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The World Bank

Report No: ICR00003823

IMPLEMENTATION COMPLETION AND RESULTS REPORT
(IDA-H2000 IDA-H7690)

ON A

GRANT

IN THE AMOUNT OF SDR10.6 MILLION

(USD 15.0 MILLION EQUIVALENT)

AND AN

ADDITIONAL GRANT

IN THE AMOUNT OF SDR 7.7 MILLION

(USD 11.85 MILLION EQUIVALENT)

TO THE

REPUBLIC OF TAJIKISTAN

FOR A

MUNICIPAL INFRASTRUCTURE DEVELOPMENT PROJECT

October 25, 2016

Social, Urban, Rural, and Resilience Global Practice
Central Asia Country Unit
Europe and Central Asia Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective October 25, 2016)

Currency Unit = TJS (Tajikistan Somoni)
XDR 1.00 = USD 1.37
USD 1.00 = TJS 7.88

ABBREVIATIONS AND ACRONYMS

CPS	Country Partnership Strategy
CSDF	Communal Services Development Fund
CSDFP	Communal Services Development Fund Project
EBIT	Earnings before interest and taxes
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortization
EBRD	European Bank for Reconstruction and Development
EBT	Earnings before taxes
ECA	Europe and Central Asia
EIRR	economic internal rate of return
EMP	Environment Management Plan
GNI	Gross National Income
HCS	Housing and Communal Services
HDPE	high density polyethylene
IBNET	International Benchmarking Network
IBRD	International Bank for Reconstruction and Development - World Bank
ICB	International Competitive Bidding
ICR	Implementation Completion Review
IDA	International Development Association
ILI	intensive learning ICR
ISR	Implementation Support Report
JICA	Japan International Cooperation Agency
KMK	State Unitary Enterprise “Khojagiyi Manziliyu Kommunali”
KVA	1,000 Volt Amps
LCD	liters per capita per day
MCSDS	Municipal Sector and Communal Services Development Strategy
MIDP	Municipal Infrastructure Development Project
MIPS	Management Improvement Programs
MIS	management information system
MLRWR	Ministry of Land Reclamation and Water Resources
MPU	Municipal Project Unit
MTR	Mid-Term Review
NDS	National Development Strategy
PAD	Project Appraisal Document
PAP	People Affected by the Project
PDO	Project Development Objective
PHRD	Policy and Human Resources Development
PMC	Project Management Consultant
PMU	Project Management Unit

CPS	Country Partnership Strategy
PPF	Project Preparation Facility
QAG	Quality Assurance Group
QEA	Quality at Entry
QSA	Quality of Supervision
RAP	Resettlement Action Plan
SDR	Special Drawing Rights
SIL	specific investment loan
SUE	State Unitary Enterprise
SWM	solid waste management
SZMC	Sanitary Zone Management Committees
TJS	Tajikistan Somoni
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
VAT	Value added tax
VIP	Ventilated improved pit
WSP	Water Supply Program
XDR	Special Drawing Rights

Vice President:	Cyril Muller
Senior Global Practice Director:	Ede Jorge Ijjasz-Vasquez
Country Director	Lilia Burunciuc
Practice Manager:	David Sislen
Project Team Leader:	Yarissa Lyngdoh Sommer
ICR Team Leader:	Anna Gueorguieva

TAJIKISTAN

MUNICIPAL INFRASTRUCTURE DEVELOPMENT PROJECT

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A. Basic Information

Country:	Tajikistan	Project Name:	Municipal Infrastructure Development Project
Project ID:	P079027	L/C/TF Number(s):	IDA-H2000,IDA-H7690
ICR Date:	07/29/2016	ICR Type:	Core ICR
Lending Instrument:	SIL	Borrower:	THE GOVERNMENT OF TAJIKSTAN
Original Total Commitment:	XDR 10.60M	Disbursed Amount:	XDR 18.21M
Revised Amount:	XDR 18.27M		
Environmental Category: B			
Implementing Agencies: Khojagiyi Manziliu Kommunali (KMK)			
Co-financiers and Other External Partners:			

B. Key Dates

Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	04/08/2004	Effectiveness:	04/12/2006	04/12/2006
Appraisal:	10/21/2005	Restructuring(s):		07/11/2011
Approval:	01/19/2006	Mid-term Review:	05/12/2008	09/22/2008
Appraisal of the AF	4/12/2012	Closing:	08/31/2011	04/30/2016

C. Ratings Summary

C.1 Performance Rating by ICR

Outcomes:	Satisfactory
Risk to Development Outcome:	High
Bank Performance:	Moderately Satisfactory
Borrower Performance:	Moderately Satisfactory

C.2 Detailed Ratings of Bank and Borrower Performance (by ICR)

Bank	Ratings	Borrower	Ratings
Quality at Entry:	Satisfactory	Government:	Moderately Satisfactory
Quality of Supervision:	Moderately Satisfactory	Implementing Agency/Agencies:	Moderately Satisfactory
Overall Bank Performance:	Moderately Satisfactory	**Overall Borrower Performance:**	Moderately Satisfactory

C.3 Quality at Entry and Implementation Performance Indicators			
Implementation Performance	**Indicators**	**QAG Assessments (if any)**	**Rating**
Potential Problem Project at any time (Yes/No):	No	Quality at Entry (QEA):	None
Problem Project at any time (Yes/No):	No	Quality of Supervision (QSA):	None
DO rating before Closing/Inactive status:	Satisfactory		

D. Sector and Theme Codes		
	Original	**Actual**
Sector Code (as % of total Bank financing)		
Sub-National Government	23	23
Waste Management	35	35
Wastewater Collection and Transportation	2	2
Water supply	40	40
Theme Code (as % of total Bank financing)		
City-wide Infrastructure and Service Delivery	40	40
Municipal finance	20	20
Municipal governance and institution building	20	20
Urban services and housing for the poor	20	20

E. Bank Staff		
Positions	**At ICR**	**At Approval**
Vice President:	Cyril Muller	Shigeo Katsu
Country Director:	Lilia Burunciuc	Dennis N. de Tray
Practice Manager/Manager:	David Sislen	Sumter Lee Travers
Project Team Leader:	Yarissa Lyngdoh Sommer	Jonathan S. Kamkwalala
ICR Team Leader:	Anna Gueorguieva	
ICR Primary Author:	Anna Gueorguieva	

F. Results Framework Analysis

Project Development Objectives (from Project Appraisal Document**)**
The development objective of MIDP is to improve the availability, quality and efficiency of delivery of basic municipal services to the population of the towns which participate in the project.

Revised Project Development Objectives (as approved by original approving authority)
Board Approved Revised Project Development Objective (If project is formally restructured)
The revised project development objective is to improve the availability, quality and efficiency of basic municipal services for the population of the towns which participate in the project. An added objective, as an urgent response to the anticipated floods of the spring of 2012, is to contribute to their mitigation with the supply of emergency materials.

(a) PDO Indicator(s)

PDO Indicators	Category	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years	Comments
PDO Indicator 1: Increase in the availability of water supply as expressed in percentage of population having at least 16 hours of water in both summer and winter (Percentage, Custom)						
		28.56%	**51.67%**	**56.67%**	**57.67%**[1]	**Target surpassed**
	Date established	**10/19/2005**	4/12/2012	4/12/2012	**04/20/2016**	
Sub-indicators	**Total value**					
Danghara	Value[2]	60%	74%		79%	Target surpassed.
	Date established	10/19/2005	10/19/2005		07/27/2012	
Farkhor	Value	0	80%	74	60%	Target not achieved, 75% reached. Sub-Indicator added at restructuring. However, the original end target of 80% determined at project preparation was found during implementation to be an over estimate in the Feasibility Study. This was primarily due to weak
	Date established	4/12/2012	4/12/2012		04/20/2016	

[1] Each composite indicator is reported as a simple average. The population-weighted averages are also checked. Only Indicator 9 reverses the achievement and this is noted in the table.
[2] In this section "Value" may be quantitative or qualitative

PDO Indicators	Category	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years	Comments
						data received from the Farkhor water utility. The maximum technically achievable target for the volume of investments in Farkhor is 60%.
Gharm	Value	68%	80%		84%	Target surpassed.
	Date established	10/19/2005	10/19/2005		07/27/2012	
Istaravshan	Value	24%	42%		44%	Target surpassed.
	Date established	10/19/2005	10/19/2005		07/27/2012	
Kanibadam	Value	2%	17%		17%	Target achieved.
	Date established	10/19/2005	10/19/2005		07/27/2012	
Kulyab	Value	13%	32%		45%	Target surpassed.
	Date established	10/19/2005	10/19/2005		07/27/2012	
Kurgan Tyube	Value	58%	70%		75%	Target surpassed.
	Date established	10/19/2005	10/19/2005		07/27/2012	
Vakhdat	Value	26%	45%		45%	Target achieved
	Date established	10/19/2005	10/19/2005		07/27/2012	
Vose	Value	6%	25%	70%	70%	Target achieved. Target revised at restructuring from 25% to 70% due to increased scope of investments.
	Date established	10/19/2005	10/19/2005	4/12/2012	04/20/2016	
PDO Indicator 2: Improved solid waste collection measured by percentage of population covered with solid waste collection services at least once a week (Percentage,						

PDO Indicators	Category	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years	Comments
Custom)						
	Total value	34.67%	60.89%	63.23%	64.78%	**Target surpassed.**
Danghara	Value	38%	47%		58%	Target surpassed.
	Date established	10/19/2005	10/19/2005		07/27/2012	
Farkhor	Value	0%	90%		90%	Target achieved. Sub-indicator added at restructuring.
	Date established	04/12/2012	04/12/2012		04/20/2016	
Gharm	Value	18%	88%		32%	Target not achieved, 36% reached. The original baseline and end target of 75 % and 88% provided at Appraisal by the utility were determined to be incorrect during implementation as reported in the ISRs. Only 18% of the population had solid waste collection at baseline. Target was never formally revised through restructuring. At Appraisal, it was estimated that the project would provide an additional 13% of the population with
	Date established	10/19/2005	10/19/2005		07/27/2012	

PDO Indicators	Category	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years	Comments
						services and the actual value achieved was 18%.
Istaravshan	Value	73%	96%		87%	Target not achieved 90% reached.
	Date established	10/19/2005	10/19/2005		07/27/2012	
Kanibadam	Value	58%	95%		77%	Target not achieved, 81% reached. The original baseline 86% and end target 95% provided at Appraisal by the utility were determined to be incorrect during implementations as reported in the ISRs. Only 58% of the population had solid waste collection at baseline. Target was never formally revised. At Appraisal, it was estimated that the project would provide an additional 11% of the population with services and the actual value achieved was 19%.
	Date established	10/19/2005	10/19/2005		07/27/2012	
Kulyab	Value	21%	23%		45%	Target surpassed.

