (or CSA). The new provincial structure, with district (*rayon*) WSS systems coming under the provincial *vodokanal*, which in turn reports to the MHCS, is seen as having significant advantages compared to the previous system in which water supply companies reported to the district administrations. Key advantages include integrated management and support for staff training and system maintenance when needed. While RCM No. 306 and the presidential decrees were issued after March 2015 (project completion), several of the changes were recommended in the strategy produced under the TA and can in part be attributed to it despite the fact that the government did not officially endorse the document.

26. **Component 2: Water supply development.** The project aimed to improve water supply systems in the city of Termez and seven districts of Surkhandarya province. It would develop safe, affordable, and reliable piped water supply systems. It involved the development of (i) boreholes, (ii) water transmission facilities, (iii) service reservoirs, (iv) chlorination facilities, (v) distribution networks, (vi) individual metered service connections, and (vii) structural improvements in office buildings. Table 3 shows contract values. Actual cost is not readily available. At the evaluation mission, the infrastructure was seen to be functioning and well-maintained.

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<sup>7</sup> Independent Evaluation Department. 2011. *Country Assistance Program Evaluation: Uzbekistan*. Manila: ADB. "ADB's technical assistance could promote subnetwork metering on a pilot basis in a suitable town (such as Gulistan), for example, using in-line doppler meters to monitor supply to subnetworks, possibly including telemetering of flows. This should permit improved management of water, and the identification of high NRW volumes in particular sectors."

Table 3: Project Water Supply and Sanitation Contracts

General Description	Contract Value		Procurement Method	Contracts Awarded
	\$ million	%		
1 Angor	0.88	3.5%	ICB	Jul 2010
2 Jarkurgan	1.93	7.7%	ICB	Sep 2010
3 Kizirik	0.85	3.4%	NCB	May 2010
4 Kumkurgan	1.46	5.8%	NCB	Nov 2010
5 Muzrabad	4.95	19.6%	ICB	Nov 2010
6 Major Repair Equipment	0.82	3.2%	ICB	Oct 2009
7 Sariasiya	2.09	8.3%	NCB	Dec 2011
8 Shurchi	1.23	4.9%	NCB	Apr 2011
9 Surkhan (Jarkurgan district)	3.66	14.5%	ICB	Nov 2010
10 Termez City	7.38	29.2%	ICB	Dec 2011
<b>Total</b>	<b>25.23</b>	<b>100.0%</b>		

ICB = international competitive bidding, NCB = national competitive bidding.

Source: Asian Development Bank project documents.

27. As of this writing, water production has met target in terms of quantity and quality. All samples are reported to meet national quality standards. However, the evaluation mission was not provided detailed quality test reports. Water in two of the districts visited was reported to be hard, causing scale deposition in pipes and kettles, likely due to naturally occurring calcium carbonate in the source groundwater.

28. Notable among the subprojects was the inclusion of new Danish and Chinese pumps, which are more reliable than the old, mainly Russian pumps they replaced. They are also estimated to be around 25% more efficient, resulting in substantial electricity cost savings as well as improved reliability.

29. Data provided by the provincial water utility in terms of population and households served and connections with meters differ significantly from the PCR. The PCR reports that, in 2015, some 340,000 people in Termez and the project's urban centers were connected to safe, reliable water, and 69,632 households had meters; whereas the provincial water utility data indicates that by the end of 2016, some 331,076 people were connected and only 22,244 households had meters.

30. **Component 3: Sanitation and hygiene.** This component developed improved sanitation practices and positive hygiene behavior among schoolchildren to prevent disease and ensure maximum health benefits from the improved infrastructure services. Safe drinking water was provided to all schools in the project district capitals under the water supply component. It supported investment in (i) toilet blocks for 17 schools in the seven project district capitals, and (ii) hygiene promotion activities in all schools in the project areas. All schools in the project areas were provided with piped water supply. A baseline survey and follow-up surveys were intended to guide the development of targeted hygiene messages and an assessment of the impact of the activities. The survey reports could not be located, preventing assessment and limiting the ability to assess health benefits.

31. **Component 4: Capacity development for service delivery.** Developed improved management capacity and efficiency, fostered professionalism among the water utility staff, and developed a better customer orientation to improve services. The component financed investments in (i) the water utility's office furniture and office equipment to computerize the management of *vodokanals*; (ii) technical, operational, and management training; (iii) the development and implementation of a performance monitoring and benchmarking system; and (iv) study tours to expose *vodokanal* staff and key government officials to national and international best practice in professional WSS delivery.

32. Office furniture and equipment was observed in good working order and being used by utility staff during the evaluation mission. Billing receipts were being entered into the computer manually

during the mission, but utility staff were also observed piloting a new computerized billing and accounting software.

33. A performance benchmarking system with technical, financial, and institutional indicators was established in the subproject *vodokanals*. Useful benchmarking data were produced for 2014 to March 2015 and are reported to have been continued. However, the provincial water utility was unable to provide the 2016 benchmarks to the mission. The system is highly relevant for supporting effective management of the district networks through allowing comparison between the district *vodokanals* and the early identification of well- or poorly-performing enterprises. Benchmarking, thus, needs to be continued and implemented on a timely basis. The performance benchmarking system established by the project is based on the International Benchmarking Network for Water and Sanitation Utilities (IBNET)<sup>8</sup> benchmarking system and can, therefore, be used to upload relevant data to IBNET, which would also be useful. However, Surkhandarya and Karakalpakstan are the only two regions that have not uploaded their performance data to IBNET website, although this was not a requirement of the project and the latest data available online for Uzbekistan is for 2010, before the 2014 benchmarking exercise under the project.

34. Three national tours were conducted in Fergana, Khorez, and Tashkent provinces, with the participation of 12 professionals per tour from the district and provincial *vodokanals*. International study tours were run in France, South Korea, and Spain, with 10 officials per tour from the MOF, the Ministry of Economy, UCSA, and the Surkhandarya Provincial Government. Participants presented a workshop on their return. However, no study tour or workshop reports could be located, making assessment difficult.

35. **Component 5: Project Implementation Assistance.** This component supported the PMU and the PIU in implementing the project. Assistance was provided through the project management consultant in (i) project management and monitoring; (ii) bid document preparation and process management; (iii) bid evaluation; (iv) financial management and accounting; (v) construction supervision; (vi) social, environment, and resettlement management and monitoring; and (vii) incremental administrative costing for the PMU and the PIU.

## F. Loan Covenants

36. The PCR states that 51 of the 58 loan covenants were satisfactorily complied with. Five loan covenants had delayed compliance: (i) development of a new water sector strategy, road map, and investment plan; (ii) environmental covenants—UCSA to ensure project facilities constructed conform to safety standards of the Borrower and ADB; (iii) provision of a maintenance plan by UCSA; (iv) hygiene promotion activities; and (v) establishment of a project performance monitoring system. The project aimed for government approval of the sector strategy in 2011; however, while many of its recommendations were adopted in subsequent sector reforms, the government never formally approved it. For the environmental covenant, reporting was only in the form of an environmental monitoring report covering July 2010–March 2014, not on the agreed semi-annual basis. A post-construction environment monitoring report covered April 2014–June 2015. The maintenance plan was prepared in November 2009 and approved by ADB in December 2009 or a two-month delay from UCSA's draft target of September 2009. The hygiene promotion consultant was engaged in August 2011, a significant delay from the target start of activities in December 2009. Lastly, the project performance monitoring system, which was to be set-up within 6 months of loan effectivity (January 2011), was only established in June 2011, a delay of 5 months.

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<sup>8</sup> The International Benchmarking Network for Water and Sanitation Utilities (IBNET) is an online database and reference for water and sanitation utilities performance data. It aims to support access to comparative information that will help promote best practice among water supply and sanitation providers worldwide.

37. Two loan covenants revolving around collection efficiency of water tariffs and tariff-setting were only partly complied with upon project completion. It was reported that, by September 2014, the average collection for all subprojects was 80%. From project inception, water tariffs were adjusted twice annually but, based on the 2014 financial statements, some *vodokanals* did not achieve full recovery of O&M costs as required. Though with increased tariffs and installation of energy-efficient pumps and equipment under the project, the financial standing of each *vodokanal* has improved, achieving cost recovery of O&M and depreciation costs in 2018.

## G. Policy Framework

38. All reports from the design and early implementation period of the project indicate a difficult policy environment at the outset. For example, the strategy and road map report supported under the project indicated that, in 2012, "*Khokimiyats* (local governments) were officially in charge of local communal services management and implementation of reform of communal services. In reality, decentralization of the sector was never supported by relevant institutional measures for its implementation. Accelerated decentralization and abrupt termination of centralized technical and financial support, which was usual during the Soviet period, put service providers and *Khokimiyats* with insufficient technical, financial, and management capacities to operate WSS services effectively."

39. Tariffs were low and insufficient to support O&M—a key factor leading to the deterioration of water infrastructure and ultimately necessitating the project interventions. Maintenance and capital budgets (e.g., for network extension) were dependent on the individual district governments and were usually inadequate. Salaries were set by central government and were universally low, threatening the retention of skilled staff.

40. A number of significant policy changes were made during the project period through RCMs. Notable among these was RCM No. 337 of November 2012, which improved the regulatory framework for WSS. This and several other RCMs affecting the water sector were summarized in Supplementary Appendix 1 of the PCR. The most important one, although it was promulgated after the project period, was RCM No. 306 of October 2015, which supported the action plan for 2015–2019. The strategy and road map produced under the project were intended to support government policy development and contributed significantly to RCM Nos. 337 and 306 in particular. RCM No. 306 was far-reaching, particularly through bringing the district *vodokanals* under the responsibility of their provincial *vodokanal* or water utility, with the provincial water utility reporting to the central government. As stated by the PCR "provincial *suvokova* (water utilities) are responsible for O&M of WSS services throughout the province, while each *vodokanal* at the district level serves as a branch of the provincial *vodokanal*. UCSA became responsible for monitoring the performance of each provincial *suvokova* and developing its capacity."

41. The new national president issued two decrees in 2017 that have a major impact on WSS. Decrees numbers 1517 and 2900, from March 2017, have restructured the sector, through the formation of a new MHCS and the establishment of CSA to assist in promoting investment (including from international financial institutions) in place of the aforementioned executing agency (*Uzkommunhizmat*–UCSA). The new structure had been in place for only 6 months at the time of the independent evaluation mission but appears to be becoming effective.

42. Probably due to the better-established policy and legal framework for water supply and the production of good quality water, the provincial courts usually have been finding in favor of water utilities in relation to overdue payments. From 2017, the newly created Bureau of Forced Execution under the General Prosecutor's Office of Uzbekistan is entitled to collect debts for communal services from the population. Thus, the water utility is entitled to disconnect customers who are 3 months or more in arrears. This is leading to an increase in the collection rate and should in time allow most water utilities to reach close to 100% tariff collection.

43. At the time of the independent evaluation mission In September 2017, the government announced currency reforms. The sum was devalued by 50% from 4,210.35 sum per dollar to 8,100 sum per dollar. Such reforms signal the government's commitment to attracting foreign investment and may benefit the sector through the encouragement of greater private sector involvement in WSS.



## CHAPTER 3

# Performance Assessment

44. This chapter assesses the project's performance using IED's *Guidelines for Preparing Performance Evaluation Reports for Public Sector Operations*.<sup>9</sup> The project's performance is based on four core criteria—relevance, effectiveness, efficiency, and sustainability.

### A. Overall Assessment

45. Table 4 summarizes the ratings for the different criteria and the corresponding weights given to each criterion.

**Table 4: Overall Performance Assessment**

Criterion	Assessment	Rating (0–3)	Weight	Weighted Rating
Relevance	Relevant	2	25%	0.50
Effectiveness	Less than Effective	1	25%	0.25
Efficiency	Efficient	2	25%	0.50
Sustainability	Likely Sustainable	2	25%	0.50
<b>Overall</b>	<b>Successful</b>			<b>1.75</b>

Source: Asian Development Bank (Independent Evaluation Department).

### B. Relevance

46. The PCR emphasized the project's consistency with government and ADB strategies at formulation and at completion. At appraisal, the ADB strategy covering Uzbekistan, the CSP, 2006–2010, advocated doing less on urban and more on rural water supplies arguing that other development partners were active in the district and provincial capitals. While the project did represent a shift away from the rural focus envisioned in the CSP, this is not considered significant given the urban project areas are mostly small towns and the report and recommendation of the President (RRP) expected that across the province "nearly 90% of urban residents and over 30% of rural residents in the project areas," were expected to benefit from the project. The independent evaluation mission observed that urban areas in the project districts (excluding Termez city) are largely peri-urban in nature and extent. IED believes that the project acted as an inflection point leading to greater focus on urban areas as emphasized in the subsequent Country Partnership Strategy, 2012–2016, where municipal services were identified as a core area for ADB support. This urban focus continues in the latest Country Operations Business Plan, 2017–2019, where support for water and other urban infrastructure and services comprises 13% of the total Country Operations Business Plan envelope.