PDO Indicators	Category	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years	Comments
	Date established	10/19/2005	10/19/2005		07/27/2012	
Kurgan Tube	Value	38%	42%		75%	Target surpassed.
	Date established	10/19/2005	10/19/2005		07/27/2012	
Vakhdat	Value	31%	38%		49%	Target surpassed.
	Date established	10/19/2005	10/19/2005		07/27/2012	
Vose	Value	35%	29%	50%	70%	Target surpassed. Target revised at restructuring from 29% to 50% due to increased investment scope.
	Date established	10/19/2005	10/19/2005	04/12/2012	04/20/2016	
PDO Indicator 3: Number of people in urban areas provided with access to improved water sources under the project						
	Total value	0	N/A	210,301[3]	204,545	**Target not achieved, 97% reached.** Indicator added at restructuring but measured since 2009.
Danghara	Value	0	N/A	17130	17130	Target achieved. Targets for the 7 cities where the project was active between Appraisal and
	Date established	10/19/2005	10/19/2005	04/12/2012	07/27/2012	

[3] Note that there was a typo in the Supplemental letters – the target was listed as 236, 864 when the sum of the individual town targets is 210,301

PDO Indicators	Category	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years	Comments
						restructuring were set at the level achievement in 2012
Farkhor	Value	0	N/A	21200	14,097	Target not achieved, 66% reached. The original target of 80% of the population during restructuring was determined during implementation to be an over estimation in the Feasibility Study stage. This was due to the weak data received from the Farkhor water utility
	Date established	04/12/2012	04/12/2012	04/12/2012	04/20/2016	
Gharm	Value	0	N/A	13041	13041	Target achieved. Targets for the 7 cities where the project was active between Appraisal and restructuring were set at the level achievement in 2012
	Date established	10/19/2005	10/19/2005	04/12/2012	07/27/2012	
Istaravshan	Value	0	N/A	27291	27291	Target achieved. Targets for the 7 cities where the project was active between Appraisal and restructuring were set
	Date established	10/19/2005	10/19/2005	04/12/2012	07/27/2012	

PDO Indicators	Category	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years	Comments
						at the level achievement in 2012
Kanibadam	Value	0	N/A	8203	8203	Target achieved. Targets for the 7 cities where the project was active between Appraisal and restructuring were set at the level achievement in 2012
	Date established	10/19/2005	10/19/2005	04/12/2012	07/27/2012	
Kulyab	Value	0	N/A	39604	39604	Target achieved. Targets for the 7 cities where the project was active between Appraisal and restructuring were set at the level achievement in 2012
	Date established	10/19/2005	10/19/2005	04/12/2012	07/27/2012	
Kurgan Tube	Value	0	N/A	53925	53925	Target achieved. Targets for the 7 cities where the project was active between Appraisal and restructuring were set at the level achievement in 2012
	Date established	10/19/2005	10/19/2005	04/12/2012	07/27/2012	
Vakhdat	Value	0	N/A	15637	15637	Target achieved. Targets for the 7 cities where the project was active between
	Date established	10/19/2005	10/19/2005	04/12/2012	07/27/2012	

PDO Indicators	Category	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years	Comments
						Appraisal and restructuring were set at the level achievement in 2012
Vose	Value	0	N/A	14270	15617	Target surpassed.
	Date established	10/19/2005	10/19/2005	04/12/2012	04/20/2016	
PDO Indicator 4: Efficiency of water utilities measured through unaccounted for water (Percentage, Custom)						
	Total value	65.33%	58.77%		23.34%	**Target surpassed** Indicator added at restructuring. The indicator was tracked before restructuring as well.
Danghara	Value	65%	56%		13%	Target surpassed
	Date established	10/19/2005	10/19/2005		07/27/2012	
Farkhor	Value	91%	50%		40%	Target surpassed. Sub-Indicator added at AF restructuring.
	Date established	4/12/2012	4/12/2012		04/30/2016	
Gharm	Value	65%	58%		58%	Target achieved.
	Date established	10/19/2005	10/19/2005		07/27/2012	
Istaravshan	Value	62%	53%		24%	Target surpassed.
	Date established	10/19/2005	10/19/2005		4/12/2012	
Kanibadam	Value	58%	48%		17%	Target surpassed
	Date established	10/19/2005	10/19/2005		08/31/2012	
Kulyab	Value	67%	58%		18.4%	Target surpassed
	Date established	10/19/2005	10/19/2005		07/27/2012	

PDO Indicators	Category	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years	Comments
Kurgan-Tube	Value	60%	52%		23.3%	Target surpassed. Value was 17% in April 2016.
	Date established	10/19/2005	10/19/2005		07/27/2012	
Vakhdat	Value	60%	50%		56%	Target not achieved, 88% reached as of 2012. As of April 2016, the Vakhdat VK reported 30% unaccounted-for water.
	Date established	10/19/2005	10/19/2005		07/27/2012	
Vose	Value	60%	52%		18.4%	Target surpassed.
	Date established	10/19/2005	10/19/2005		03/30/2016	
PDO Indicator 5: Improved efficiency of participating utilities as measured by a reduction in energy consumption costs (percentage of total operating cost)						
	Total value	16.96%	8.74%		5.28%	**Target surpassed.**
Danghara	Value	9%	--		0.05%	Sub-indicator dropped at restructuring. The system is gravity fed in Danghara, thus does not apply
	Date established	10/19/2005	4/12/2012		07/27/2012	
Farkhor	Value	4.62%	N/A		13.7%	Target surpassed. Sub-indicator added at restructuring. The very low baseline value is due to the under-performance and under-utilization of the system as reported in
	Date established	4/12/2012	4/12/2012		09/30/2015	

PDO Indicators	Category	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years	Comments
						the ISRs.
Garm (Rasht)	Value	17%	--		--	Sub-Indicator dropped at restructuring. The system is gravity fed in Rasht, thus does not apply.
	Date established	10/19/2005	4/12/2012		07/27/2012	
Istaravshan	Value	15%	6%		3.88%	Target surpassed.
	Date established	10/19/2005	10/19/2005		07/27/2012	
Kanibadam	Value	25%	11.47%		11.47%	Target surpassed.
	Date established	10/19/2005	10/19/2005		07/27/2012	
Kurgan Tube	Value	15%	5%		3.07%	Target surpassed.
	Date established	10/19/2005	10/19/2005		07/27/2012	
Kulyab	Value	16%	7%		0.91%	Target surpassed.
	Date established	10/19/2005	10/19/2005		07/27/2012	
Vose	Value	35%	20%		3.8%	Target surpassed.
	Date established	10/19/2005	10/19/2005		04/30/2016	
Vakhdat	Value	16%	8%		10.72%	Target not achieved, 66% reached.
	Date established	10/19/2005	10/19/2005		07/27/2012	
PDO Indicator 6: Financial efficiency of the water utilities, measured through revenue to operating costs ratio (Percentage, Custom)						
	Total value	**0.69%**		**1.05%**	**0.98%**	**Target not achieved, 93% reached.** Indicator added at restructuring**.**

PDO Indicators	Category	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years	Comments
Farkhor	Value	0.39%	N/A	1.1%	0.96%	87% of the target is achieved. Indicator added at restructuring.
	Date established	4/12/2012		4/12/2012	04/20/2016	
Vose	Value	1%	N/A	1%	1%	Target achieved. Indicator added at restructuring.
	Date established	4/12/2012		4/12/2012	04/20/2016	
PDO Indicator 7: Efficiency of water utilities, measured through reduction of energy costs per unit of water produced in Farkhor (Text, Custom)						
	Total value	**0.07**		**0.06**	**0.062**	**Target achieved. Indicator added at restructuring.**
	Date established	4/12/2012		4/12/2012	04/20/2016	
Indicator 8: Project beneficiaries for water supply services (Number, Core)						
	Total value	**0**		210,301	204,545	**Target not achieved, 97% reached.** Indicator added at restructuring. Baseline measured as "people with access to improved water sources under the project" at restructuring.
	Date established	4/12/2012		04/12/2012	04/30/2016	
Of which	Value	53%		53%	53%	Target achieved.