47. The project was consistent with the Government of Uzbekistan's strategies and policies at appraisal and at completion, including the Welfare Improvement Strategy of Uzbekistan, 2008–2010 (which identified improved water supply and sanitation as a strategic priority for rural and urban populations) and several RCMs covering the period 2012–2015, which initiated many sector reforms (footnote 5).

<sup>9</sup> IED. 2016. *Guidelines for the Evaluation of Public Sector Operations*. Manila: ADB.

48. There is evidence that the sector strategy and road map prepared in 2012 under the grant component of the project,<sup>10</sup> while not fully adopted by the government, did contribute significantly to sector reforms, which occurred during project implementation and subsequently. RCM Nos. 337, 306, and other resolutions and presidential decrees have adopted several of the strategy suggestions. The sector strategy and road map identified a state unified association to supervise directly the operational management of city and district *vodokanals* (excluding Tashkent city)—this model was adopted under RCM No. 306 in 2015. Also adopted under RCM No. 306 was the improvement of the institutional and human capacities of WSS utilities through professional training and introducing performance indicators. Through Presidential Decrees, staff salaries of state enterprises have increased steadily since 2010, most recently in November 2017, and are now competitively based on the market. The MOF officials interviewed during the evaluation mission said that the sector strategy and road map “served as a foundation” for the sector reforms. Officials from the MHCS reiterated this sentiment, noting that many of the principles it contained were built into subsequent reforms. Development partners also concurred with this assessment.

49. The sanitation component, at less than 3% of the base cost, was too small to contribute meaningfully to the sanitation services part of the outcome statement and should have been modified accordingly. The small loan value undoubtedly resulted in low priority for the sanitation component of the project. It is likely this contributed to the design shortcomings and operational flaws that are now evident.

50. Overall, the design of the water supply component of the project was holistic and appropriate, addressing both source development, treatment, distribution, and household connections. There were design and operational issues in the toilet facilities constructed in schools—these points are dealt with under Section C: Effectiveness. Capacity development included innovative performance benchmarking with technical, financial, and institutional indicators, which provide a sound basis for tracking improved service delivery by water utilities; however, this does not appear to have been rigorously adhered to since project completion. The DMF’s overreliance on the performance benchmarking system resulted in some indicators being difficult to measure.

51. The project continues to demonstrate its relevance to the sector. The influence of the sector strategy and road map on reforms, together with the innovative performance benchmarking approach to water supply utilities, combine to characterize a project that has had transformational effects. However, sanitation, which was of equally poor standard in Surkhandarya at appraisal, should have been given much greater attention and its neglect somewhat diminished the project’s relevance. For these reasons, the evaluation assessed the project relevant.

## C. Effectiveness

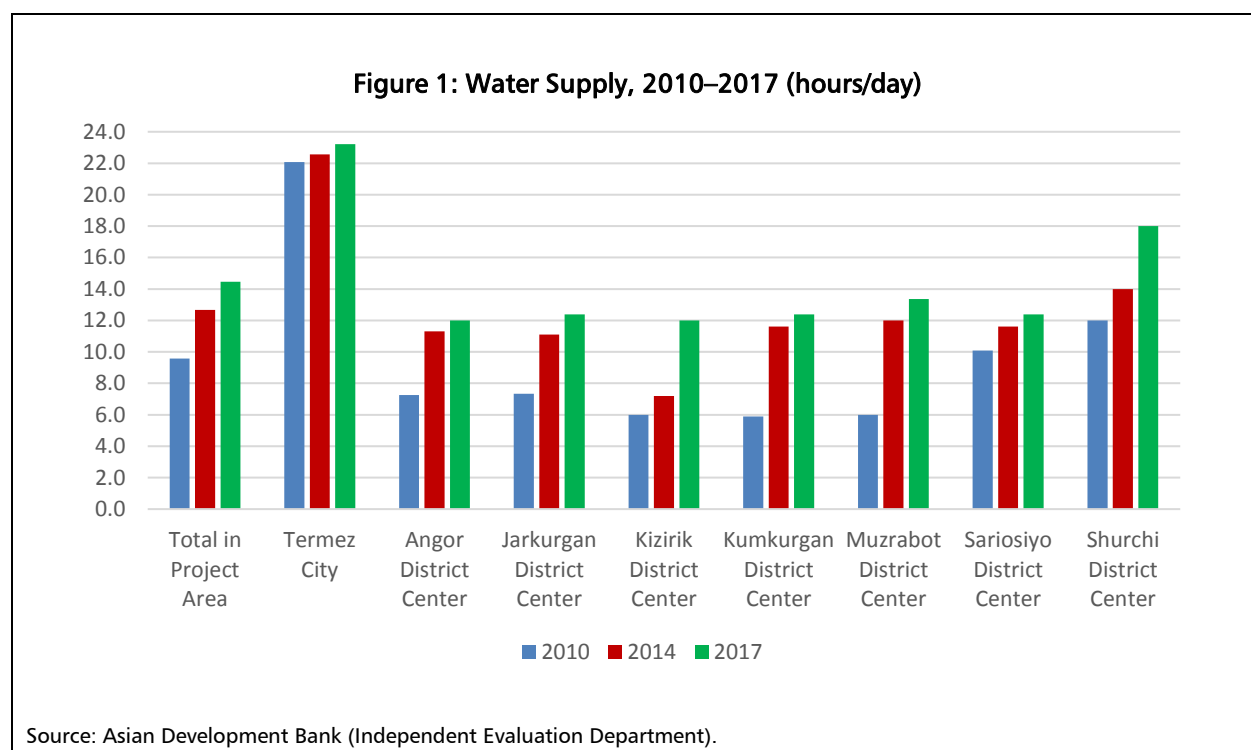
52. The independent evaluation mission requested data through CSA and the Surkhandarya water utility to support the assessment of performance targets of the project. The data provided were of variable quality and sometimes inconsistent with those cited in the PCR. These inconsistencies are highlighted in para. 64. Performance data in the PCR relied heavily on 2014–2015 indicators developed using the approach of the IBNET, an initiative funded by the World Bank Group. However, more recent benchmarking data in IBNET format were not available during the evaluation mission. This is a serious institutional concern and discussed under the sustainability assessment below. This assessment of effectiveness was based on performance data provided by the Surkhandarya water utility, field observations of built infrastructure, and focus group discussions with water users. An assessment of the status of the DMF’s outcomes and outputs at evaluation is provided in Appendix 1. The following important outputs have yet to be fully achieved: (i) a benchmarking performance system was established

<sup>10</sup> ADB. 2012. *Developing of Strategy, Road Map and Investment Program for the Water Supply and Sanitation Sector of the Republic of Uzbekistan until 2020, Final Report*. Manila.

but has not been institutionalized or maintained since completion, (ii) the number of meters installed is at 22,244, less than the 69,632 reported in the PCR, and (iii) handwashing facilities in the school toilet blocks are not functioning. A detailed assessment of the achievement of expected outcomes is in Appendix 1.

53. **Provision of water supply.** Data provided by the Surkhandarya water utility indicates that by the end of 2016, some 331,076 people were connected to a centralized water supply system in the project areas, slightly under the target of 340,000, which was reported as achieved in the PCR. Similarly, the project was expected to result in 70,000 households with meters, and the PCR reported that by project completion 69,632 households were metered; 12,452 meters through the project and the remainder through a separate loan from the Export and Import Bank of China. In contrast, data provided by the Surkhandarya water utility to the evaluation mission indicate that by 2017, only 22,244 households had meters or 44% of project areas.<sup>11</sup> Water quality data were not provided, but the Surkhandarya water utility indicated that water supplied is in full compliance with national drinking water standards, as reported in the PCR.

54. **Continuity of supply.** Data provided by the Surkhandarya water utility indicate that by the end of 2016, households were receiving between 12 hours and 23.2 hours of water supply, with an average of 14.5 hours (Figure 1). These data differ with the 15 hours to 22 hours reported in the PCR. The average 14.5 hours reported by the water utility is below the target of 20 hours by 2014, but water supply has been increasing steadily since project start in 2010. Power outages were reported as less of an issue since project completion, due to recently operational energy projects including the ADB-supported Talimarjan thermal power plant with a capacity of 450 megawatt.



55. **Unaccounted for water (UFW).** Data provided by the Surkhandarya water utility during the evaluation mission, indicate that by the end of 2016, UFW was averaging 12.2% for project areas. This is

<sup>11</sup> Further information on the provision of meters under the loan from the Export and Import Bank of China were not provided to IED.

less than the 19.4% reported for 2014–2015 in the PCR and well below the 40% target at appraisal. However, as reported in the PCR and observed during the evaluation mission, the true values of UFW will not be verifiable until connections are fully metered. Complaints received by the provincial water utility and its district branches are significantly lower now than at start of project and, based on focus group discussions, consist generally of minor issues that are nearly always addressed promptly. The PCR quotes benchmarking data for 2014–2015 reporting that operating cost ratios range from 1.13 to 1.42 for the water utility branches and Termez city. Table 5 indicates increasing operational ratios since project start for Termez and Muzrabad using data collected during the evaluation mission and based on the economic and financial analysis in Appendix 6. This indicates that sufficient revenue is being generated to meet operational costs.

**Table 5: Operational Ratios for Muzrabad and Termez City**

Urban Centre	2009	2010	2011	2012	2013	2014	2015	2016
Muzrabad	1.00	1.00	1.00	1.02	1.04	1.17	1.19	1.26
Termez City	0.95	0.70	1.06	1.07	1.07	1.08	1.03	1.15

Source: Asian Development Bank (Independent Evaluation Department).

56. The project's only hygiene related outcome target was that 80% of school children wash their hands with soap by 2014. This was deemed achieved by the PCR; however, no objectively verifiable method to confirm this is provided although the hygiene promotion activities undertaken under the project are cited. Based on the PCR, a survey conducted in 42 schools reported that waterborne infections in 2014 decreased by about 70% per 100,000 children under 14 years of age after the project.<sup>12</sup> While this is consistent with the district level health data provided by the Surkhandarya Province Department of the Ministry of Health (Table 8), in the absence of baseline data with control populations, it is not possible to attribute this outcome to the project. The evaluation mission met with staff in Termez School No. 3, where a provincial resource center was established to develop the hygiene training and develop awareness materials. The center is no longer in existence, but the materials were still visible. However, in visits to the district schools, the mission observed significant design flaws. Urinals constructed in the toilet blocks were poorly designed and obsolete. The handwashing facilities built under the project were not functioning or obsolete, requiring the schools to use temporary, mobile handwashing facilities outside the toilet blocks. Some school managers reported that they were undertaking retrofitting using government funds to address these design flaws. Given these facts, this evaluation concludes that this outcome indicator was not achieved.

57. This evaluation assessed the project less than effective in achieving the expected outcome of providing safe, reliable, and sustainable water supply services in participating urban centers of Surkhandarya province. The project objectives for sanitation and hygiene outcomes were not fully achieved, although this represents less than 3% of project base cost. The project's DMF stated eight outcome performance targets, of which, seven concern the provision of water supply and one concerns hygiene. This imbalance in outcome indicators reflects the dominance of the water supply component in the loan value and the neglect of sanitation services, which is considered a design issue and, as discussed earlier, diminished the project's relevance. Overall, the project is deemed less than effective given that, while most of the outcome and output indicators are on a positive trajectory, many targets remain to be fully achieved.

## D. Efficiency

58. In some ways, the project was highly efficient, based on the economic performance of its major component, and the improvements realized in water system management and operation, including a major increase in collections and on-time payments. Its process efficiency was good, particularly

<sup>12</sup> The survey report could not be located by the ADB's resident mission or by government agencies.

compared to the three preceding ADB projects in Uzbekistan's water sector. However, several contractors had their contract amounts reduced due to delays in completion. Other outputs were generally achieved. The lack of adequate maintenance of the school toilets combined with contract delays, prevents a highly efficient rating being allocated.

59. **Process efficiency.** Process efficiency was generally satisfactory. Water production facilities and distribution network contracts were issued between July 2010 (Angor) and December 2011 (Termez). The first of these was within 16 months of loan approval, an impressive performance, particularly in light of the major delays experienced by the three earlier water sector projects.

60. The PCR states that some contractors were fined liquidated damages for delays, according to the contract conditions due to (i) poor management of works and cash-flow problems, (ii) nationwide interruptions of fuel and lubricant supply, (iii) the need for design modifications due to inaccuracy or ambiguity in the contract documents or diversified hydrogeological field conditions, (iv) limited information on underground utilities, (v) unfavorable weather conditions, and (vi) lengthy procedures required by the authorities for customs clearance and tax audits. However, only one contractor was reported to have been fined in the five districts visited by the evaluation mission.

61. The delay in the completion of civil works in most of the subprojects was attributed partly to the limited capacity of the national construction supervision consultants. The engagement of many individual construction supervision consultants made it difficult for the team leader to provide each of them with adequate guidance.

62. **Economic efficiency.** At appraisal, component 2 was estimated to generate an economic internal rate of return (EIRR) of 32%. Economic return to investment in the rehabilitation of water infrastructure can show a high return since much of the capital cost of the overall scheme is essentially a sunk cost.

63. Economic analysis at completion indicated a decline in average return, to 23.5%—still a high level. While the appraisal methodology appears sound, this evaluation identified substantial issues, including (i) double counting of capital cost; (ii) generation of benefits before rehabilitation has commenced; (iii) lower UFW rates for the new systems than the existing; (iv) no estimate of non-residential tariffs, which have always been higher than residential; (v) assumed percentage increases in the selling price of water, rather than actual; and (vi) connection numbers that appear to bear no relationship to actual numbers.

64. At evaluation, two subprojects were selected for economic assessment (Table 6). Termez city was chosen as the largest of the subprojects in terms of both cost and population. Muzrabad was chosen as the second largest with 10,640 connections at the time of the benchmarking survey in early 2015. In aggregate, the two subprojects accounted for 55% of all connections. A reason for the limited analysis was twofold—inability to build on the PCR's analysis and the limited and inconsistent data available from the *vodokanals*.

65. The economic assessment was based on the financial data in Appendix 5. Water was divided into non-incremental—i.e., that for which network water replaced previously used water supplies—and incremental, which is classed as additional to previous consumption. Non-incremental water was valued at the savings in cost due to piped water—in this case, time savings and elimination of storage costs. In the absence of better data, information on these savings was based on appraisal and PCR data. Although one of the goals of the project was to improve health, no health benefits were assessed, in part because focus groups' members did not believe that their family members' health had improved significantly, and neither appraisal nor the PCR attempted to assess them.

66. Incremental water is valued at the assessed willingness-to-pay. This was estimated at around twice the current tariff level, which all focus groups agreed would be paid willingly by almost all

households, without significant reduction of consumption. In practice, a detailed willingness-to-pay analysis would probably generate higher economic values, since many consumers would be prepared to pay more with little reduction in consumption. The underpinning reason for this is that even at current prices, which are high by historical standards, the total cost per household is small compared to expenditure on electricity and gas. The Djarkurgan focus group also indicated that “some villagers used to spend 4–5 times more for water before the project.”

67. Based on these assumptions, the EIRR for Termez is estimated at 20%, same as the PCR. Muzrabad’s EIRR is estimated at 32%, significantly higher than the 22% estimated at completion, but below the 35% of the RRP. The reason for the relatively high return in Muzrabad is that the time savings from water collection in the absence of the project are estimated at 48 hours per household per month compared to 14.5 hours in Termez. This evaluation notes that available data are inconsistent, and no value is seen in reporting economic net present values or sensitivities to changing parameters. Overall, the project is assessed efficient, the same rating applied by the PCR.

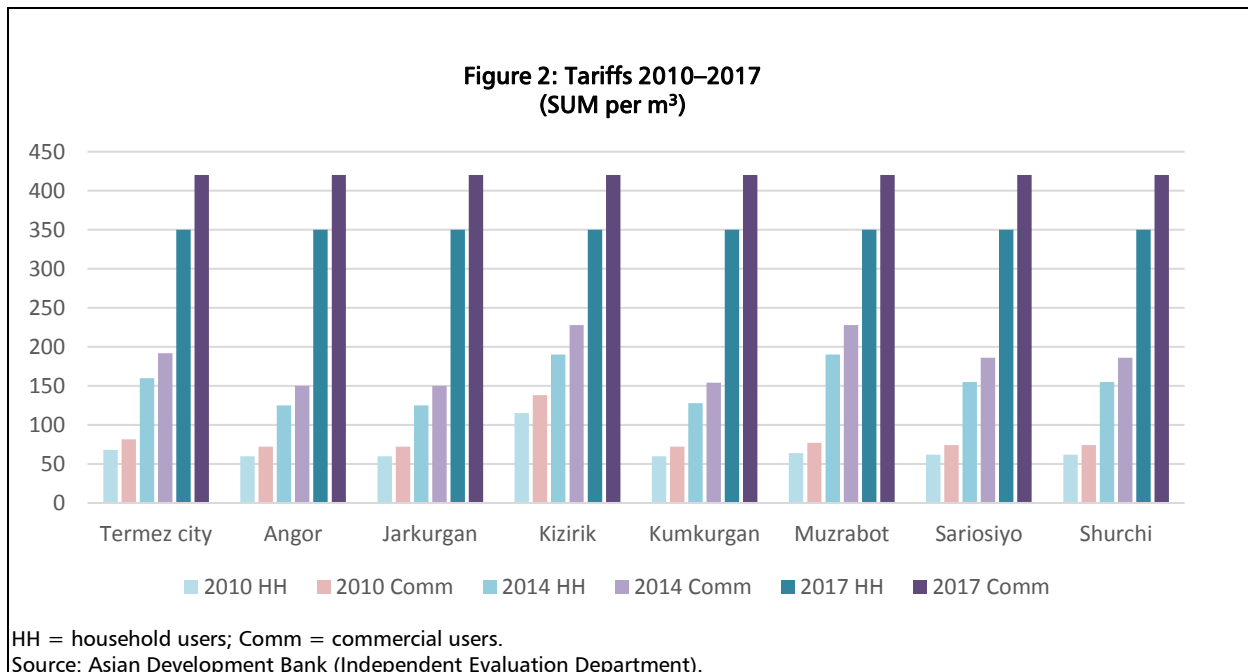
**Table 6: Economic Internal Rate of Return of Water Supply Subprojects at Appraisal and at Completion**

Subproject	Appraisal (2009)	Completion (2015)	Evaluation 2017
Djarkurgan	38.6%	26.4%	-
Hodjaipak	31.5%	24.8%	-
Kumkurgan	27.9%	23.4%	-
Muzrabad	34.2%	21.7%	32.0%
Sariasia	24.4%	22.3%	-
Shurchi	29.7%	23.2%	-
Surkhan	39.7%	28.7%	-
Termez City	31.1%	20.0%	20.0%
<b>Overall</b>	<b>32.1%</b>	<b>23.5%</b>	-

Source: Project completion report (Appendix 9) and Independent Evaluation Department.

## E. Sustainability

68. All six water supply systems visited were operating well and were reported by the provincial *vodokanal* to be profitable. The built infrastructure appears sound and includes more energy efficient pumps. The structure of the Surkhandarya water supply networks, with district *vodokanals* reporting to the provincial water utility, is sound and has the capacity to support the district networks at an adequate level. The government is now pricing water at a level intended to allow the *vodokanals* to operate profitably. With the province-wide management structure, this should have the potential to allow the more profitable *vodokanals* to support the less profitable. Tariffs have been increasing steadily since 2010 and now are uniform across the province (Figure 2).



69. The school toilet construction component is considered to be less than likely sustainable overall. While the buildings are sound, the water supply systems connected to the toilet blocks for handwashing have deteriorated and, in the schools visited, were not functioning. Schools have improvised by installing temporary handwashing facilities outside the toilet blocks. However, the pit toilets and pit and septic systems are operable, though the tank cover in Shurchi was collapsing during the site visit. The problems are attributable to poor design and the limited management and financial focus placed on the toilets by the school. Children are advised to bring half-liter bottles of water to school, which can be filled from a tap in the school or, in the case of Shurchi School No. 9, during the evaluation mission, from a free-flowing rising plastic pipe—the latter representing a health hazard as well as water loss to the system.

70. The hygiene training center at Termez City School No.3 provided materials for school hygiene programs under subsequent multitranche financing facility projects. The hygiene program initiated the ongoing 15 October International Hand Washing Day, which was a big celebration and includes a postcard drawing competition. The hygiene support systems have not outlived the project, and few schools had hygiene posters in their classrooms. Project posters were only seen in the nurse's room in Angor School No. 2.

71. Financial analysis at appraisal indicated a return on capital of 5.5% in real terms, higher than the weighted average cost of capital (WACC) of 4.2% estimated by the PCR.<sup>13</sup> The WACC appears reasonable, but this evaluation notes that the return to the government was estimated at 18% in real terms at appraisal and 25% at PCR.

72. A financial analysis was undertaken for Termez city and Muzrabad at evaluation. The financial analysis in the PCR includes some inconsistencies in the tables, which are described in Appendix 6. Data were requested from CSA and the Surkhandarya *vodokanal* staff. However, the data received were highly inconsistent, making analysis difficult. The government is now strongly committed to ensuring that all provincial *vodokanals* are financially viable and will support them in the event of short-term or even longer-term financial deficits. To become financially viable (at least in terms of generating returns that

<sup>13</sup> Weighted average cost of capital was estimated in the report and recommendation of the President at 4.7% for Termez and 4.5% for Muzrabad.

exceed the WACC in the long term), further increases in tariffs will be required. Since all *vodokanals* in the province are now on a unified tariff, the financial analysis assumed that real tariffs for the two centers reviewed would double over the next 5 years—an increase of 15% per year.

73. Under this tariff regime, Termez city should produce a financial internal rate of return (FIRR) of around 8.1% over the planned 30-year operating life (with no residual). If only half of the 5-year tariff increase is realized, FIRR would decline to 4.4%. FIRR for Muzrabad is estimated at 5.1%, below the 5.5% estimated by the PCR, but above the WACC. A reduction of 50% in the 5-year projected tariff increase would reduce FIRR to 1.3%, still positive, but well below the WACC, suggesting that the project could not continue to operate without government subsidies. Progressive increases in tariffs must be maintained.

74. The continuing high staff turnover (Table 7) is a concern for institutional sustainability. During the evaluation mission, provincial and district management indicated that staff salaries had increased and were now competitive with other similar sectors. While the rate of attrition has decreased since 2010, a 20% annual turnover is still too high. This will reduce the impact of training programs as trained staff leave and impact on institutional capacity. Training systems have improved with the provincial *vodokanal* able to support the districts through the Training Resource Center established under the project. In Tashkent, the evaluation mission met with the national training center staff in MHCS, established this year with support from Switzerland, which offers a range of technical, financial, and human resources courses. This has potential to improve the capacity of the provincial water utilities and their district branches.

**Table 7: Staff Turnover in Surkhondarya Provincial Water Utility and District Branches**

No.	District branch	Annual Staff Turnover		
		2010	2014	2017
1	Angor	25%	5%	38%
2	Jarkurgan	8%	28%	20%
3	Kizirik	13%	4%	15%
4	Kumkurgan	10%	7%	17%
5	Muzrabad	18%	10%	14%
6	Province Head Office	30%	35%	17%
7	Sariosiyo	4%	9%	20%
8	Shurchi	13%	14%	7%
9	Termez City	45%	48%	31%
	<b>Total in Project Districts</b>	<b>24%</b>	<b>24%</b>	<b>20%</b>

Source: Surkhondarya Provincial Suvokova.

75. The poor ability of the Surkhondarya water utility and its district branches to routinely monitor their own performance on key technical, financial, and institutional indicators constitutes a risk for their institutional sustainability. It is evident that data collection and management present a major problem for the Surkhondarya water utility, with a lack of systematic recording and analysis. The benchmarking exercise undertaken in the project in 2014 was a very positive start, and it was on the basis of this 2014/2015 data that the PCR assessed the achievement of many of the project's outcome and output targets. Requested data, such as the 2016 and first half of 2017 benchmarking data could not be provided despite several requests. The collection of such performance indicators has not yet been institutionalized. The benchmarking exercise report dated August 2014 highlights this risk by citing as key lessons that "data quality (both reliability and accuracy) requires ongoing improvement" and that "if benchmarking is to continue, participating utilities will require significant support from the PMU," and finally that "the PMU itself requires further support in terms of both coordination of data collection and technical knowledge." This requires urgent attention and follow-up.



76. Overall, the project is assessed likely sustainable. Technically, the water supply infrastructure that was built, which dominates the loan value, appears to be functioning as required and is being maintained well. Data assessed for Termez City and Muzrabad indicate that sufficient revenue is being generated to meet operational costs. The same cannot be said for the hand washing facilities in the school toilet blocks. Financially, based on a detailed assessment of the Termez and Muzrabad water utilities, the utilities appear to be operating profitably and progressive increases in tariffs across all towns are positive indicators. Threats to sustainability lie on the institutional side, particularly concerning data management and high staff turnover.

## Other Assessments

### A. Impact

77. The project's impact at appraisal was expected to be "improved living standards, environment, and public health in urban centers of Surkhandarya," with 90% of the population provided with safe and reliable water supply at least 20 hours a day by 2020. By the time of the independent evaluation mission in 2017, the project is on track to deliver its envisaged impacts.

78. A secondary impact of the provision of clean water and the hygiene promotion program was that waterborne infections per 100,000 children under 14 years in Surkhandarya would decrease by 40% by 2020. According to a survey conducted at 42 schools, waterborne infections in 2014 decreased by about 70% per 100,000 children under 14 years after the project. This outcome is seemingly confirmed by data from the Surkhandarya Department of Health provided to the evaluation mission, though the number of cases reported is minute. This implies that most cases of diarrhea are not reported in official statistics. However, the low level of diarrhea incidence was confirmed by the mission's focus groups which reported almost no cases in the past year (after the project), and few before. Hepatitis (probably mainly A) cases have also fallen greatly, by 60% in the project districts and almost as much elsewhere, suggesting that most of the improvement is due to generally improved hygiene and awareness of the causes of the disease, rather than the project per se.