PDO Indicators	Category	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years	Comments
women						
	Date established	4/12/2012		04/12/2012	04/30/2016	
PDO Indicator 9. Satisfaction of the population with basic infrastructures services in participating small towns during the project measured through percentage of households reporting poor water quality						
	Total value	**45.89%**	**22.45%**	**21.89%**	**22.78%**	**Target not achieved, 96% reached**. The indicator is achieved when considering weighted averages.
Danghara	Value	46%	28%		23%	Target surpassed.
	Date established	10/19/2005	10/19/2005		07/27/2012	
Farkhor	Value	88%	10%		40%	Target not achieved, 61% reached - as this is a negative indicator. Less people indicating bad quality is a positive trend. Sub-indicators added at restructuring.
	Date established	04/12/2012	04/12/2012		04/20/2016	
Istaravshan	Value	56%	36%		33%	Target surpassed.
	Date established	10/19/2005	10/19/2005		08/31/2012	
Vose	Value	51%	33%	28%	28%	Target achieved. Target revised at restructuring.
	Date established	10/19/2005	10/19/2005	04/12/2012	03/30/2016	
Kanibadam	Value	83%	50%		49%	Target surpassed.
	Date established	10/19/2005	10/19/2005		07/27/2012	

PDO Indicators	Category	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years	Comments
Kulyab	Value	39%	18%		13%	Target surpassed.
	Date established	10/19/2005	10/19/2005		07/27/2012	
Kurgan Tube	Value	28%	15%		11%	Target surpassed.
	Date established	10/19/2005	10/19/2005		08/31/2012	
Garm	Value	6%	5%		3%	Target surpassed.
	Date established	10/19/2005	10/19/2005		07/27/2012	
Vakhdat	Value	16%	7%		5%	Target surpassed.
	Date established	10/19/2005	10/19/2005		07/27/2012	
PDO Indicator 10. Satisfaction of the population with basic infrastructures services in participating small towns during the project measured through customers rating of water supply services, expressed as percentage of customers rating the services as satisfactory						
	Total value	**31.78%**	**53.45%**	**53.89%**	**56%**	**Target surpassed.**
Farkhor	Value	31%	80%		60%	Target not achieved, 75% reached. Sub-Indicator added at AF restructuring.
	Date established	4/12/2012	4/12/2012		04/20/2016	
Danghara	Value	56%	70%		75%	Target surpassed.
	Date established	10/19/2005	10/19/2005		07/27/2012	
Istaravshan	Value	13%	24%		36%	Target surpassed.
	Date established	10/19/2005	10/19/2005		07/27/2012	
Garm	Value	13%	30%		35%	Target surpassed.
	Date established	10/19/2005	10/19/2005		07/27/2012	
Kanibadam	Value	8%	28%		29%	Target surpassed.
	Date established	10/19/2005	10/19/2005		08/31/2012	
Kulyab	Value	44%	64%		69%	Target surpassed.

PDO Indicators	Category	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years	Comments
	Date established	10/19/2005	10/19/2005		08/31/2012	
Kurgan Tube	Value	45%	67%		71%	Target surpassed.
	Date established	10/19/2005	10/19/2005		07/27/2012	
Vakhdat	Value	36%	58%		59%	Target surpassed.
	Date established	10/19/2005	10/19/2005		07/27/2012	
Vose	Value	40%	60%	64%	70%	Target surpassed.
	Date established	10/19/2005	10/19/2005	04/12/2012	04/20/2016	
PDO Indicator 11: Length of river embankment rehabilitated by the government to mitigate risks associated with 2012 Spring flooding (Meter(m), Custom)						
	Total value	**0**	**4500.00**		**4500.00**	**Target achieved. Indicator added at restructuring.**
	Date established		4/12/2012		04/20/2016	

(b) Intermediate Outcome Indicator(s)

Intermediate Indicators	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years	Achievement
Intermediate Indicator 1: Piped household water connections that are benefiting from rehabilitation works undertaken by the project (Number, Core)					
Value	0	41085.00		38805.00	**Target not achieved, 94% reached.**
Date established	4/12/2012	4/12/2012		04/30/2016	
Comments	94% percent of the target is achieved. Indicator added at restructuring. In Farkhor, 2,860 new connections were built instead, captured under PDO indicator 2. If these new connections are counted, the target is surpassed. City Actual achievement				

	Istaravshan 5100 Kanibadam 3500 Rasht (Garm) 1100 Vakhdat 1247 Danghara 2500 Kulyab 11058 Kurgan Tube 11720 Vose 2580 Farkhor 0				
Intermediate Indicator 2: Improved community water points constructed or rehabilitated under the project (Number, Core)					
Value	1612.00	N/A	1702.00	1766.00	**Target surpassed. Indicator added at restructuring.**
Date established	05/11/2012		4/12/2012	04/20/2016	
Intermediate Indicator 3: New piped household water connections that are resulting from the project intervention (Number, Core)					
Value	0.00	N/A	19618.00	19968.00	**Target surpassed. Indicator added at restructuring.**
Date established	05/11/2012		05/11/2012	03/30/2016	
Comments	Target surpassed. Indicator added at restructuring. City Achieved Istaravshan 1300				

	Kanibodam 900 Rasht (Garm) 98 Vakhdat 3810 Danghara 300 Kulyab 7130 Kurgan Tube 4100 Vose 1300 Farkhor 1030				
Intermediate Indicator 4: Number of metered connections in Farkhor (Number, Custom)					
Value	0.00	N/A	3400.00	1230.00	**Target not achieved, 36% reached. Indicator added at restructuring.**
Date established	05/11/2012		05/11/2012	03/30/2016	
Comments	The target was adjusted to 1800 in December 2015 ISR due to reduced scope of activities. Due to technical design reasons and non-working connections, the number of apartments benefiting from rehabilitated internal piping to be covered under the project was reduced. Since it was an intermediate indicator for a pilot the target was not revised formally.				
Intermediate Indicator 5: Improvement of collection in DVKs (Danghara, Kurgan-Tube and Kulyab) due to introduction of payment system through mobile electronic kiosks (measured through the percentage of electronic payments for water supply and waste water services (Percentage, Custom)					
Value	N/A	0.00	50%	100%	**Target surpassed.**
Date established		05/11/2012	05/11/2012	03/30/2016	
Intermediate Indicator 6: Number of water utilities that the project is supporting (Number, Core)					

Value	0.00	N/A	9	9	**Target achieved.**
Date established	05/11/2012		05/11/2012	03/30/2016	

(c) Dropped PDO Outcome Indicator(s)

PDO Indicators	Category	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years	Comments
PDO Indicator 11: Improved solid waste collection measured by the percentage of the population covered by municipal waste collection and removal (Percentage, Custom)						**Indicator dropped at restructuring**. The indicator was duplicative and less specific than indicator 2. It had sub-indicators for each of the 8 towns involved. Indicator 2, which specifies that solid waste collection is at least once a week, is now measured at 64.77%
	Total value	44%	57.25%	57.25%	Achieved	
	Date established	10/19/2005	10/19/2005	04/12/2012	04/30/2016	

(d) Dropped Intermediate Outcome Indicator(s)

Intermediate Indicators	Category	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years	Comments
Intermediate Indicator 10: Project investments are satisfactory completed in participating small towns (Number of subprojects implemented)						**Indicator dropped at restructuring.** The AF moved towards providing full water and sanitation solution to two cities.
	Value	0	12	N/A		
	Date established	10/19/2005	05/11/2012	04/12/2012		

Intermediate Indicators	Category	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years	Comments
Intermediate Indicator 11: Technical measures in business plans are satisfactory implemented in participating utilities (Number of participating utilities)						**Indicator dropped at restructuring**. The indicator was replaced more specific efficiency measures.
	Value	0	12	N/A		
	Date established	10/19/2005	05/11/2012	04/12/2012		
Intermediate Indicator 12: Sub-project pipeline is satisfactory prepared and robust (Number of projects ready for implementation)						**Indicator dropped at restructuring**. The AF moved towards providing full water and sanitation solution to two cities.
	Value	0	12	N/A		
	Date established	10/19/2005	05/11/2012	04/12/2012		
Intermediate Indicator 13: Reporting on utility performance is regular and satisfactory (Number of progress reports)						**Indicator dropped at restructuring**. The indicator was replaced by PDO indicators 4, 5 and 6 and intermediate indicators 5 to capture the performance of the utility.
	Value	0	12	N/A		
	Date established	10/19/2005	05/11/2012	04/12/2012		
Intermediate Indicator 14: Managerial and financial improvements in business plans are prepared and implemented (Number of activities started)						**Indicator dropped at restructuring**. The indicator was replaced by PDO indicators 5 and 7 and intermediate indicators 4 and 5.
	Value	0	12	N/A		
	Date established	10/19/2005	05/11/2012	04/12/2012		
Intermediate Indicator 15: Auditors issue unqualified opinion on financial statements of project accounts (Number of progress						**Indicator dropped at**

Intermediate Indicators	Category	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years	Comments
			reports)			**restructuring**. This is tracked during supervision.
	Value	0	12	N/A		
	Date established	10/19/2005	05/11/2012	04/12/2012		

G. Ratings of Project Performance in ISRs

No.	Date ISR Archived	DO	IP	Actual Disbursements (USD millions)
1	03/10/2006	Satisfactory	Satisfactory	0.00
2	10/19/2006	Satisfactory	Satisfactory	0.99
3	11/14/2007	Satisfactory	Satisfactory	2.86
4	01/22/2008	Satisfactory	Satisfactory	3.33
5	10/17/2008	Moderately Satisfactory	Moderately Satisfactory	6.63
6	06/03/2009	Moderately Satisfactory	Moderately Satisfactory	11.26
7	11/29/2009	Moderately Satisfactory	Moderately Satisfactory	12.30
8	07/30/2010	Moderately Satisfactory	Moderately Satisfactory	12.68
9	02/05/2011	Moderately Satisfactory	Moderately Satisfactory	13.20
10	06/22/2011	Satisfactory	Satisfactory	14.05
11	03/03/2012	Satisfactory	Satisfactory	15.11
12	12/26/2012	Satisfactory	Satisfactory	16.27
13	06/23/2013	Satisfactory	Moderately Satisfactory	18.53
14	01/19/2014	Satisfactory	Moderately Satisfactory	21.01
15	09/29/2014	Satisfactory	Moderately Satisfactory	23.01
16	05/28/2015	Moderately Satisfactory	Moderately Satisfactory	24.40
17	12/17/2015	Moderately Satisfactory	Satisfactory	26.40
18	04/29/2016	Satisfactory	Satisfactory	27.53