**Table 8: Officially Recorded Cases of Waterborne Diseases in 2012 and 2017**

City and Districts	No. of Cases of Hepatitis			No. of Cases of Diarrhea		
	2012	2017	% change	2012	2017	% change
1 Angor	260	114		2	0	
2 Jarkurgan	280	148		3	0	
3 Kizirik	173	49		1	1	
4 Kumkurgan	174	87		2	0	
5 Muzrabot	85	30		1	0	
6 Sariosiyo	192	54		12	4	
7 Shurchi	149	73		45	9	
8 Termez City	397	132		2	1	
<b>Total in Project Districts</b>	<b>1710</b>	<b>687</b>	<b>60%</b>	<b>68</b>	<b>15</b>	<b>78%</b>
<b>Other Districts</b>						
9 Boysun	198	134		0	0	
10 Denau	404	207		9	12	
11 Oltinsoy	171	39		0	0	
12 Sherobod	200	51		1	1	
13 Termez district	119	45		5	1	
14 Uzun	174	100		3	1	
<b>Total other districts</b>	<b>1266</b>	<b>576</b>	<b>55%</b>	<b>18</b>	<b>15</b>	<b>17%</b>
<b>Total</b>	<b>2976</b>	<b>1263</b>	<b>58%</b>	<b>86</b>	<b>30</b>	<b>65%</b>

Source: Surkhandarya Province Department of Ministry of Health, 2017.

79. Wider impacts of the project can be seen in the contribution of the strategy and road map to the development of key policy and legislation, notably RCM Nos. 306 and 337 and the presidential decrees of 2017 (paras. 25 and 48).

80. The development of the Hygiene Resource Center in Termez School No 3, was effective locally during the life of the project, and also contributed materials to other ADB subprojects financed under the multitranchise financing facility.

81. Project impact is assessed satisfactory.

## **B. Asian Development Bank and Implementing Agency Performance**

### **1. Asian Development Bank**

82. The design process for the project began life as the Third Rural Water Supply Project, then, prior to the TA, became the Djizzak and Surkhandarya Rural Water Supply and Sanitation Sector Project. At that stage, it reflected the priorities of the 2006 to 2010 Uzbekistan CSP, even though it focused on the district capitals, and thus, was largely urban as opposed to the rural focus of the CSP. The earlier project designs were aligned with the national welfare improvement strategy as the subprojects, though focusing on district capitals, would serve nearby smaller settlements.

83. By July 2008, the project name had changed, with Djizzak districts dropped from the project (and Termez city added). A back-to-office report notes that after discussion with the government it was decided that dropping Djizzak would allow a focus on one province thereby streamlining project implementation, set a model for the sector and produce more demonstrable impacts. It would appear that the change reflected changing government policy, with the focus moving from rural poverty alleviation to the establishment of a viable national water supply sector.

84. Regarding quality at entry, project design as implemented is considered to have been sound for the provision of water supply, with the RRP and its supporting documents being of a high standard. However, sanitation was unduly neglected—the school toilet block design and construction were less than satisfactory, an issue that ADB review missions could perhaps have identified, given staff's wide experience in WSS. However, the component comprised less than 3% of the budgeted project cost and, as a consequence, received less attention than water supply development. The lack of an objectively verifiable method to confirm the achievement of 80% of school children washing their hands due to the hygiene promotion activities was also a design flaw. The benchmarking exercise, though a positive step, has not been institutionalized and should have been given more attention by ADB during review missions.

85. Review missions were held regularly and appear to have been constructive and helpful, while the midterm review and the PCR were well-prepared, apart from the financial and economic analysis in the PCR. ADB's performance is assessed satisfactory.

### **2. Implementing Agency**

86. UCSA established an effective group within the pre-existing PMU in Tashkent and the new PIU within the Surkhandarya provincial government. Early implementation was effective. For example, at the time of the fieldwork for the previous Country Assistance Program Evaluation for Uzbekistan in 2010, two of the subproject contracts had already been signed. All except three were signed by November 2011. The midterm review reported that "implementation progress was on track with overall progress of 75% versus an elapsed period of 66%."

87. The transition from UCSA to CSA does not appear to have been smooth, with consequent high staff turnover. A similar high staff turnover has occurred since the sector reforms at provincial and district water utility levels. However, these issues appear to be stabilizing. Effective, systematic, and coordinated data management, particularly for benchmarking performance data, is probably the single most important shortcoming of the implementing agencies to ensure and track continued improvement. This point is taken up in Chapter 5. UCSA generally performed well as implementing agency and is assessed satisfactory.

# Issues, Lessons, and Recommendations

## A. Issues

88. **Sanitation facilities in project schools in Surkhandarya province are not operating effectively.** The small size of the sanitation component compared to the water supply component, meant that it received little support from the project, perhaps explaining weak design and operation. This follows the downsizing and problems under the sanitation component of Kashkadarya and Navoi rural water supply and sanitation (WSS) and suggests that (i) more attention needs to be given to sanitation components, including ongoing poster campaigns; (ii) improved designs are needed for school toilet blocks, including reliable water supply and inclusion of full septic tank systems with drainage trenches where suitable land exists; and (iii) schools support to take on responsibility for O&M.

89. **The Surkhandarya provincial water utility is not collecting benchmarking performance data systematically.** The Surkhandarya water utility developed benchmarking capability under the project. However, although the water facility's management advised the evaluation mission in Termez that the benchmark data for 2016 and part of 2017 were available, implying they had continued to prepare the data after the end of the project, the data could not be provided. This is unfortunate as performance data are critical to the project's economic analysis and suggests that the benchmarking system may not be as well developed as indicated and is not being maintained sufficiently. Data reporting and management were observed as a key bottleneck for better performance. The government should consider their overall data collection, processing, and storage system, and attempt to make it more accessible and user-friendly. Such a development may well also be needed in other provincial water facilities.

90. **The enabling environment for public–private partnerships in the sector is limited.** The project and the strategy and road map examined public–private partnership involvement in the sector, but no substantial progress has been made to date. There is now recognition in Tashkent that, for example, the medium to long-term leasing of water networks to private companies will in many cases promote efficient operation. The government may need to take further steps to promote public–private partnership if the massive investment deficit in water supply and, particularly, sanitation is to be overcome.

91. **Communities peripheral to the project's urban settlements continue to have poor water supply provision.** Further work is required to expand the district capital networks to include additional peri-urban and near urban settlements in the water distribution network, where such development is financially viable. In part, this can come from the central government budget through MHCS, while *vodokanals* should be encouraged to seek bank loans for network expansion, where increased revenues would allow loans to be paid off within about 5 years. All *vodokanals* with whom the suggestion was discussed were enthusiastic about the concept. Interest rates are reasonable, though recently rising from 9% to 14% meaning that interest and capital repayment charges should be manageable provided that network length per additional connection is not too great. An example of a supplementary tariff for the expansion area until the loan is paid off was also suggested as an option in Jarkurgan, where a substantial majority of potential clients are interested in meeting such payments.

92. In Termez City, there is a planned rapid expansion of the sewerage network, which should be encouraged and supported. However, this will lead to increased demand for water, and the Termez *vodokanal* will need to ensure that its sources are sufficient to meet the demand. Termez *vodokanal* management believes that it can meet sewerage demand and expand water coverage by around 16% based on current wellfield capacity.

93. **Tariffs have been increasing steadily but are still relatively low.** The current tariff for household water is SUM350/cubic meter ( $m^3$ ) or around \$0.05, a low level by international standards.<sup>14</sup> At either the official or the floating rate, water is cheap in Surkhandarya, with households reporting that they spend on average around 0.5% of their income on water. In this situation, it is not surprising that around 95% of focus group members would be prepared to pay a tariff that was double the present level, though a few would cut back their water purchases to some degree. Even after a doubling of price per cubic meter, the monthly water bill would be low compared to their expenditure on electricity and gas for example, which is often of the order of SUM100,000 per month.

94. Focus group members were uniformly supportive of pro-poor block tariffs, believing it would promote more efficient water use, as well as benefiting the poor. Poor households can often limit their monthly consumption to the lowest block (e.g.,  $10m^3$ /month) or not much above it. Consequently, it is suggested that a new tariff regime may be introduced, possibly starting at the present household rate of SUM350/ $m^3$  for the first 5 or  $10m^3$  rising to say SUM500 for the next  $10m^3$ , 700 for between  $20m^3$ /month and  $30m^3$ /month with a peak of SUM900 or SUM1000 for consumption over  $30m^3$ . The computerized billing system currently being trialed with support from ADB should make such a tariff regime reasonably easy to implement.

95. **Government-led coordination of development partners for the sector is not in place.** Informal sectoral networks across development partners are quite strong and this mechanism helps avoid duplication of efforts. However, there is an opportunity to enhance coordination and synergies through the support of a government-led coordination mechanism. Such enhanced coordination is even more important now because the individual district *vodokanals* no longer operate independently since the sector reforms; they now operate as branches of the provincial water utility. Therefore, interventions by development partners at district level should take into account other interventions in the same province.

## B. Lessons

96. Key lessons arising from this evaluation are:

- (i) **Performance benchmarking systems must be underpinned by sustained institutional support.** Benchmarking of district and provincial water utilities' performance is an invaluable tool in monitoring performance and identifying strengths and weaknesses, allowing problems to be addressed in a timely manner. However, sustained support is required to ensure these benchmarking systems are effective. It is suggested that MHCS reviews the benchmarking system in all provincial water utilities and develops a plan for filling any gaps.
- (ii) **Results for sanitation components suffer when low investment coincides with low priority.** More attention needs to be given to sanitation components, including continuing hygiene awareness campaigns. Improved designs are needed for school toilet blocks, and schools need support for operation and maintenance.
- (iii) **Targeted support for sector reforms can yield positive results.** The grant component of this project developed a sector strategy and road map that was successful in supporting necessary WSS reforms nationally. Similar projects can leverage their added value to the sector through this kind of targeted support for sector reform. Sequencing sector reform support in advance of loans may maximize the benefits.

<sup>14</sup> Closer to \$0.09/ $m^3$  at the official rate that existed up to 5 September 2017.

## C. Recommendations

97. **Sanitation should be a priority in water supply and sanitation projects, and remedial action in project schools is warranted.** Future WSS projects supported by ADB that include sanitation components should have an adequate budget, appropriate technical design, and institutional support to ensure effectiveness and sustainability. Support is needed for the 17 project schools to assess and rehabilitate any deficiencies in the hand washing facilities in the toilet blocks constructed under the project.

98. **Performance benchmarking in water utilities needs sustained support to be effective.** It is recommended that future WSS interventions by ADB in Uzbekistan review the benchmarking system and data management generally in all provincial water utilities and develop implementation plans to fill the gaps. Institutional support is needed to ensure that established systems to monitor utility performance are sustained beyond the lifetime of the project.

99. **Coordination among development partners, providing interventions in water supply and sanitation, needs to be enhanced.** There is currently no formal coordination mechanism among development partners providing WSS interventions. However, given the newly established water utility and sector reforms, it may be opportune to support such an initiative. During the evaluation mission, government, ADB, and development partners expressed an interest in such coordination, but any initial attempts in that direction have yet to reach fruition. Informal collaboration continues but consideration could be given to supporting the establishment of formal government-led coordination to prevent overlap of interventions and develop complementary synergies.

# Appendixes

## APPENDIX 1: DESIGN AND MONITORING FRAMEWORK

Design Summary	Appraisal Targets	Achievements at Project Completion	Achievements at Evaluation
<p><b>Impact</b></p> <p>Improved living standards, environment, and public health in urban centers of Surkhandarya</p>	<p>90% of the population is provided with safe and reliable water supply at least 20 hours a day by 2020.</p> <p>Waterborne infections per 100,000 children under 14 years in Surkhandarya decrease by 40% by 2020.</p>	<p><b>Achieved.</b> 90% of the population served with safe and reliable water over 20 hours a day is achievable by 2020, provided that an uninterrupted electricity supply is ensured. After project completion, <i>vodokanals</i> gained the capacity to provide safe and reliable 24/7 water supply in the subproject areas. As of March 2015, the continuity of water supply per day in subprojects varied from 15 to 22 hours compared to 2–6 hours before the project.</p> <p><b>Achieved.</b> As of March 2015, waterborne infections per 100,000 children under 14 years in project areas had decreased by 70%, on average.</p>	<p>Ranges from 12–23.2 hours of supply; slightly less in winter.</p> <p>Waterborne disease incidence has declined greatly in both project and non-project districts but cannot be attributed easily to the project. Built hand washing facilities are not functioning.</p>
<p><b>Outcome</b></p> <p>Safe, reliable, and sustainable water supply and sanitation services and improved community hygiene in participating urban centers of Surkhandarya</p>	<p>Safe and reliable water is provided to 340,000 people by 2014, and to 367,000 by 2020.</p>	<p><b>Achieved.</b> As a result of the project, the <i>vodokanals</i> have the capacity to provide safe and reliable water to 340,000 people in Angor (12,300), Jarkurgan (27,200), Kizirik (12,000), Kumkurgan (16,500), Muzrabad (50,400), Sariasia districts (31,500), Shurchi (23,500), Surkhan (28,200), and the city of Termez (138,300).</p>	<p>Connections now reach 331,076 people according to provincial water utility data.</p>
	<p>Water supply is available at least 20 hours a day by 2014, and 24 hours a day by 2020.</p> <p>UFW is reduced to less than 40% by 2014.</p>	<p><b>Achieved.</b> The newly constructed water supply system has the capacity to provide a 24-hour uninterrupted supply of water. As of March 2015, the continuity of water supply per day varied from 15 to 22 hours, compared to 2–6 hours before the project. By 2020, all urban centers of Surkhandarya will get water 24 hours a day.</p> <p><b>Achieved.</b> According to the 2014–2015 benchmarking report, NRW in March 2015 was less than 40%; Angor (19%), Jarkurgan (20%), Kizirik</p>	<p>Households are being provided 12–23.2 hours of water; averaging 14.5 hours per day. Electricity supply has improved.</p> <p>UFW is not measurable because full metering was not achieved and there is a lack of bulk</p>



Design Summary	Appraisal Targets	Achievements at Project Completion	Achievements at Evaluation
	<p>Water quality complies with national drinking water standards from 2014.</p> <p>Customer complaints are recorded and responded to promptly from 2014; the number of complaints is reduced over time.</p> <p>Each customer care unit has a gender focal point to receive and address women's complaints.</p>	<p>(20%), Kumkurgan (19.2%), Muzrabad (15.6%), Sariasia (20.7%), Shurchi (18.6%), Surkhan (21.4%), and Termez (19.7%).</p> <p><b>Achieved.</b> Water quality is tested at the laboratory of the provincial <i>vodokanal</i> on a weekly basis, and the tested water complies with national drinking water standards in all the <i>vodokanals</i>.</p> <p><b>Achieved.</b> A customer complaints recording and responding system has been established in Angor, Jarkurgan, Kizirik, Kumkurgan, Muzrabad, Sariasia districts, Surkhan, and Termez. The customer complaints during 2014–2015 ranged from 11 to 30/1,000 connections.</p>	<p>water meters in pipelines.</p> <p>No water quality issues were raised by focus groups, except for water hardness in two out of six districts.</p> <p>Complaints in 2017 are mainly minor in nature and easily addressed by the <i>vodokanals</i>.</p> <p>Some <i>vodokanals</i> have gender focal points or at least women in the complaints section.</p>
	<p><i>Vodokanals</i> cover O&amp;M costs from 2010, and O&amp;M and depreciation costs from 2014.</p> <p>The collection rate of water supply and sanitation charges increases to 90% by 2014.</p> <p>80% of schoolchildren wash their hands with soap by 2014.</p>	<p><b>Partly Achieved.</b> According to the 2014–2015 benchmarking report, the operating cost coverage ratio, excluding depreciation, ranges between 1.13 and 1.42. Tariffs are adjusted twice a year. Starting 1 December 2013, the <i>vodokanals</i> increased the per capita-tariff by 1.5 times for non-metered consumers, according to the Resolution of the Cabinet of Ministers No. 300 of 2013.</p> <p><b>Achieved.</b> The collection rates increased in Angor (85%), Jarkurgan (92%), Kizirik (85%), Kumkurgan (91%), Muzrabad (90%), Sariasia (90%), Shurchi (94%), Surkhan (88%), and Termez (92%). The average collection rate is 90%.</p> <p><b>Achieved.</b> Under the hygiene promotion program, all schoolchildren in all nine subprojects were taught to wash their hands with soap. Approximately 20,000 booklets and posters on hygiene practices were distributed.</p>	<p>Recent benchmarking data is not available.</p> <p>The operating ratio for Muzrabad is estimated at 1.26 while the operating ratio for Termez city is estimated at 1.15.</p> <p>The collection rate is heading towards 85–90% and supported by the courts, which are imposing fines on late payers who lack a good reason.</p> <p>Not achieved. Little remains of the hygiene education program. Handwashing facilities built under the project are not functioning properly.</p>

Design Summary	Appraisal Targets	Achievements at Project Completion	Achievements at Evaluation
		Teaching aids for schoolteachers, such as the 175-page “practice-based learning the basics of hygiene, sanitation, and healthy lifestyle” were developed. One thousand pieces (700 in Uzbek and 300 in Russian) were developed and distributed.	
<b>Outputs</b>			
1.1 WSS strategy, including PPP framework	A sector strategy with a long-term and coherent vision and a holistic approach to sector development and PPP promotion is prepared and approved by December 2011.	<b>Achieved.</b> A WSS sector strategy was prepared in March 2012. The government has been taking a phased approach in implementing sector reforms. It has enacted a number of legislative documents, focusing on (i) reforming institutional structures and regulatory environments; (ii) strengthening the management and operation of the WSS utilities, including benchmarking; (iii) improving financial management and tariff structure; (iv) establishing an ICT system and metering; and (v) rehabilitating and expanding the infrastructure. The Sector Strategy Action Plan 2015–2019, road map, and investment plan for the WSS sector in Uzbekistan until 2020 was approved by RCM No. 306, dated 30 Oct. 2015.	RCM Nos. 337, 306, and other relevant resolutions and 2017 presidential decrees have adopted several of the strategy suggestions.
	A profile of private operators in the sector is prepared by December 2011.	<b>Achieved.</b> Only three private operators were observed in the country. Their experience and capacity were reviewed and analyzed. Private sector participation in the WSS sector will be introduced in a phased manner (Phase 1–Transition, and Phase 2–Mainstreaming) to ensure that an enabling environment is created and a sustainable PPP market is established in the long run. At present, UCSA is adopting Phase 1.	Little has happened in the time since completion. However, the change in the structure of the WSS sector is likely to lead to increased involvement of private sector in the operation of WSS systems. Private investment in sewerage systems may need to be sought.
1.2 WSS development road map and investment plan for 2020	Road map is prepared and adopted by the government by December 2012.	<b>Achieved.</b> The road map was prepared in March 2012. The actions proposed in the road map are being adopted step by step. As a first step, RCM No. 337, dated 30 November 2012, was issued for comprehensive development and modernization of WSS systems for 2013–2015. In addition, RCMs Nos. 300, 188, 194,	The strategy and road map acted as a “foundation” for subsequent sector reforms.

Design Summary	Appraisal Targets	Achievements at Project Completion	Achievements at Evaluation
		and 197 were issued to materialize various strategy directions. The government approved RCM No. 306 on 30 Oct. 2015 to enact the strategic directions until 2020.	
2.1 Rehabilitated water supply infrastructure in urban centers of seven districts and Termez	19 reservoirs, 47 boreholes, 44 pumping stations, 53 km of trunk mains, and 148 km of distribution networks are rehabilitated	<b>Achieved.</b> 20 reservoirs, 40 boreholes, 12 pump stations, 53.3 km of trunk mains, and 148.9 km of distribution networks were rehabilitated.	Built infrastructure was observed as well built during the evaluation mission.
	8 reservoirs, 11 boreholes, 4 pumping stations, 24.4 km of trunk mains, and 108 km of distribution networks are constructed.	<b>Achieved.</b> 7 reservoirs, 14 boreholes, 1 pump station, 24.9 km of trunk mains, and 156.3 km of distribution networks were constructed.	All systems observed by the evaluation mission are operating adequately.
	Water meters are installed in 70,000 households, connecting them to the water supply system.	<b>Achieved.</b> A total of 69,632 households were connected with water meters through 288.8 km of service pipelines (D=20–50mm). Of all, 12,452 meters were installed under the project while the rest were installed within the framework of the other project.	Water utility data indicates that only 22,244 households had meters or 44% of project areas. No information was available on metering undertaken by the Export–Import Bank of China.
3.1 Improved latrines (with handwashing facilities) in selected schools in project areas	At least 17 schools are provided with improved latrine facilities by 2014.	<b>Achieved.</b> 17 schools were provided with improved latrine facilities and water supply.	The four schools visited had failed to adequately maintain their systems, particularly with respect to the water supply to the toilet blocks.
	All schools in the project areas are provided with a piped water supply.	<b>Achieved.</b> There are 65 schools in the project area: Angor–2, Jarkurgan–7, Kizirik–5, Kumkurgan–6, Muzrabad–16, Sariasia–4, Shurchi–4, Surkhan WDC–1, and Termez–20. All these schools are provided with a piped water supply from the water supply system constructed under this project.	All schools reported having a piped water supply, though in the schools visited by the evaluation mission, only to the canteen. Outside taps for school children were not available.
3.2 Innovative hygiene promotion activities in school communities in project areas	Hygiene promotion activities are carried out in all schools in the project areas; at least five women are trained in each <i>makhalla</i> in the project areas.	<b>Achieved.</b> Since the beginning of the project, 1,145 people were trained, of whom more than 77% are women (879).	Little ongoing activity apart from World Handwashing Day in School No. 3 in Termez.
	One baseline and two	<b>Achieved.</b> Hygiene baseline survey	Survey reports could not

Design Summary	Appraisal Targets	Achievements at Project Completion	Achievements at Evaluation
	follow-up surveys are carried out to gather gender-disaggregated information.	and formative research were completed in September 2011. A follow-up survey was carried out in September 2013 and a final survey in April 2014.	be located. No information is available.
4.1 Improved and well-maintained <i>vodokanal</i> offices, equipment, and infrastructure	<p>Eight subproject <i>vodokanals</i> receive new furniture and equipment, and keep them well maintained.</p> <p>Customer care units and customer representative groups are established in each <i>vodokanal</i> by 2010.</p>	<p><b>Achieved.</b> All <i>vodokanals</i> received new furniture and equipment by September 2009.</p> <p><b>Achieved.</b> Customer care units were established in each subproject <i>vodokanal</i>.</p>	<p>Offices are functioning well.</p> <p>Customer care appears to be effective.</p>
4.2 Training program to improve operations, management, and customer relations skills developed, implemented, and evaluated	<p>Consumer databases are developed and all consumers are registered by 2014.</p> <p>Computerized financial management systems are adopted.</p> <p>An O&amp;M manual is developed for each <i>vodokanal</i> and adopted.</p>	<p><b>Achieved.</b> Consumer databases were developed and consumers registered in all <i>vodokanals</i>.</p> <p><b>Achieved.</b> Computerized financial management systems were adopted in all <i>vodokanals</i>.</p> <p><b>Achieved.</b> An O&amp;M manual has been developed for each <i>vodokanal</i> and adopted.</p>	<p>Manual computer entry of consumer bills observed during the evaluation mission.</p> <p>Trial of computerized systems (includes billing) ongoing</p> <p>Ongoing</p>
4.3 Performance monitoring system for participating <i>vodokanals</i>	A simple performance benchmarking system is developed by 2012, all <i>vodokanals</i> attend performance benchmarking workshops, and the performance benchmarking system is adopted by 2013.	<b>Achieved.</b> The performance benchmarking system with technical, financial, and institutional indicators has been developed and established in the project <i>vodokanals</i> . The <i>vodokanals'</i> representatives have been trained in the collection, analysis, and monitoring of the performance data. The <i>vodokanals</i> have been submitting their quarterly performance benchmarking reports to the executing agency.	The benchmarking system was reported to be up-to-date, but no information was available since that developed during the PCR.
4.4 Study tours to places with good practice examples	<p>Study tour participants actively discuss and participate in the preparation of frameworks and WSS strategy, and in running the <i>vodokanal</i> offices throughout the project implementation period.</p> <p>At least 20% of participants in the training activities and study tours are women.</p>	<p><b>Achieved.</b> Three national study tours in Fergana, Khorezm, and Tashkent provinces, and three international study tours in France, South Korea, and Spain were conducted for <i>vodokanal</i> staff. After each study tour, the participants shared the results and feedback of the study tours in the form of workshops.</p> <p><b>Achieved.</b> The participation of women in the training activities and study tours was 32%, on average:</p>	<p>No study tour or workshop reports could be provided to the evaluation mission. The study tours were, however, reported by participants as useful.</p> <p>Employment of women is still limited in the <i>vodokanals</i>. However, female accountants and</p>

Design Summary	Appraisal Targets	Achievements at Project Completion	Achievements at Evaluation
		<ul style="list-style-type: none"> <li>• of 13 training modules with 191 participants, 98 were women (51%);</li> <li>• of 56 participants in a 3-day seminar, 12 were women (21%);</li> <li>• of 35 participants in 3 national study tours, 7 were women (20%);</li> <li>• of 31 participants in 3 international study tours, 1 was a woman (3%); the distance and long stay abroad made women reluctant to participate;</li> <li>• of 159 participants in 6 seminars on the results of study tours, 34 were women (21%).</li> </ul> (see table in Appendix 10)	collectors are quite common.

ICT = Information and Communication Technology, km = kilometer, O&M = operation and maintenance, PCR = project completion report, RCM = resolution of the Cabinet of Ministers, UFW = unaccounted for water, UCSA = Uzbekistan Communal Services Agency (*Uzkommunhizmat*), WSS = water supply and sanitation.

Source: Asian Development Bank.