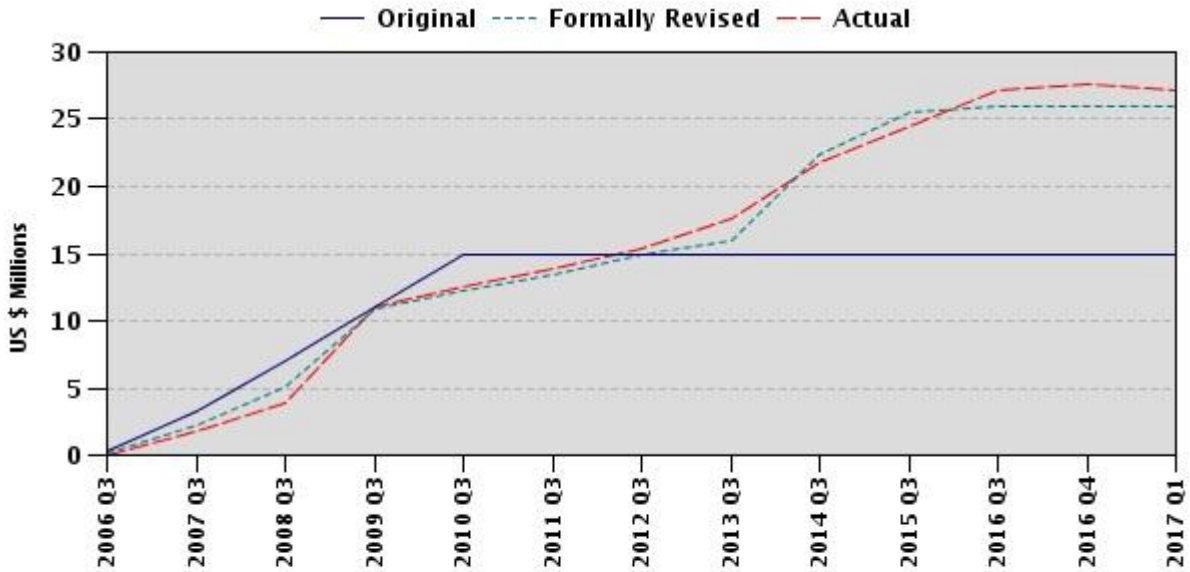
H. Restructuring

The MIDP was restructured five times which included four extensions. The extensions were necessary due to the time needed for importing materials, bureaucratic procedures, variations in the type and scope of the contracted work and the transfer of tasks between contracts. These were not significant and had little to no impact on Bank allocated supervision coefficients as extensions were within the Bank fiscal year calendar; or on project operating costs on the client side.

Restruct. Date(s)	Board Approved PDO Change	ISR Ratings at Restruct.		Amount Disbursed at Restruct. in USD mil.	Reason for Restructuring & Key Changes Made
		DO	IP		
07/11/2011		S	S	14.05	(1) the re-allocation of the Grant proceeds; (2) the trigger of a new safeguard policy on

					Involuntary Resettlement (OP 4.12); and (3) the extension of the Closing Date of the Project from August 31, 2011 to February 28, 2012. A Supplemental letter sent to the Government in February 2006 established the indicators for the project.
02/27/2012		S	S	15.11	Extension of the Closing Date of the Project from February 28, 2012 to August 31, 2012, so as to accommodate the need to finalize the MIDP AF feasibility, detail design and bidding documents preparation, as well as accommodate completion of original project investments.
05/11/2012	08/23/2012	S	S	16.27	Level 1 AF restructuring. Extension of the closing date to August 31, 2015. A supplemental letter sent to the Government in August 2012 revised the indicators. The targets for the original 7 towns were not revised.
06/24/2014		S	MS	21.01	Amendment to the Financing Agreement to permit payment of all taxes from project funds, with the exception of VAT and customs taxes.
04/13/2015		MS	MS	24.40	Extension of project closing and reallocation of resources between categories.

I. Disbursement Profile



Executive Summary

1. The Municipal Infrastructure Development Project (MIDP) achieved its Project Development Objective (PDO) in a very difficult sector and country context. The MIDP began in 2005 by responding to an emergency situation in Tajikistan, where the delivery of municipal services was rapidly deteriorating. In 2005, 35 percent of the water supply distribution networks countrywide were broken down and the remaining 65% were in an advanced state of dilapidation. The original PDO was "to improve the availability, quality and efficiency of delivery of basic municipal services for the eight towns participating in the project". The Implementing Agency was the national State Unitary Enterprise (SUE) 'Khojagii Manziliyu Kommunali' (KMK). Its subsidiary local utilities received support under the project for physical investments aimed at improving the availability, quality and efficiency of their operations as well as improved operational capacity and financial sustainability.

2. By 2012, the most pressing investment needs in the eight original towns were addressed and the project was restructured to provide more integrated solutions with Additional Financing (AF). Since 2012, the project emphasized city-wide integrated investments, citizen engagement, piloting of metering and subsidy programs, and financial and operational capacity building activities. The project also responded to the anticipated floods of 2012 by supplying emergency materials, which was added to the original PDO with the restructuring.

3. The relevance of the original and the revised PDO was high at the time of both the 2005 and 2012 AF Appraisals and remain relevant today as evidenced by the large remaining sectoral investment needs and the National Development Strategy 2030. The design of the project at entry and at AF appraisal was substantially relevant as it adapted from addressing immediate needs to an integrated water sector program, complementing other donors' work.

4. The achievement of the original and revised PDO is substantial. Out of the eleven revised PDO indicators, five were surpassed, two were fully achieved and four were at or above 93 percent achievement. The intermediate indicators and the beneficiary survey confirm these evidence-based results. Yet during implementation, the project met with several difficulties. The Project Management Unit (PMU) had a suboptimal mix of technical skills with general civil engineers rather than water supply engineers with experience in water utilities. Three small assets in the first half of the project were sub-optimally designed and constructed by the low capacity construction industry in Tajikistan, which was not corrected by supervision. The Monitoring and Evaluation (M&E) of the project was moderately unsatisfactory due to issues with target setting and PMU implementation. Procurement opportunities were not fully explored as the capacity was limited. Still, the efficiency of the project was satisfactory with a 14% Economic Internal Rate of Return.

5. All project activities were aimed to put in place an enabling environment for efficiency and the sustainable management of investments. Still the risk to development outcome is high and is related to lack of financial resources for operation and maintenance by the utility, lost institutional capacity at the KMK level; and significant underfunding in the sector as a whole.

1. Project Context, Development Objectives and Design

1.1 Context at Appraisal

6. *Country Context*: After gaining independence from the Former Soviet Union in 1991, Tajikistan fell into a devastating civil war, from 1992 to 1997. The war seriously hampered Tajikistan's growth and development dynamics, the effects of which are still felt today. At the time of Project Appraisal in 2005, Tajikistan had a per capita Gross National Income (GNI) of about USD200, and was considered to be one of the poorest countries in the Europe and Central Asia region. Government reforms allowed for rapid economic growth and poverty reductions from 81% in 1999 to 32% in 2014[4], although the country remains one of the poorest in the region.

7. *Sector context*. The civil war compounded the effects of the break-up of the Soviet Union resulting in losses in subsidies and trade. The delivery of basic services, the responsibility of the centralized State Unitary Enterprise (SUE) 'Khojagii Manziliyu Kommunali' (KMK) and its local subsidiary utilities, was very limited due to technical and financial constraints. The internal migration created by urbanization and the civil unrest, on the other hand, created strong pressures on the government to urgently rehabilitate urban infrastructure.

8. At Appraisal in 2005, the UNDP's '2003 Tajikistan National Human Development Report', cited 43% of the population as being without access to safe drinking water. In fact, 35% of water supply distribution networks countrywide were broken down while the remaining 65% were in an advanced state of dilapidation. Water losses through leakage were extremely high and in many places estimated to be in excess of 60%. In addition, in some of the larger cities that still had functioning water distribution systems, water supply was considered unsafe, as possibly not more than 10% of distributed water received adequate treatment. The situation was further exacerbated by outbreaks of typhoid fever occurring periodically and the incidence of other water-borne diseases (UNDP, 2003). Other basic municipal services such as solid waste collection and disposal were in similarly poor condition.

9. The towns selected for this program had a non-functioning or only partially functioning water supply systems and in some cases no sustainable waste disposal solutions. Even in 2011, just before AF Appraisal, the assessment of small towns provided by KMK in the Khatlon Region indicate water supply coverage as low as 14%, solid waste coverage of 1% and sanitation coverage of 0-1% in some towns. Throughout the system there was a lack of operational and technical capacity and very significant physical infrastructure rehabilitation financing needs.

10. **Rationale for Bank Assistance**. The Municipal Infrastructure Development Project (MIDP) responded to an emergency situation - the rapid deterioration in the delivery of basic municipal services, which carried significant health and economic risks. With its regional and sectoral expertise, the Bank was rightly suited to provide assistance for sustained results in Tajikistan. The project was aligned with

[4] Poverty estimates for 1999, 2003, 2007 and 2009 are based on national poverty lines using the Living Standards Measurement Survey (LSMS) and since 2012 the national Tajikistan Household Budget Survey (HBS), which employs the cost-of-basic-needs methodology.

the 2005 Country Assistance Strategy (CAS), which recognized that reliable urban infrastructure is essential for growth and increased business opportunities in urban areas.

1.2 Original Project Development Objectives (PDO) and Key Indicators

11. The original project development objective of MIDP was "*to improve the availability, quality and efficiency of delivery of basic municipal services for the eight towns participating in the project*". The original project towns included: Danghara, Kulyab, Vose, Istaravshan, Kanibadam, Vakhdat, Garm (Rasht), and Kurgan-Tyube.