## APPENDIX 2: PROJECT COST

Table A2.1: Project Cost by Component

Item	Amount	% base cost	% project cost
<b>A. Base Costs by Component</b>			
1. Strengthening of Sector Strategy & Management	1.0	3.0%	2.5%
2. Water Supply Development	29.9	89.0%	74.8%
3. Sanitation and Hygiene	0.9	2.7%	2.3%
4. Capacity Development	0.5	1.5%	1.3%
5. Project Implementation Assistance	1.3	3.9%	3.3%
<b>Subtotal (A)</b>	<b>33.6</b>	<b>100.0%</b>	<b>84.0%</b>
<b>B. Contingencies</b>			
Physical	2.6		6.5%
Price	3.1		7.8%
<b>Subtotal (B)</b>	<b>5.7</b>		<b>14.3%</b>
<b>C. Interest and Other Charges during Construction<sup>a</sup></b>	<b>0.7</b>		<b>1.8%</b>
<b>Total (A + B + C)</b>	<b>40.0</b>		<b>100.0%</b>

<sup>a</sup> Interest during construction of 1% per year.

Source: Report and Recommendation of the President.

Table A2.2: Project Cost and Financing Plan

Items	Appraisal Estimate			Actual		
	Foreign Exchange	Local Currency	Total Cost	Foreign Exchange	Local Currency	Total Cost
<b>Investment Costs</b>						
1. Civil Works	2.7	15.7	18.4		22.6	22.6
2. Mechanical and Equipment	4.2	1.1	5.3	6.2	0.4	6.5
3. Environment and Social Mitigation	0.1	0.1	0.2			
4. Consultants						
a. Strengthening of Sector Strategy and Management	0.6	0.9	1.5	0.6	0.9	1.5
b. Detailed Design & Construction Supervision		1.2	1.2		1.0	1.0
c. Hygiene Program	0.1	0.1	0.2		0.2	0.2
d. Project Implementation Assistance	0.4	0.2	0.6	0.2	0.4	0.6
5. Taxes and Duties		5.7	5.7		5.6	5.6
<b>Subtotal (A)</b>	<b>8.0</b>	<b>25.0</b>	<b>33.0</b>	<b>6.9</b>	<b>31.1</b>	<b>38.0</b>
<b>Recurrent Costs</b>						
1. Salaries		0.4	0.4		0.5	0.5
2. Equipment Operation and Maintenance		0.2	0.2		0.4	0.4
<b>Subtotal (B)</b>		<b>0.5</b>	<b>0.5</b>		<b>0.9</b>	<b>0.9</b>
<b>Total Base Cost Contingencies</b>	<b>8.0</b>	<b>25.6</b>	<b>33.6</b>	<b>6.9</b>	<b>32.0</b>	<b>38.9</b>
1. Physical	0.8	1.8	2.6			
2. Price	0.8	2.4	3.2			
<b>Subtotal (C)</b>	<b>1.6</b>	<b>4.2</b>	<b>5.7</b>			
<b>Financing Charges during Implementation</b>						
1. Interest during Implementation	0.7		0.7	0.6		0.6
<b>Subtotal (D)</b>	<b>0.7</b>		<b>0.7</b>	<b>0.6</b>		<b>0.6</b>
<b>Total Project Costs (A+B+C+D)</b>	<b>10.3</b>	<b>29.8</b>	<b>40.0</b>	<b>7.5</b>	<b>32.0</b>	<b>39.5</b>

Source: Project Completion Report.

## APPENDIX 3: SUMMARY OF LAND ACQUISITION AND RESETTLEMENT ISSUES

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1. The physical component of the project included the replacement of water supply systems in nine subprojects. In Jarkurgan district, the new construction entailed the minimal temporary acquisition of agricultural land. There was no permanent impact to residents as a result of the project. No residences or structures were impacted or demolished. The Surkhandarya Water Supply and Sanitation Project had a temporary impact only in Jarkurgan district (in the rural settlement of Surkhan).
2. The water main route went from the Surkhan water intake through fields owned by households. In total, temporarily affected were 2.6 hectares (ha) of farm enterprises and 0.042 ha of family households. No permanent land acquisition was required. In total, resettlement impact affected 19 households comprising 169 persons in the 2.6 ha of land under the category of cropping farms and individual households.
3. No one lost productive assets permanently due to pipe-laying works. Seven farm enterprises lost access to a portion of their leased land temporarily. All pipe laying took place in autumn or winter when no agricultural activities were taking place. Pipe-laying along the vegetable gardens of 12 households took place in late autumn (November–January 2012/2013) resulting in a temporary loss of access to a portion of their lands, on average no more than 1.7%.
4. In 2014, a resettlement verification report was prepared by the resettlement monitoring consultant hired by the Uzbekistan Communal Services Agency (UCSA).<sup>1</sup> The consultant conducted interviews with affected individuals and, during the field visit, the consultant also carried out consultations with the project implementation unit (PIU) and community-based organizations to verify whether conditions set in the updated land acquisition and resettlement plan (LARP) had been fully implemented.
5. The main conclusions of the resettlement verification report are:
  - (i) During the verification visit it was verified that the land of all affected households was restored to pre-project condition;
  - (ii) During the consultation with individual family members and farming enterprises, no complaints regarding the implementation of LARP were identified by the external monitoring consultant. Rather there were requests to connect the households to the new drinking water pipeline;
  - (iii) All compensation was paid fully to affected households in the amounts specified in the LARP. Affected households have confirmed that no crops, buildings, or structures had been demolished or impacted. They have signed on the survey questionnaire that they agree with these statements.
6. During the independent evaluation mission, the local staff of Surkhon pump station in Jarkurgan district confirmed that all affected households are now connected to the new water network, are satisfied with the current water supply service, and have no complaints in relation to the implementation of the LARP.

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<sup>1</sup> ADB. 2014. *Resettlement Verification Report: Surkhandarya Water Supply and Sanitation Project in Uzbekistan*. Manila.

## APPENDIX 4: SUMMARY OF ENVIRONMENTAL ISSUES

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1. The project was classified as environmental category B as no significant adverse environmental impact was envisaged. According to government rules and regulations, the project was classified in the “low risk environmental impact” category. National environmental protection measures were incorporated into the project design and bidding documents. All the necessary documents for the project in terms of environment protection were designed in accordance with Asian Development Bank’s (ADB) Environmental Policy (2002), its Environmental Assessment Guidelines (2003), and national legislation.<sup>1</sup> The technology used in the project did not have a negative impact on the environment, and all project-related activities were designed to mitigate any negative impact on the environment or to have a minimal impact.

2. All works were undertaken in accordance with provisions of the environmental management and monitoring plan. Environmental concerns during construction were addressed through measures such as (i) protection of water sources; (ii) proper collection and disposal of construction waste; (iii) provision of appropriate safe work conditions; (iv) improved sanitation and hygiene conditions; and (v) increased awareness of local authorities, people, and contractors about the importance of protecting the environment. Engaging local authorities and nongovernment organizations in environmental monitoring and hygiene awareness programs helped address public concerns, including minor dust and noise pollution. Scrap metals were stored properly and sent to a designated processing company for recycling and old transformers were collected by a specialized electricity company to be disposed of in accordance with procedures for oil-containing power equipment. The ventilated pit latrines with septic tanks and provision of safe drinking water provide improved sanitary and hygienic conditions in 17 public schools, thereby preventing soil, ground, and surface water pollution from wastewater and protecting children from viral diseases. However, the septic systems inspected do not have drainage trenches to dispose of liquid waste.

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<sup>1</sup> ADB. 2002. *Environment Policy of the Asian Development Bank*. Manila; and ADB. 2003. *Environmental Assessment Guidelines*. Manila.



## APPENDIX 5: FINANCIAL AND ECONOMIC PERFORMANCE OF SUBPROJECTS REEVALUATION

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1. The Independent Evaluation Department (IED) assessed the financial performance of Termez and Muzrabad *vodokanals* based on available data. These *vodokanals* were selected on the basis that Termez is Surkhandarya's capital city and Muzrabad is reasonably typical of the district *vodokanals* and was assessed the worst performing in the project completion report (PCR), despite being among the larger *vodokanals*.

2. It was not possible to simply update PCR estimates as the PCR data were highly inconsistent. Because the Ministry of Housing and Community Services (MHCS) cut short the fieldwork, it was also not possible to sit down with *vodokanal* staff and obtain relevant data. While the appraisal methodology in the PCR appears sound, the current evaluation identified the following issues: (i) higher unaccounted for water (UFW) rates for the new systems than under the existing, (ii) assumed percentage increases in selling price of water, rather than actual, and (iii) connection numbers that appear to bear no relationship to actual numbers.

3. A blank workbook was consequently sent to the Termez provincial *vodokanal* with a request to provide data on water production and sales, tariffs and income, and direct and indirect costs, for the period from 2009 to 2017. The *vodokanal* attempted to fill in the form, but major inconsistencies remained. However, as far as possible, the data were used, supplemented by 2014/2015 benchmarking data, which were assumed to be reasonably accurate for 2014, and 2017 budget data. Data from the PCR were also used when possible (e.g., for capital costs and shadow exchange rate, wage rate, and the weighted average cost of capital). From the project preparatory technical assistance (TA) report, the value of time savings from the reduced need for households to collect water from outside the yard was assessed on the basis that they had access to the socio-economic baseline survey results which could not be provided to the independent evaluation mission.

### a. Assumptions

4. To bring historical prices to current (2017) values, the nonfood inflation factor included in ADB's Key Indicators for Asia and the Pacific 2017 for Uzbekistan was applied to historical costs and benefits. Water sales in real terms are budgeted to stay the same in 2016 and 2017 and then to increase by 15% per year from 2018 for 5 years. This is less than the 23% average rate of increase implemented between 2009 and 2016. Capital replacement is budgeted at 5% of the capital cost in 2017 sum every 5 years, as assumed by the TA but not considered by the PCR.

5. The weighted average cost of capital (WACC) from the PCR of 4.7% is adopted, slightly above the rate of the report and recommendation of the President (RRP) of 4.3%.

### b. Financial Performance

6. On the assumptions made, Muzrabad should achieve a financial internal rate of return (FIRR) of around 5.1%, similar to the 5.4% calculated by the PCR (Table A5.1).<sup>1</sup> The PCR, however, estimates that real revenue in 2014 sum will increase from SUM210 million in 2017 to SUM7.5 billion in 2039 or by around 3500%. In the project performance evaluation report, sales of SUM1.8 billion in 2017 are projected to increase to SUM3.7 billion in 2022 or a 100% increase.

7. A similar assessment was undertaken for Termez, generating a higher FIRR of 8.1% (Table A5.2), well above the WACC, suggesting that, provided real increases of tariff continue for the next five 5 years, the subproject should be viable. While the baseline assumes 15% increases, if increases are only 9%, this would reduce FIRR to 5.3% indicating substantial sensitivity to this factor.

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<sup>1</sup> Accounting for the reported methodological errors ADB staff provided revised PCR FIRR values for Muzrabad and Termez of 5.4% and 8.0%, respectively.