12. Key indicators: The outcome indicators of the PDO at approval were improvement in the availability, quality, efficiency and satisfaction with basic infrastructure services, according to the Supplemental letter. Quantifiable indicators were used for each of these characteristics, and these were disaggregated at the town level. The expected project outcomes at appraisal were:

a) Availability and quality of delivery of basic municipal services improves in the eight participating towns during project implementation, measured by:
   - Increase in the availability of water supply as expressed in percentage of population having at least 16 hours of water in both summer and winter
   - Improved solid waste collection as measured by the percentage of the population covered by municipal waste collection and removal
   - Improved solid waste collection as measured by percentage of population with access to municipal waste collection at least once a week

b) Efficiency of basic municipal services improves in the eight participating towns during project implementation, measured by:
   - Improved efficiency of participating utilities as measured by a reduction in energy consumption costs (as a percentage of total operating costs)

c) Satisfaction of the population with improvements in the delivery of basic municipal services in the eight participating towns increases during project implementation, measured by:
   - Decrease in the number of households reporting poor water quality (as percentage of population)
   - Improved customer rating of water supply as expressed in percentage of population rating service as satisfactory

1.3 Revised PDO and Key Indicators

13. *Revised PDO*: The revised objective was to "*improve the availability, quality and efficiency of basic municipal services for the population of the towns which participate in the project. An added objective, as an urgent response to the anticipated floods of the spring of 2012, is to contribute to their mitigation with the supply of emergency materials*".

14. *Context at AF Appraisal:* With the most pressing investment needs addressed and a noticeable contribution to improving the living conditions made by 2011, the project evolved from an emergency intervention to an integrated approach. Investments in water supply, solid waste management and sanitation were complemented by pilot institutional programs that aimed to improve the operational and financial sustainability of the public service provision sector. The project evolved from providing

emergency infrastructure relief across multiple cities to providing an example of effective public service technology, management and practices that could later be mirrored in the entire country. In addition, the Bank was responsive to the risk of the anticipated floods of the spring of 2012 and provided the emergency materials needed to prevent further damage to the infrastructure and reduce public risk, which was reflected in the PDO.

15. The geographical scope was reduced to five urban centers, which include cities where the project activities were ongoing (Danghara, Kulyab, Kurgan-Tube and Vose) and added Farkhor. Vose and Farkhor received most of the additional financing. The choice appears to be well justified - Vose was the city that had received the smallest amount of funds thus far. Farkhor was selected by GoRT out of 14 cities based on population size, percentage of population not covered by services, lack of investment in infrastructure and the availability of studies

16. *Revised key outcome indicators*: The PDO indicators were revised to reflect the changes in geographical scope, and the new corporate core indicators. All but one of the original PDO indicators were retained for the five project towns under Additional Financing. One PDO level indicator, "Improved solid waste collection measure by percentage of population covered by the municipal waste collection and removal," was dropped as it was duplicative with the more specific indicator of collection once a week, which was kept in place and monitored. Changes included the introduction of indicators meant to capture a more complete picture of the financial performance of utilities, as well as to more precisely identify the total number of project beneficiaries. In addition, a specific indicator was added to measure the added objective of urgently responding to the expected floods during the spring of 2012. The targets were increased only in the two towns that would receive further investments. The PDO indicators were restructured as follows, as per the Supplemental Letter of August 2012:

a) Increase in the availability of water supply as expressed in percentage of population having at least 16 hours of water in both summer and winter;
b) Improved solid waste collection as measured by percentage of population with access to municipal waste collection at least once a week;
c) Number of people in urban areas provided with access to improved water sources under the project;
d) Efficiency of water utilities measured through unaccounted for water;
e) Efficiency of water utilities measured through energy consumption costs (as percentage of total operating costs);
f) Financial efficiency of water utilities measured through improvement of revenue to operating costs ratio in Farkhor and Vose;
g) Efficiency of water utilities measured through reduction in energy costs per unit of water produced in Farkhor
h) Project beneficiaries (for water supply services activities);
i) Satisfaction of the population with basic infrastructure services in participating small towns during the project measured through percentage of households reporting poor water quality;
j) Customer rating of water supply services, expressed as percentage of customers rating the services as satisfactory;
k) The length of the river embankment rehabilitated by the government to mitigate risks associated with the 2012 Spring flooding;

1.4 Main Beneficiaries

17. The direct beneficiaries of the project were the water supply (vodokanals), and wastewater and solid waste (State Subsidiary Enterprises of "KMK") utilities in all 9 towns covered by the project, which have received support for improved operational capacity, financial sustainability, as well as physical investments aimed at improving the efficiency, reliability and quality of their operations. Indirect beneficiaries were some of the residents of the towns (numbering 204,545 beneficiaries out of 360,408 total population) as well as the 9 local Self-Governments, which were serviced by the subject utilities. In addition, 3,373 urban residents benefited from access to improved sanitation under the project. Several pilots might have an exponential effect on the number of beneficiaries: for instance, the KMK intends to expand the septic tanks pilot to other towns. At the central level, the KMK benefitted from technical capacity building assistance, as well as assistance in developing the "Municipal and Communal Services Development Strategy" aimed at identifying mid to long-term actions required for improvement of the municipal and communal sector in the country. A list of outputs by component can be found in Annex 2. Outputs by Component

1.5 Original Components

Component A: Municipal Infrastructure Rehabilitation (Estimated component cost: US$12.5 million; indicative IDA financing: US$11.0 million). The component financed the rehabilitation and/or repair of infrastructure and installations, and the replacement of equipment needed for the delivery of basic municipal services by the KMK local subsidiary utility enterprises (water supply, solid waste collection, etc.) in the eight towns (Danghara, Istaravshan, Kanibadam, Kulyab, Kurgan-Tyube, Rasht (Gharm), Vakhdat, and Vose) that were selected by the Government in May 2004 to participate in the project.

Component B: Technical and Institutional Strengthening (Estimated component cost: US$1.5 million, indicative IDA financing: US$1.5 million):

- ⇒ ***Sub-component B.1***: The sub-component financed a series of studies and activities necessary for defining the scope and features of some of the investments to be carried out under Component A in the second and subsequent years of project implementation. The studies and activities, carried out by international and domestic consultants, included the following: (a) updating of inventory and mapping of existing water supply distribution and sewerage networks; (b) leak detection campaigns for water supply systems; and (c) other technical and hydrogeological studies as needed.

- ⇒ ***Sub-component B.2:*** The sub-component financed technical assistance by international and domestic consultants in various areas to assist KMK and its local subsidiary utility enterprises in: (a) developing their capacity to more effectively address issues of operational and financial management; (b) training staff in matters of occupational safety, business and environmental management, and operational planning; (c) addressing legal issues arising from both current arrangements for the delivery of basic municipal services, and the expected larger role of local authorities in the future delivery of such services; and (d) strengthening the financial and technical management of the KMK local subsidiary utility enterprises in the participating towns through the implementation of enterprise specific Management Improvement Programs (MIPS) which focus on improving billing and collection, accounting, and customer relations as well as on updating operating

procedures and establishing and implementing preventive maintenance programs for utility installations and equipment.

Component C: Implementation Support (Estimated component cost: US$2.5 million, indicative IDA financing: US$2.5 million).

1.6 Revised Components

18. When Additional Financing activities were added in April 2012, the three components were adjusted to improve the PDO outcomes but remained largely the same. Under Additional Financing, components A and B, were adjusted to reflect the greater emphasis on city-wide integrated investments, citizen engagement, piloting of metering and subsidy investments, particularly for the town of Farkhor, as well as to underline the increased focus on institutional strengthening, public outreach, and financial and operational capacity building activities aimed at both the target utilities and central SUE "KMK."

19. **Adjustments to Component A**: Municipal Infrastructure Rehabilitation: Physical investments were carried out in an integrated manner in Farkhor and Vose (IDA USD 8.5 million; GoRT USD 1.028 million), which included improved Sanitation Zones, piloted household connection subsidy and septic tanks, integrated solid waste management investments (including improvements to a landfill and the road to it) as well as urgent acquisition of emergency response equipment and flood protection.

20. **Adjustments to Component B**: Technical and Institutional Strengthening (IDA USD 1.605 million; Household contributions USD .088 million) was adjusted to include a pilot metering and connection subsidy program in Farkhor, a communication and public awareness campaign, a customized Monitoring Information System (MIS) for KMK central and its regional hubs as well as improvements of the financial management systems. Another adjustment was the Municipal Sector Strategy and the design of the Communal Services Development Financing Mechanism, both exemplifying the deeper engagement with the sector in Tajikistan and ensuring a more sustained improvement for the country that goes beyond the immediate physical investments.

21. There were no changes to component C (IDA USD 1.745) but additional funds were provided for implementing the expanded activities for a longer time.

Table 1. Appraisal and AF Appraisal Cost Estimates.

Component	Original cost	Changes with AF	Revised cost
Component A:	12,500,000.00	9,528,000.00	22,028,000.00
Component B:	1,500,000.00	1,693,000.00	3,193,000.00
Component C:	2,500,000.00	1,745,000.00	4,245,000.00
Total Project Cost	16,500,000.00	12,966,000.00	29,466,000.00

1.7 Other significant changes

22. *Project restructuring and closing date extensions.* The MIDP was restructured a total of five times, one level 1 restructuring with the AF in 2012 and four restructurings for reallocation of expenditures and other reasons. The closing date was extended four times. This is described in detail in section H of the Data Sheet.

23. *Changes in Intermediate Indicators*. The approval of the AF replaced seven intermediate indicators in order to align them better with the components and their activities, as well as to reflect the newly adopted WB core indicators. The revised intermediate indicators better reflect the metering and subsidy pilot outcomes, the individual household water connection intervention, and the institutional strengthening activities for the utilities. Intermediate indicators number 1, 2, 3 and 6 below were tracked in the ISRs since 2009 as the team found them useful for their work and the AF restructuring formalized these indicators. The intermediate indicators as per the Supplementary Letter of August 2012 were:

1. Piped household water connections that are benefiting from rehabilitation works undertaken by the project;
2. Improved community water points constructed or rehabilitated under project
3. New piped household water connections that are resulting from the project intervention;
4. Number of metered connections in Farkhor,
5. Improvement of collection in water utilities in Kurgan-Tube and Kulyab due to introduction of payment system through electronic mobile terminals and kiosks (measured through percentage of electronic payments for water supply and wastewater services);
6. Number of utilities the project is supporting
7.

2. Key Factors Affecting Implementation and Outcomes

2.1 Project Preparation, Design and Quality at Entry

24. *Soundness of the background analysis and lessons learned.* MIDP was based on feasibility reports and extensive analysis done for project preparation. MIDP preparation was supported by a USD 420,500 PHRD Grant to Tajikistan (TF 53124). It was also based on the 2003 UNDP National Human Development Report, which provided a thorough assessment of the access to and quality of services in the sector. MIDP was further informed by the lessons learned from the first World Bank project in Tajikistan to address problems of basic municipal service infrastructure, the Dushanbe Water Supply Project. The AF was based on sound background analysis and used the 2011 World Bank report "Tajikistan: Sanitation in Small Towns."

25. *Assessment of the project design.* A main strength of the design was its progression – it graduated from an emergency intervention to an integrated urban approach as well as a response to a particular emergency situation. The approach at entry to address the immediate needs of the population in terms of basic services was a key recommendation from experience in Tajikistan and the region. At the time of the AF in 2012, the project design adapted to the higher capacity and, having addressed some urgent coverage needs, focused on providing a full water and sanitation solution to two towns and on piloting small institutional reforms.

26. *Assessment of risks and mitigation*. Risks and mitigation strategies were properly identified and implemented. The Project Appraisal Document (PAD) identified three types of risks: (i) limited

technical experience of KMK and the PMU, (ii) low maintenance due to poor cost recovery, and (iii) low capacity of the local construction industry. The first group of risks was well mitigated through a Project Management Consultant and adequate arrangements were put in place. The risk of low cost-recovery and the resulting low maintenance was envisioned to be mitigated through communication by KMK that there would be improvement in services. The risk of low quality of the local design and construction industry was correctly identified. The lack of capable contractors and flawed designs caused several implementation difficulties and delays as described in section 2.2. The Bank mitigated the risk by providing experts who proposed feasible technical solutions where possible.

27. During restructuring in 2012, the risk and mitigation strategies were updated and built strongly on the experience of the first 6 years. The AF project paper identified the risk as Substantial and provided a list of mitigation strategies, which the team utilized. It correctly identified that communities' willingness for the metering program might be low in Farkhor. The mitigation strategy identified was implemented by improving service before billing and adding a citizen engagement effort. Staff turnover was identified as another risk. As reported in various ISRs, that was a significant constraint to sustained capacity building. An action plan for the Farkhor KMK was implemented but was hindered to some extent by the low salaries in the sector. The improved financial sustainability of the utilities should help address this issue in the long run. The AF correctly identified that the capacity of the PMU might constrain implementation and this was to a high degree mitigated with the PMC and the MIS. The risk of the local utilities not being open to new billing practices was mitigated by securing prior commitments from them. Official design standards which require municipal service delivery schemes that might not be financially viable in the current economic environment were identified as a potential risk. A Feasibility Study was prepared and the least costly design options were selected for both Farkhor and Vose investments, which effectively mitigated these design risks. The pilot septic tanks in Farkhor are an example of an innovative design solution. Several restructurings were required to reallocate funding; this was done expeditiously and in response to emerging priorities during sub-project implementation.

28. *Adequacy of Government Commitment*. The project enjoyed strong support from the Government during preparation as well as implementation. It proactively assisted preparation activities, supported Bank requirements to establish a conducive implementation environment, facilitated rapid ratification and meeting of effectiveness conditions following the signing of the legal agreements.

29. *Coordination with other donors.* MIDP was to some extent coordinated with the efforts by other donors (EBRD, JICA and USAID), mainly in order to avoid overlap in the cities covered by different donors. The MIDP towns excluded towns such as Khojand which was already a beneficiary of sizable municipal infrastructure investment operations funded from other sources. EBRD engaged in water and sanitation in different cities than MIDP and used different selection criteria. JICA and USAID worked primarily in rural areas.

2.2 Implementation

30. Project investments and activities supported by both the original MIDP and its Additional Financing have been implemented satisfactory, overall.

31. *The Mid Term Review (MTR)* of the MIDP was conducted from September 22 to October 2, 2008. The MTR identified project performance to be "moderately satisfactory," with no need for any major change in project design or implementation arrangements. An informal MTR of Additional

Financing was conducted in December 2014. The MTR of the AF assessed the implementation performance and the outcome of the project to be "moderately satisfactory" and that the project was on a steady path to meet its development objectives.

32. *Factors that contributed to successful implementation*:

- *Proactive supervision* by the Bank's team during implementation. This allowed identifying design flaws early on and facilitating adjustments. Civil works implementation was intensely monitored permitting timely field adjustments. On several occasions, the Bank mobilized supplemental external technical expertise to advise the client.
- *Project readiness* was high as project preparation was supported by a PHRD grant and the original MIDP ensured funds were available to support preparation of follow-up investments for the AF. Bid documents were prepared and ready for tendering for the first 18 months of implementation.
- MIDP enjoyed *strong support from the Government* throughout the implementation period, which was an important factor for successful implementation. The Government met its obligations in terms of causing the project to be implemented in accordance with fiduciary and safeguards requirements. It provided the necessary support to the PMU and it ensured its co-financing was reflected in the budget and allocated on time.

33. Factors that gave rise to problems in implementation:

- *Low capacity of the design and construction industry*. Three assets delivered in 2012 were sub-optimally designed and constructed as described in Section 2.5. In September 2014, although most contracts and activities were progressing well, there were delays in implementing two key contracts[5]. The reason for the delay was the need to redesign and/or re-tender due to weak contractor capacity and under-estimated needs made by the Feasibility Study consultant. Although ultimately outcomes were achieved, such capacity issues caused high transaction costs during implementation and required four project extensions.
- *Procurement issues* related to recruiting international consultants caused delays in the selection and hiring of the Project Management Consultant (PMC) and the Municipal and Communal Services Development Strategy Consultancy. Overall low procurement capacity meant that the opportunity to package contracts to get access to international-quality contractors was not utilized.
- *Low capacity of the PMU*: The PMU had a suboptimal mix of technical skills with general civil engineers rather than water supply engineers with experience from water utilities. The international project management consultants (PMC) were recruited to compensate for this lack of expertise. As a result, with a stronger PMC selected in 2012 and with close support from the

[5] Construction of borehole at Farkhor water intake and launching of the household subsidy program

Task Team, the project managed to introduce innovative designs such as the septic tanks in Farkhor.

2.3 Monitoring and Evaluation Design, Implementation and Utilization

Rating: Moderately Unsatisfactory

34. *M&E Design*. The PDO, project activities, and results matrix were well aligned and reflected by the M&E system. The PMU utilized a Management Information System (MIS) that linked financial management, procurement, and disbursements. It developed regular and detailed reports. In addition, three beneficiary surveys were carried out – at Appraisal, at the beginning of the AF and near the end of the project.

35. *Target setting*. At Appraisal, as part of the social assessment, baseline information and data were collected on the overall quality and availability of water supply, solid waste collection and other municipal services as well as the effects of access limitations or poor quality of services on the living conditions of the population, in particular the poor. The initial targets were set based on this assessment. However, the more detailed feasibility studies revealed that several of the chosen targets were unrealistic. Targets were set incorrectly for PDO indicator 5 "Improved efficiency of participating utilities as measured by a reduction in energy consumption costs (as a percentage of total operating costs)". Two towns had gravity-fed systems and to them these indicators did not apply and were dropped during restructuring. In the revised intermediate indicators, the target for indicator number 4 (metered connections in Farkhor) was determined during the feasibility study to be excessive given the number of functioning water networks.

36. *M&E implementation and utilization.* Monitoring and Evaluation (M&E) has been a work of constant guidance and progress throughout the project. The responsibility for M&E on the client side has been with the Project Management Unit (PMU) for MIDP. The internal M&E system implementation by the PMU was never entirely successful, although capacity improved drastically under the guidance and support of the World Bank technical specialist. There was always an M&E specialist within the PMU, however the capacity was low, and a change of staff was required three times. The WB team was mostly responsible to check and keep track of deliverables. However, with the hiring of a new M&E consultant in July 2015 the PMU began to record project results following a defined methodology for each indicator, which helped correct past inconsistencies in reporting. Overall, M&E for KMK as an institution has benefited from the installation of the Management Information System (MIS) and training provided.

37. Due to the difficulties with target setting, collecting and verifying information, M&E is evaluated as moderately unsatisfactory.

2.4 Safeguards and Fiduciary Compliance

38. *Environment.* At Appraisal, the project triggered the OP 4.01 on Environmental Assessment and the project was classified as category B. Throughout its implementation, the project complied with the requirements of the Project Environmental Management Plan (EMP) developed by the GoRT at the project initiation and updated during the preparation for additional financing in 2012. As required by the EMP, the GoRT developed site-specific environmental plans for each particular investment and agreed on them with the World Bank and local communities. These site-specific EMPs contained good engineering and construction practices and mitigation measures applied by contractors at each

particular location. No significant environmental issues were discovered during implementation by the Bank's support missions during the site supervision visits conducted by the PMU. Minor observations and recommendations were made about the provision of the personal protective equipment for construction workers, timeliness of the preparation of site-specific EMPs and the management of asbestos at construction sites. The Borrower has implemented all required follow-up actions. The overall Project environmental performance is satisfactory.

39. *Involuntary Resettlement*. During the course of implementation, OP 4.12 on Involuntary Resettlement was triggered since the project necessitated land acquisition which was not originally envisaged during the Appraisal of the Project. A Resettlement Action Plan (RAP) was developed for each relevant city, with respect to the Tajikistan land code, the Regulation on order of compensation of the land users' losses and other relevant legislation, and in accordance with the WB's Policy (WB OP 4.12) on the matters of involuntary resettlement. Wherever there has been a gap between Tajikistan's law and OP 4.12 the latter took precedence and was held as a minimum standard. There were 21 project affected persons and in each case they received compensation in accordance with the action plans.