Table A5.1: Estimated Financial Performance of Muzrabat *Vodokanal*

Indicators	Units	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Nonfood inflation factor</b>	factor	1.67	1.59	1.51	1.39	1.33	1.26	1.17	1.10	1.00	1.00
<b>Average exchange rate</b>	SUM/\$	1459	1578	1707	1898	2097	2320	2584	2981		
<b>Number of connections</b>											
Residential	no.	6154	6234	6315	6315	6335	10640 <sup>a</sup>	15000	16500	17071	17071
Other	no.	10	10	10	10	10	44	44	45	46	46
<i>Total connections</i>	no.	6164	6244	6325	6325	6345	10684	15044	16545	17117	17117
<b>Total water production</b>											
Non-revenue water	'000 m <sup>3</sup>	354	358	349	349	338	3330 <sup>a</sup>	5000	5500	6166 <sup>b</sup>	6166
	%	26%	26%	23%	23%	20%	16% <sup>a</sup>	16%	14%	14%	0
Sales of water residential	'000 m <sup>3</sup>	225	228	230	230	231	2638	4027	4553	5121	5121
Other	'000 m <sup>3</sup>	38	38	38	38	39	173	173	177	181	181
Total sales of water	'000 m <sup>3</sup>	262	265	269	269	271	2811 <sup>a</sup>	4200	4730	5303	5303
Non-revenue water	'000 m <sup>3</sup>	92	93	81	81	68	526	800	770	863	863
Sales/connection per day	liters	117	116	116	116	117	721	765	783	849	849
<b>Average tariff</b>											
Residential	SUM/m <sup>3</sup>	53	68	80	110	132	160	200	350	357	357
Other	SUM/m <sup>3</sup>	67	82	96	132	158	192	240	420	428	428
Average nominal	SUM/m <sup>3</sup>	55	70	82	113	136	161	201	352	374 <sup>b</sup>	374
Average real (2017 SUM)	SUM/m <sup>3</sup>	92	111	124	158	181	203	235	388	388	388
Annual change	%		21%	12%	27%	14%	12%	16%	65%	0%	0
Average for period to 2016	%								23%		
<b>Financial cashflow</b>											
<b>Capital expenditure</b>											
ADB contribution	SUM mil	98	1374	4881	2755	1559	1091				
Government contribution	SUM mil	0	270	1479	579	240	136				
<i>Total capital expenditure</i>	SUM mil	<b>98</b>	<b>1645</b>	<b>6360</b>	<b>3333</b>	<b>1799</b>	<b>1227</b>				
<b>Sales of water</b>											
Households	SUM mil	11.9	15.5	18.4	25.4	30.5	562.0 <sup>a</sup>	805.3	1593.4	1644.0 <sup>b</sup>	1644.0
Other connections	SUM mil	2.5	3.1	3.7	5.1	6.2	32.4	41.6	74.5	86.0 <sup>b</sup>	86.0
Other income	SUM mil	0.0	0.0	0.0	0.0	0.4	19.0	55.5	113.4	117.0 <sup>b</sup>	117.0
<i>Total sales</i>	SUM mil	<b>14.4</b>	<b>18.6</b>	<b>22.1</b>	<b>30.4</b>	<b>37.1</b>	<b>613.4</b>	<b>902.5</b>	<b>1781.3</b>	<b>1847.0</b>	<b>1847.0</b>
<b>Costs</b>											
Production cost	SUM mil	14.1	18.0	21.6	28.5	33.6	455.0	652.0	1150.0	1232.0 <sup>b</sup>	1232.0
Other costs	SUM mil	0.3	0.4	0.5	1.1	1.8	70.0	90.0	200.0	306.0 <sup>b</sup>	306.0
<i>Total expenses</i>	SUM mil	<b>14.4</b>	<b>18.4</b>	<b>22.0</b>	<b>29.6</b>	<b>35.4</b>	<b>525.0</b>	<b>742.0</b>	<b>1350.0</b>	<b>1538.0</b>	<b>1538.0</b>
Operating margin	SUM mil	0.0	0.1	0.1	0.9	1.7	88.4	160.5	431.3	309.0	309.0
Debt service	SUM mil						90.0	90.0	90.0	90.0	90.0
Net profit	SUM mil	0.0	0.1	0.1	0.9	1.7	-1.6	70.5	341.3	219.0	219.0
Tax paid	SUM mil	0.0	0.0	0.0	0.2	0.3	-0.3	13.8	66.7	42.8	42.8
<b>Post-tax profit</b>	SUM mil	0.0	0.1	0.1	0.7	1.4	-1.3	56.7	274.6	176.2	176.2
Real increase in tariff/year (5 years)											15%
Water and other sales		14	19	22	30	37	613	902	1781	1847	2124
Total costs		14	18	22	30	36	525	756	1417	1581	1581
Cash flow (ex-debt service)		-98	-1645	-6360	-3333	-1797	-1048	237	455	356	633
Cash flow in 2017 SUM		-164	-2617	-9609	-4649	-2390	-1321	277	501	356	633
FIRR	%	5.6%									

FIRR = financial internal rate of return, m<sup>3</sup> = cubic meter, mil = million.

<sup>a</sup> benchmark data

<sup>b</sup> 2017 budget data

Source: Asian Development Bank (Independent Evaluation Department).

Table A5.2: Projected Financial Performance of Termez City *Vodokanal*

Indicators	Units	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Nonfood inflation factor</b>	factor	1.67	1.59	1.51	1.39	1.33	1.26	1.17	1.10	1.00	1.00
<b>Average exchange rate</b>	SUM/\$	1459	1578	1707	1898	2097	2320	2584	2981		
<b>Number of connections</b>											
Residential	no.	1680	1987	22424	22424	22424	21140	22364	23661	24360	24360
Other	no.	380	415	423	432	443	454	495	536	598	598
<i>Total connections</i>	no.	2060	2402	22847	22856	22867	21594	22859	24197	24958	24958
<b>Total production of water</b>	'000 m <sup>3</sup>	6115	9511	9538	9509	9255	8459	8855	8748	7926	7926
Non-revenue water	%	54	53	52	50	45	32	30	25	13	13
Sales of water residential	'000 m <sup>3</sup>	2805	4912	4954	4991	4991	5000	5276	5324	5190	5190
Other	'000 m <sup>3</sup>	1179	1288	1312	1340	1374	1409	1536	1663	1855	1855
Total sales of water	'000 m <sup>3</sup>	3984	6200	6267	6331	6365	6408	6812	6987	7045	7045
Non-revenue water	'000 m <sup>3</sup>	2131	3311	3271	3178	2890	2051	2044	1761	881	881
Sales/connection per day	liters			751	759	763	813	816	791	773	773
<b>Average tariff</b>											
Residential	SUM/m <sup>3</sup>	53	68	80	110	132	160	200	350	357	357
Other	SUM/m <sup>3</sup>	64	82	96	132	158	192	240	420	428	428
Average nominal	SUM/m <sup>3</sup>	58	75	88	121	145	176	220	385	393	393
Average real (2017 sum)	SUM/m <sup>3</sup>	97	119	133	169	193	222	258	424	393	424
Annual change	%		23%	11%	27%	14%	15%	16%	65%	-7%	0%
Average for period to 2016	%								23%		
<b>Financial cashflow</b>											
<b>Capital expenditure</b>											
ADB contribution	SUM mil	77	1047	2734	4099	2686	2521				
Government contribution	SUM mil	0	0	0	1591	1485	1209				
<i>Total capital expenditure</i>	SUM mil	<b>77</b>	<b>1047</b>	<b>2734</b>	<b>5690</b>	<b>4171</b>	<b>3730</b>				
<b>Sales of water</b>											
Households	SUM mil	136	190	396	549	659	800	1055	1863	1920	1920
Other connections	SUM mil	75	97	126	177	218	270	369	698	824	824
Other income	SUM mil	0	0	0	1	4	12	30	54	56	56
<b>Total Sales</b>	SUM mil	<b>211</b>	<b>287</b>	<b>523</b>	<b>727</b>	<b>881</b>	<b>1083</b>	<b>1454</b>	<b>2616</b>	<b>2744</b>	<b>2744</b>
<b>Costs</b>											
Production cost	SUM mil	109	288	342	410	410	691	732	1168	1400	1400
Other costs	SUM mil	60	60	73	138	259	137	470	98	28	28
<i>Total expenses</i>	SUM mil	<b>169</b>	<b>348</b>	<b>415</b>	<b>548</b>	<b>669</b>	<b>828</b>	<b>1202</b>	<b>1266</b>	<b>1428</b>	<b>1428</b>
Operating margin	SUM mil	41	-61	108	178	208	243	222	1296	1918	1918
Depreciation	SUM mil	15	20	21	35	53	65	102	498	673	673
Interest paid	SUM mil	0	0	0	0	0	0	0	353	265	265
<b>Net profit</b>	SUM mil	26	-81	87	143	155	178	120	444	980	980
Tax paid	SUM mil	37	44	58	99	104	110	111	154	174	174
<b>Post-tax profit</b>	SUM mil	-11	-125	28	44	51	68	9	290	806	806
Projected real increase in tariff/year											15%
Water sales	SUM mil	211	287	523	727	881	1083	1454	2616	2744	3156
Total costs	SUM mil	221	412	494	682	825	1002	1415	2272	2540	2540
Cash flow adding back depreciation	SUM mil	-73	-1152	-2684	-5610	-4063	-3585	140	842	876	1288
Cash flow in 2017 SUM	SUM mil	-121	-1833	-4054	-7826	-5403	-4519	165	928	876	1288
FIRR	%		8.1%								

FIRR = financial internal rate of return, m3 = cubic meter, mil = million.

<sup>a</sup> benchmark data

<sup>b</sup> 2017 budget data

Source: Asian Development Bank (Independent Evaluation Department).

## APPENDIX 6: ECONOMIC REEVALUATION

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1. In undertaking the economic re-evaluation of the project, the major assumption made is that the estimated time savings from a piped water supply network are the same as estimated by the technical assistance (TA), since these were based on the socio-economic surveys undertaken at the time. Storage savings derive from the elimination of the need to purchase household water storage tanks every few years and are also based on TA estimates, updated to 2017 values. While there should be substantial health benefits, these could not be calculated by the evaluation mission, consistent with the TA and report and recommendation of the President, thus resulting in some understatement of project benefits.

2. The projected economic performance of the Muzrabad subproject is summarized in Table A6.1 and of Termez city in Table A6.2. Water sales (from the financial analysis) are divided into non-incremental (water collected by households from wells or canals at subproject commencement) and incremental (supplies added by the subproject). For Muzrabad, the time savings from a near-24-hour piped supply are estimated at SUM692,000 per household. Incremental water is valued at the estimated willingness-to-pay, which in 2017 values is set at double the current tariff, based on statements from the focus group discussions conducted by the evaluation mission. Under these assumptions, the economic internal rate of return (EIRR) is estimated at 32% compared to 22% in the project completion report (PCR). The main difference is that capital costs were accidentally double counted by the PCR and benefits assumed to start too early, making the recalculation with corrected assumptions difficult.<sup>1</sup>

3. For Termez city, the time savings due to piped water were estimated at 5 hours/household/month by the TA and 24 hours by the PCR. For this evaluation, these estimates were averaged, generating an EIRR of 20%, the same rate as the PCR, though the Termez PCR spreadsheet suffers from the same problems as Muzrabad.

4. The PCR computed various sensitivities, such as the change in EIRR with an increase of 10% in capital cost. The current evaluation sees little benefit in such calculations since (i) the data on which EIRR are based are tenuous, due to multiple and inconsistent sources and (ii) capital costs are (or should be) known reasonably accurately.

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<sup>1</sup> Accounting for the reported methodological errors ADB staff provided revised PCR EIRR values for Muzrabad and Termez of 37.1% and 27.1%, respectively.

Table A6.1: Projected Economic Performance of Muzrabad *Vodokanal*

Indicators	Units	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Water sales	'000 m <sup>3</sup>	262	265	269	269	271	2811	4200	4730	5303	5303
Non-incremental (from wells/canals)	'000 m <sup>3</sup>						2330	3285	3614	3739	3739
Incremental	'000 m <sup>3</sup>						481	915	1117	1564	1564
<b>Value of non-incremental water</b>											
<b>Time savings</b>	/HH										
Average collection time (TA)	hours/month	48									
	'000										
Wage rate 2017	SUM/month	500									
Collection cost at min wage/HH	'000 SUM/y	1385									
Benefit/HH (50% min wage cost)	'000 SUM/y	692									
Number of HH	#	6154	6234	6315	6315	6335	10640	15000	16500	17071	17071
Value of travel time savings	SUM mil/y						7366	10385	11423	11818	11818
<b>Storage benefits</b>											
Value per HH estimated by TA	SUM/y	8788									150
Total storage benefits	SUM mil/y						94	132	145	150	150
<b>Total value of non-incremental water</b>							7460	10516	11568	11968	11968
<b>Value of incremental water</b>											
Non-revenue water	'000 m <sup>3</sup>	92	93	81	81	68	526	800	770	863	863
NRW used (e.g., stolen or due non-working meters)	'000 m <sup>3</sup>	30%	28	28	24	24	20	158	240	231	259
Incremental water sales	'000 m <sup>3</sup>						481	915	1117	1564	1564
Total incremental and NRW	'000 m <sup>3</sup>	28	28	24	24	20	639	1155	1348	1823	1823
<b>Willingness-to-pay</b>											
Tariff (at 2017 values)	SUM/ m <sup>3</sup>	92	111	124	158	181	203	235	388	374	374
Estimated willingness to pay	SUM/ m <sup>3</sup>	184	223	249	316	361	406	471	776	776	776
Incremental and NRW valued at WTP	SUM mil/y	5	6	6	8	7	259	544	1045	1414	1414
<b>Total economic benefits</b>	SUM mil/y	5	6	6	8	7	7719	11060	12613	13383	13383
<b>Economic capital cost (2017 values)</b>											
Financial capital cost	SUM mil/y	164	2617	9609	4650	2392	1546				
Forex costs	SUM mil/y	98	1570	5765	2790	1435	928				
Local costs	SUM mil/y	65	1047	3843	1860	957	619				
Less estimated tax		16	262	961	465	239	155				
Allowance for unskilled labor	SUM mil/y	7	105	384	186	96	62				
SERF	factor	1.2									
SWRF	factor	0.8									
Economic capital cost + replacement	SUM mil/y	160	2564	9417	4557	2344	1515				
Operational cost (97% of financial cost)		23	28	32	40	46	642	843	1443	1492	1492
<b>Economic cash flow</b>	SUM mil/y	-179	-2587	-9443	-4589	-2382	5562	10217	11170	11891	11891
EIRR	%	31.8%									
EPNV (12% discount rate)	SUM mil	40241									

EIRR = economic internal rate of return, ePNV = expected net present value, HH = household users, m<sup>3</sup> = cubic meter, mil = million, SERF = Shadow Exchange Rate factor, SWRF = Shadow Wage Rate factor, TA = technical assistance, NRW = nonrevenue water, WTP = willingness to pay, y = year.

Source: Asian Development Bank (Independent Evaluation Department).