40. *Fiduciary compliance.* The Implementation Status and Results Reports (ISR) ratings were in the satisfactory range throughout the life of the project.

41. *Financial Management* (FM). The financial management arrangements for the Project, including accounting and reporting, internal control procedures, planning and budgeting, external audits, funds flow, organization and staffing arrangements are considered "satisfactory". Despite occasional delays, such as in 2010 due to the late selection of the auditor by the State Committee on Investment and State Property that procures audit services for all World Bank financed projects in Tajikistan under the Block Audit arrangement, any difficulties were resolved once feedback was received. The KMK used the cash basis for project accounting and utilized the 1C accounting software for project accounting. During the project implementation period the program was updated and automatically generated SOEs, IFRs and audit reports, and allowed tracking contract payments. The KMK submitted IFRs on time and they were found to be satisfactory to the Bank. The last audit report was received on September 30, 2016. It was reviewed by the bank and found to be acceptable. The Acknowledgement letter was sent to the client. In addition, in 2016, the KMK were able to contract qualified financial management consultants to help address FM issues and train staff. IDA regularly monitored its portfolio through follow-up fiduciary reviews, and procurement and financial management training were provided.

42. *Procurement:* Procurement under the project was generally conducted in compliance with the applicable Procurement and Consultants Guidelines and provisions of the Financing Agreement. There was no mis-procurement and overall procurement performance remained satisfactory. Due to the low capacity of the PMU, certain procurement opportunities were not taken advantage of such as the packaging of contracts to attract higher participation of foreign and local bidders. Regardless of delays in procurement and implementation of some contracts, all goods, works and services were delivered in full amount and there were no delays in payments.

2.5 Post-completion Operation/Next Phase

43. By completion of the project, all relevant assets and investments were transferred into the balance of SUE "KMK" and its subsidiary branches in target towns. Accordingly, management and operation of these assets will be the continued responsibility of SUE KMK and its subsidiary branches,

in coordination with Local Government Units and the community. Under the project, physical investments were accompanied with appropriate institutional strengthening and technical assistance support, including modern billing and collection systems, financial software and hardware and utility operation trainings, as well as community mobilization and engagement. All these activities were aimed to put in place an enabling environment for the sustainable management of investments. During the ICR mission most assets were found in working order and under good maintenance. Only three small assets were improperly designed by the contractors: an incorrectly positioned water well in Vakhdat and a chlorination pump in Danghara and incorrectly chosen pumps for Istaravshan. One chlorination station in Kulyab was found to be using chlorination only once a month rather than the required more regular schedule.

44. The Government's continued commitment to improving the municipal and communal services sector has been further confirmed with its request for support for the establishment of a Communal Services Development Fund (CSDF) – a financing mechanism to pool various public, private and donor resources for municipal and communal investments in a more harmonized and cost-effective manner. A credit for a project in support of the Communal Services Development Fund (CSDF), and a natural follow on activity to MIDP, was negotiated, and approved by the Board of World Bank Executive Directors on March 17, 2015. Although CSDF was originally designed for an investment scope of $30.0 million IDA grant, due to the Debt Sustainability Assessment (DSA) financing terms changing from 100% credit to 45% grant and 55% credit at project appraisal, the scope of investments was reduced to a $13.5 million of IDA grant only. However, as of July 1, 2015, the DSA changed again and resulted in financing terms of 100% credit, thereby adversely affecting the IDA 17 country financing grant credit balance. However, the option to restructure the project, with a mixture of grants and credits that would help balance country IDA financing parameters, was not accepted by the Ministry of Finance, as it was unwilling to borrow and on-lend the IDA credit to KMK at that time. Accordingly, the proposed operation had to be cancelled shortly thereafter on June 24, 2015.

45. In a broader context, and despite the cancellation of CSDFP, the Government of the Republic of Tajikistan remains committed to continue improving municipal and communal services, as reflected in the new National Development Strategy for 2016-2030, with an emphasis on providing access for all citizens to sustainable, affordable, and quality services in accordance to current health and environmental requirements, based on market economy principles. Although advancements have been slow, the recent approval of the Tajikistan Water Sector Reform Program for 2016-2025 by the Government calls for continued reform in the water supply and sanitation sector. The reform process foresees the development of self-reliant, independent regional companies and an economic mechanism for full cost recovery.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation

46. Approximately 59% of the total credit proceeds were disbursed at the time of level one restructuring when the PDO was revised and the AF added. Relevance, achievements and efficiency are therefore evaluated against the original and the revised PDOs, and the results are weighted in order to arrive at the overall outcome rating.

47. *The relevance of the original and revised PDO is **high***. The original PDO, which aimed to improve the availability, quality and efficiency of basic municipal services provision to the population of the towns which participate in the project, was relevant to conditions in Tajikistan at the time of both 2005 and 2012 AF Appraisals as water and sanitation were desperately needed. It remains relevant and consistent with current development priorities, especially the efficiency aspect which will support financial sustainability. The revised PDO remains relevant to current development priorities as stated in the National Development Strategy (NDS) 2030 and in the current Country Partnership Strategy for FY2015-2018.

48. *Relevance of design and implementation is **substantial***. The PDO, project activities, and the results matrix were well aligned, and project activities supported the achievement of both the original and the revised PDO.

49. *Project investments and activities have remained relevant*. The investments and activities support the provision of services, which were needed both at Appraisal and AF Appraisal, and currently as evidenced by the Government National Development Strategy 2016-2030. The support to the sustainability of the sector is still an urgent agenda.

3.2 Achievement of Project Development Objectives

Rating: Substantial

50. The original and revised PDO have been achieved in full.

51. *Achievements against the revised PDO are **substantial.*** The project achieved its PDO. Out of the eleven PDO indicators, five were surpassed, two were fully achieved and four come close to full achievement at over 93%. In terms of the first objective, *availability*, 204,545 people[6] have benefited from improved access to water services under the project, out of which around 53 percent are women. The percent of the population in the project towns with water supply increased from about 52% to 58% and with solid waste collection services from 61% to 65%. In terms of the second objective, *quality*, the satisfaction with these services improved. The utilities have advanced in their *efficiency* (third objective) by decreasing the unaccounted-for water from 52% to 23% and decreasing their energy consumption costs from 9% to 5 % of total operating costs. The financial efficiency improved significantly in Farkhor from 0.39 to 1.1 ratio of revenues to operating costs. The project also achieved its objective related to *emergency* disaster mitigation response to spring flooding. The project successfully financed the requested emergency material that enabled the government of Tajikistan to rehabilitate 4,500 km of river embankment.

52. Further achievements against the PDO are also reflected in the achievements of the intermediary indicators. All, but two, intermediate level targets were achieved or surpassed. The two indicators that have been achieved partially include "Number of meter connections in Farkhor", which reached 36% of the target due to an overestimate of the target and the baseline working connections.

[6] Out of the 360, 408 citizen in the 9 towns (this population estimate is likely an underestimate since the estimates for Rasht (Gharm) are very poor).

The rehabilitated piped water connections reached 94% of the target primarily due to poor data quality in target setting. Other results include:

- 38,805 piped household water connections that have benefited from rehabilitation works
- 1,766 improved community water points
- 19,968 new piped household water connections
- 1,230 metered connections in Farkhor
- 9 utilities were supported through the project

53. *Achievements towards the original PDO are also substantial.* The original and revised PDOs are similar. The revised PDO adds the emergency response work that was requested and has been completed in full. All of the original indicators have been kept except for one, which was duplicative and has been achieved. The intermediate indicators that were dropped were replaced by similar but more specific indicators (e.g. reporting on utility performance is regular and satisfactory is replaced with an indicator on improvements in collections by utilities) and as such are considered achieved.

54. *The above achievements are evidence-based and have been confirmed by the results of the beneficiary survey.* The qualitative and quantitative results from the beneficiary survey are consistent with the results reported in the results framework from administrative sources and indicate a significant increase in satisfaction with services, as can be seen in more detail in Annex 5. The percentage of satisfied people went from 15.4% to 37.9%, even though the survey was carried out shortly before all works had been completed. In terms of waste management, respondents reported that there was more space in the waste collection bins closest to their homes. Satisfaction with waste collection services had improved. The pilot institutional strengthening activities in Farkhor had also started having an effect: billing of clients had improved by 8.5 points compared to the baseline, with 52.8% of respondents now having received a water bill and 98% of those receiving a water bill paying it, as reported during the ICR mission.

There are many additional benefits going beyond the results framework, which support the PDO. Sanitation zones (rather than simply public toilets) were constructed and a total of 3,373 people in Vose and Farkhor benefited from improved sanitation. Citizen Engagement increased and strides in institutional governance were made through the piloting of the household subsidy water connection program and new technological solutions. The modernization of billing and collection increased revenues three fold. These advancements are contributing to a more self-sufficient sector.

3.3 Efficiency

Rating: Satisfactory

55. *The ex-ante economic analysis of the project was carried out on a qualitative basis due to poor availability of reliable data.* Identified economic benefits included: reduction of cost of water supply services; increased willingness to pay for water services; reduction of coping costs related to poor water services; and improved health benefits. Reduction of cost of water supply services was identified to include lower electricity costs; avoided costs of expanding the water services; and reduced costs for water treatment. Replacement and optimization of pumping systems were expected to decrease unit

energy consumption by about 25%. Reduction of technical water losses was further expected to reduce costs of energy, chemical treatment etc. Repair of leakages would further reduce costs of repairing roads and other infrastructure damages. With the overall upgrading of the water services the willingness to pay was expected to increase from a low level. Residents' as well as commercial/government services' coping costs related to the poor service, such as costs of boiling water for example, were expected to be reduced. According to surveys 75% of the population was estimated to boil water for drinking purposes. Expected other savings were related to the coping costs of fetching water: the population spent a significant amount of time, either to wait for irregular supply at communal stand pipes and in-house connections, or to collect water from informal sources such as irrigation canals. Half of households surveyed indicated that they had no pressure in the pipes at all. The reduction of morbidity was expected to produce benefits by reducing the costs of medicine and treatment at doctor/hospital.