Table A6.2 Projected Economic Performance of Termez City *Vodokanal*

Indicators	Units	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Water sales	000 m <sup>3</sup>	3984	6200	6267	6331	6365	6408	6812	6987	7045	7045	
Non-incremental (from wells/canals)	'000 m <sup>3</sup>						4228	4473	4732	4872	4872	
Incremental	'000 m <sup>3</sup>						2180	2339	2255	2173	2173	
<b>Value of non-incremental water</b>												
<b>Time savings/HH</b>												
Average collection time	hours/month	14.5										
Wage rate	'000SUM/month	600										
Collection cost at min wage/HH	'000SUM/y	435										
% Benefit/HH (50% of min wage cost)	'000SUM/y	217.5										
Number of HH	#	1680	1987	22424	22424	22424	21140	22364	23661	24360	24360	
Value of travel time benefits	SUM mil/y						4598	4864	5146	5298	5298	
<b>Storage benefits</b>												
Value per HH estimated by TA	SUM/y	8787.6										
Estimated total storage benefits	SUM mil/y						186	197	208	214	214	
<b>Total value of non-incremental water</b>							<b>4784</b>	<b>5061</b>	<b>5354</b>	<b>5512</b>	<b>5512</b>	<b>2041</b>
<b>Value of incremental water</b>												
Non-revenue water	'000 m <sup>3</sup>	2131	3311	3271	3178	2890	2051	2044	1761	881	881	
NRW used (e.g., stolen or due to non-working meters)	'000 m <sup>3</sup>	30%	639	993	981	953	867	615	613	528	264	
Incremental water sales	'000 m <sup>3</sup>						2180	2339	2255	2173	2173	
Total incremental and NRW	'000 m <sup>3</sup>	639	993	981	953	867	2795	2952	2783	2437	2437	
<b>Willingness-to-pay</b>												
Tariff (at 2017 values)	SUM/ m <sup>3</sup>	97	119	133	169	193	222	258	424	393	393	
Estimated willingness to pay	SUM/ m <sup>3</sup>	195	239	266	338	386	444	515	849	849	849	
Incremental and NRW valued at WTP	SUM mil/y	125	237	261	322	335	1240	1522	2361	2069	2069	
<b>Total economic benefits</b>	SUM mil/y	125	237	261	322	335	6024	6582	7716	7582	7582	
<b>Economic capital cost (at 2017 values)</b>												
Financial capital cost	SUM mil/y	129	1666	4130	7938	5546	4701					
Forex costs	SUM mil/y	78	1000	2478	4763	3328	2821					
Local costs	SUM mil/y	52	666	1652	3175	2218	1881					
Less estimated tax		13	167	413	794	555	470					
Allowance for unskilled labor	SUM mil/y	5	67	165	318	222	188					
SERF	factor	1.2										
SWRF	factor	0.8										
Economic capital cost	SUM mil/y	127	1633	4047	7779	5435	4607					
Operational cost (97% of financial cost)		274	537	607	741	863	1012	1366	1354	1386	1386	
<b>Economic cash flow</b>	SUM mil/y	-276	-1933	-4394	-8199	-5963	404	5216	6362	6196	6196	
EIRR	%	19.7%										
eNPV (12% discount rate)	SUM mil	12715										

EIRR = economic internal rate of return, eNPV = expected net present value, HH = household users, m<sup>3</sup> = cubic meter, NRW = nonrevenue water, SERF = Shadow Exchange Rate factor, SWRF = Shadow Wage Rate factor, TA = technical assistance, WTP = willingness to pay.

Source: Asian Development Bank (Independent Evaluation Department).

## APPENDIX 7: FOCUS GROUP DISCUSSION

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### A. Summary of Focus Group Discussion in Angor District

1. In Angor, the project was completed about 5 years ago, and participants did not recall some details of the implemented project activities. Nevertheless, they are happy with the project results, since they have an almost 24-hour water supply, private connections with water meters installed and paying from SUM7,000 to 10,000 a month for good quality water supply and good flow pressure. Before the project, local residents used different sources of water, they drank water from ditches (desilted and boiled), some had hand-pump wells (extracting water from a depth of 7–20 meters), and some fetched water from outside wells.
2. The provision of piped water to the households has resulted in the improvement of households' sanitation conditions by installing taps in the kitchen, building new bathrooms with connected water taps, installing electric water heaters for showers, and the purchase and installation of washing machines. These new conveniences allow women in project villages to save time they were spending fetching water, to do the laundry, food preparation, and dishwashing and other housework, which is now easier to do and less time consuming due to the indoors water connection. With better water supply and having more free time at home, some women are able to work in local organizations, which generates extra income for households.
3. Households pay less than 1% of their average monthly income for the water supply service, and they are ready to pay even double the price for the water supply if it is justified. They liked and supported the idea of a pricing system where the first 5 cubic meters (m<sup>3</sup>)/month are low cost and the rest is higher; this would encourage people to use water more efficiently.
4. Participants mentioned that they have no serious water-borne diseases now. They usually do not go to the doctor in case of diarrhea, but buy medication and treat themselves.
5. In the future, people expect more support in the water sector, with the improvement of the sewerage system and implementation of similar water supply projects in other villages in the area.



Focus group discussion in Angor District.

## B. Summary of Focus Group Discussion in Jarkurgan District

6. Generally, participants are satisfied with the project. They have now 24-hour water supply, private connections with water meters installed and paying from SUM7,000 to 15,000 a month for good quality water supply and good flow pressure. The group indicated this is a significant improvement compared to water supply from the street taps with low pressure, when households had to walk up to 500 meters to fetch water 2–3 times a day. The project works started here in 2011 and were completed in 2014; no problems or issues were faced during project implementation regarding dust, noise, and difficulty with access to homes and shops.

7. Water supply development has resulted in improvement of sanitation conditions of households by installing taps in the kitchen, building new bathrooms with connected water taps, installing electric water heaters for showers, and the purchase and installation of a washing machine. These new conveniences allow women in project villages to save time they were spending on water fetching, to do the laundry, food preparation, and dishwashing and other housework, which is now easier to do and less time consuming due to the indoors water connection.

8. Households now pay less than 1% of their average monthly income for the water supply service, and some villagers used to spend 4–5 times more for water before the project. They are ready to pay even double the price for water supply since compared to what they pay for gas, electricity, and other communal services, the cost of water is very low. They liked and supported the idea of a pricing system where the first 5 m<sup>3</sup>/month are low cost and the rest is higher; this would encourage people to use water more efficiently.

9. Participants mentioned that they have no serious water-borne diseases now. They usually do not go to the doctor in case of diarrhea; instead, they buy medication and treat themselves.

10. In the future, people expect more support in the water sector, with the improvement of the sewerage system and implementation of similar water supply projects in other villages in the area.



Focus group discussion in Jarkurgan District.

## C. Summary of Focus Group Discussion in Muzrabat District

11. Generally, participants are satisfied with the project. They now have a 24-hour water supply, private connections with water meters installed and paying from SUM5,000 to 6,000 a month for a water supply with good flow and pressure. Before the project, people had water only for 4-hours a day with low pressure. Project works started here in 2010 and were completed in 2012. During the implementation of the project works, the water supply was cut from the network and people had to fetch water from



wells nearby. The participants have mentioned that the quality of water from the centralized network is hard, and they still buy better quality water to drink (SUM1,000 per 40 liters).

12. Water supply development has resulted in the improvement of the sanitation conditions of households by building new bathrooms with connected water taps, installing electric water heaters for showers, and the purchase and installation of washing machines. These new conveniences allow women in project villages to save time they were spending on water fetching, to do the laundry, food preparation, and dish washing and other housework, which is now easier to do and less time consuming due to the indoors water connection.

13. Households pay less than 1% of their average monthly income for the water supply service, which is very low compared to some other villages in the Muzrabat district, where people have to buy water brought in by tankers, spending on average about SUM100,000 each month. They are ready to pay even double the price for the water supply, since compared to what they pay for gas, electricity, and other communal services, water costs are low. They liked and supported the idea of a pricing system where the first 5 m<sup>3</sup>/month are low cost and the rest is higher; this would encourage people to use water more efficiently.

14. Participants have mentioned that they have no serious water-borne diseases now. They usually do not go to the doctor in case of diarrhea; instead, they buy medication and treat themselves.

15. In the future, people expect more support in the water sector, with the improvement of the sewerage system and implementation of similar water supply projects in other villages in the area.



Focus group discussion in Muzrabat District.

#### D. Summary of Focus Group Discussion in Non-Project Village, Muzrabat District

16. People in Darband village use different sources of drinking water. Some are connected to the old network, which supplies water for 6–8 hours a day; some use water from hand-pump wells, mainly for cleaning and washing, while they fetch water from nearby springs for drinking and preparation of food; and others use water from canals and ditches, desilting and boiling it for drinking.

17. The old water network is not reliable in this village. They have water only for 6–7 hours a day and, during pump breakages, they have no water for 5–6 days, until the local water utility repairs it. For this service, households pay SUM5,000–10,000 per month. People without centralized connection have to fetch water from outside springs or use water from hand-pump wells and canals (para. 16).

18. Women and children who are mainly responsible for fetching water spend up to 1–1.5 hours in total to bring water 2–3 times a day. Women have to spend more time for cleaning, washing clothes, preparation of food, and washing children, for which they need to have more water. Women participants mentioned that they would have more free time if they had private connections. They are ready to spend up to SUM25,000 each month for a good water supply. Moreover, with private connections they could have bathrooms with showers, install water heaters and purchase washing machines.

19. Participants did not want to speak much about water-borne diseases, particularly about diarrhea; however, they mentioned that it is common for children to have diarrhea, especially in summer time. It is hard to control children, as when they are thirsty, they tend to drink untreated water. They believe that with better water supply the cases of diarrhea would decrease significantly.



Focus group discussion in Non-Project Village, Muzrabat District.

## E. Summary of Focus Group Discussion in Non-Project Village, Termez District

20. Karhramon village is located about 7–8 km from the center of Termez city. This village is more like a semi-urban type of settlement. The average monthly income of residents is about SUM2–3 million, which is higher than in more distant villages. People here get water from the old water supply system, fed by two pump wells. In addition, many households have hand pump wells (10–20 m depth) used mainly for irrigation and feeding their livestock.

21. The old water network is not reliable in this village, as they have water only for 6–7 hours a day (2 hours in the morning, 2 hours in the afternoon, and 2 hours in the evening). For this service, households pay SUM7,000–10,000 per month. Some people use outside connections, fetching water from up to 100 m distance. While this is not crucial for them, it takes 15–20 minutes to fetch water.

22. They are ready to spend up to SUM20,000 each month for a good 24-hour water supply. Moreover, with private connections they could have bathrooms with showers, install water heaters, and purchase washing machines.

## F. Summary of Focus Group Discussion in Shurchi District

23. Generally, participants are satisfied with the project. They have now 24-hour water supply, private connections with water meters installed and paying from SUM6,000–SUM7,000 per month for a good quality water supply and good flow pressure. Before the project, they had private connections with

low water pressure and water supply for 5–6 hours a day only. Project works started here in 2011 and were completed in 2014. No issues were faced during project implementation with dust, noise, and difficulty with access to homes and shops.

24. Water supply development has resulted in the improvement of sanitation conditions of households by installing taps in the kitchen, building new bathrooms with connected water taps, installing electric water heaters for showers, and the purchase and installation of washing machines. These new conveniences allow women in project villages to save time they were spending on water fetching, to do the laundry, food preparation, and dishwashing and other housework, which is now easier to do and less time consuming due to indoors water connection.

25. Households pay less than 1% of their average monthly income for the water supply service. They are ready to pay even double the price for water supply, since compared to what they pay for gas, electricity, and other communal services now, water costs are very low. They liked and supported the idea of a pricing system where the first 5 m<sup>3</sup>/month are low cost and the rest is higher; this would encourage people to use water more efficiently.

26. Participants have mentioned that they have no serious water-borne diseases now. They usually do not go to the doctor in case of diarrhea. In the future people expect more support in the water sector, with the improvement of the sewerage system and implementation of similar water supply projects in other villages in the area.



Focus group discussion in Shurchi District.

## G. Summary of Focus Group Discussion in Termez City

27. Generally, participants are satisfied with the project. Participants from Termez city had centralized water supply and sewerage system even before the project; however, now they have improved water supply for at least 20 hours a day, better flow pressure, and a rehabilitated sewerage system. Before the project, they had water supply for 5–6 hours a day and had to store water for reserve in buckets. Now they have a more reliable water supply. Project works started here in 2013 and were completed in 2015. During the implementation period, there were some problems with access to roads and water supply interruptions.

28. Households pay less than 1% of their average monthly income for the water supply service. They are ready to pay even double the price for the water supply, since compared to what they pay for gas, electricity, and other communal services, water costs are very low. Many liked and supported the idea of a pricing system where the first 5 m<sup>3</sup>/month are low cost and the rest is higher; this would encourage people to use water more efficiently.

29. Participants have mentioned that they have no serious water-borne diseases now. They usually do not go to the doctor in case of diarrhea; instead, they spend about SUM10,000–50,000 for treatment. In the future, people expect installation of a transparent billing system and be able to pay online with national debit cards.



Focus group discussion in Termez City.