56. *For the Appraisal of the additional financing, ex-ante economic analysis comprised cost effectiveness analysis of the water supply, sanitation and solid waste investments.* The cost effectiveness analysis guided priority intervention in Farkhor concerning: water abstraction area (rehabilitation vs. replacement); water storage (elevated vs. non elevated water reservoirs); and, collection logistics (house collection vs. community collection points). Rehabilitation of the existing water intake in the extraction area was selected versus replacing the surface water intake from the Panj River partly due to lower costs associated with the selected solution. An elevated water reservoir solution was selected rather than a city level reservoir due to costs and energy saving reasons, as the selected option would create distribution by gravity. For the solid waste component, the option of combined house collection and collection points was selected as it was found most favorable due to lower number of collection points and thereby lower capital expenditures. The evaluation of the sanitation was made on a qualitative basis only.

57. *The ex-post economic analysis included cost benefit analysis of implemented investments and follow up on least cost solutions established during project preparation.* The cost benefit analysis includes quantification of economic benefits with calculation of economic rate of return for key water supply sub-components. Main economic benefits cover basically the ones identified at the ex-ante analysis. The ex-post analysis shows that the improved revenue collection for water supply services overall is the main contributor to the economic benefits. For project towns, which have obtained drinkable water supply as a result of the MIDP project, reduction of coping costs for treatment of water for drinking purposes is likely to be a main contributor too. Reduced time to fetch water is a medium size benefit, and the benefit of reduced consumption of electricity is the smallest. The economic benefits are presented below together with the calculated EIRR. The three towns presented were chosen due to data availability reasons, assumptions are made for the rest of the towns with water supply investments.

*Table 2**: Economic Analysis of selected Water Supply Investments and Estimated Total***

		Vakhdat	**Kulyab**	**Vose**	**Total for all water supply investments**
Project	Rehabilitated Supply System	Implemented	Implemented	Implemented	

Characteristics	Limited Extension of Supply System	-	-	Implemented	
	Implemented Express Pay	-	Implemented	Implemented	
Benefits	B1 Reduced Morbidity	-	-	-	
	B2 Reduced time to collect water	Quantified	Quantified	Quantified	
	B3 Saved cleaning of water for drinking	-	-	Quantified	
	B4 Saved cleaning of water for other purposes	-	-	-	
	B5 Reduced cost of electricity	Quantified	Quantified	Quantified	
	B6 Increased collection fees	Quantified	Quantified	Quantified	
	B7 Improved collection efficiency	-	Quantified	Quantified	
EIRR	Economic Internal Rate of Return	17%	26%	6%	14%
ENPV (rate 6%)	Economic Net Present Value	USD 1.3 mill.	USD 6.5 mill.	USD -0.1 mill.	USD 23 mill.

58. Based on the result of the analysis of Vakhdat, Kulyab and Vose a benefit transfer approach is used to determine the ENPV and EIRR of the water supply investments in the other project towns. It is assumed that same level of return on the invested capital can be obtained by towns within each of the three types of water investments made: A. basic rehabilitation of water supply system (Istaravshan, Kanibadam, Rasht, Vakhdat); B. basic rehabilitation of water supply system with electronic billing and collection implemented (Danghara, Kurgan Tube, Kulyab); C. larger investments in the water supply system with electronic billing and collection implemented (Farkhor, Vose). By this approach, the economic return of the total water supply investments is calculated to an ENPV on USD 23 m and an EIRR of 14%. It should be further noted that the cost of supervision was relatively high at USD 1,012.67 (see Annex 4), and that the project was slow to be implemented, having been extended two times for implementation delays (excluding the two extensions due to the AF).

Table 3: **ENPV and EIRR for all water supply investment under the project**

Project Town	**Type**	**Investment in USD**	**ENPV/ inv. USD**	**ENPV in USD**	**EIRR**
Istaravshan	A	660,216	1.83	1,210,018	17%
Kanibadam		686,351		1,257,917	
Rasht (Garm)		612,210		1,122,035	
Vakhdat*		730,258		1,338,388	
Danghara	B	1,509,838	4.16	6,275,982	26%
Kulyab*		1,567,892		6,517,296	
Kurgan Tube		1,312,918		5,457,439	
Vose*	C	2,181,294	-0.03	-68,937	6%
Farkhor		4,807,566		-151,937	
* Analyzed investments				**22,958,202**	**14%**

59. The ex-post evaluation of the least cost analysis prepared for the water supply and the solid waste sub-components does not reject the selections made ex-ante. The actual costs of implementing

the solutions are lower than the costs estimated at Appraisal. This indicates that the least cost selections were made on a conservative basis and were proven correct at project design and entry.

60. The ex-ante financial analysis of the project was carried out solely on a qualitative basis due to limited reliability of data during the preparation of MIDP. The analysis concluded that full cost recovery of the water supply services would not be realistic. The analysis guided the identification of institutional and financial capacity building activities included in the project. At the Appraisal of the additional financing, the financial analysis included calculation of tariff levels for recovery of costs of operation and maintenance only. Furthermore, the financial analysis for the Additional Financing included financial forecasts of the Farkhor component to document the likelihood of moving towards cost recovery of O&M expenses by increasing fee collection rates to acceptable levels.

61. The ex-post financial analysis of the project includes financial forecast analysis of the vodokanals to show financial room for an increase in expenditures in the future. The revenue of the vodokanals has doubled in real terms since 2010. Analysis of the vodokanals that benefited from investments in modernizing their billing and collection systems through introducing Express Pay, show that revenue collection has increased almost every month. The annual financial reporting of the vodokanals indicates that the companies are balancing their expenditures to the revenue collected, with a provision for depreciation. It is very likely that this policy will continue in the future to provide for improved services and maintenance of the supply system. With the expected improvement in fee collections, the analysis shows that there will be financial room for increases in expenditures in the future.

62. Affordability of water supply tariffs was confirmed both ex-ante and ex-post. The analysis at AF Appraisal showed the tariffs in Vose and Farkhor were affordable to low-income households in the two project towns. The two towns do not charge for wastewater services. The ex-post affordability analysis shows that the charged fees are affordable for low-income households with the project facilities implemented in the project town of Kurgan Tube, which charge for both water and wastewater and has highest normed consumption level of all project towns. The analysis indicates in particular that a combined water and wastewater bill for a low-income household with connection accounts for around 2.5% of the households' disposable income. This is below an acceptable threshold of around 5%.

3.4 Justification of Overall Outcome Rating

63. The overall outcome rating is assessed as Satisfactory on the basis of achievement, efficiency, and relevance against the original and revised PDO as shown below.

Table 4. Evaluation of Relevance, Achievements, Efficiency

	Against Original PDO	Against Revised PDO
Relevance	**Substantial**	**Substantial**
Relevancy of objective	High	High
Relevancy of design	Substantial	Substantial
Achievements	**Substantial**	**Substantial**
Efficiency	**Substantial**	
Overall	**Substantial**	**Substantial**

Table 5. Overall Outcome Rating

Item	Against Original PDO	Against Revised PDO	Overall
Rating	**Satisfactory**	**Satisfactory**	
Rating value	5	5	
Weight (% disbursed before/ after PDO change)	59%	41%	100%
Weighted value (line 2 x line 3)	2.95	2.05	5
Final rating (rounded)			**Satisfactory**

3.4 Overarching Themes, Other Outcomes and Impacts

(a) Poverty Impacts, Gender Aspects, and Social Development

64. The project investments led to an improvement of the living conditions of the urban poor, had positive impacts on gender and contributed to social development through its citizen engagement activities. The project addressed issues of urban poverty by focusing on improving basic service delivery. In fact, the focus group discussions revealed that women and children benefitted the most from the project, since water carrying is seen primarily as their responsibility. The survey indicated that women spent 1.8 hours per day carrying water while men spent 0.4 hours per day. The affordability analysis showed that the improved service is affordable to poor households. Households with new installed meters also now benefit from being able to manage water consumption and the size of the water bill rather than being billed based on a normed supply. The project also promoted community organization, including sanitation zone management groups and better relationships with local governments and between neighbors once water became less of a cause for conflict. It was encouraging to see that women were able to take leading roles in the Sanitation Zone Management Committees. The citizen engagement improved the relationship between the population and local authorities, garnered support for the investments and led to the perpetuation of better sanitation practices.

(b) Institutional Change/Strengthening

65. The project supported the Government in preparing the first Municipal and Communal Services Development Strategy and the piloting of institutional reforms. The project also contributed to the institutional strengthening of local governments and utilities. The project financed the development of important management tools (i.e. meter installation, billing and collection systems) that strengthened the capacity of these entities to deliver services and raise revenues. In addition, the project developed training and capacity building activities that supported the technical operation of the infrastructure financed. The twinning arrangements with Khojand city, a better performing municipality and water utility, provided an opportunity to staff gained on-the-job training by shadowing their peers in the day-to-day operations and management of a performing utility for an extended period of time.

(c) Other Unintended Outcomes and Impacts (positive or negative)

66. The project tested a new technical solution for the problem of lack of sanitation infrastructure in smaller towns. The septic tanks were introduced in Farkhor as a low capital investment solution. The

initial responses from the users and the utilities have been overwhelmingly positive. The real test would be the sustainability of the solution – the emptying of the septic tank. The KMK expressed an intention to use the septic tank solution in other cities.

3.5 Summary of Findings of the Beneficiary Survey and Stakeholder Workshops

67. **Beneficiary survey**. In 2015, a beneficiary survey was carried out to capture the impact of the project in the cities of Vose and Farkhor. The results were compared to a 2014 baseline survey carried out in the same towns. Unfortunately, no baseline survey was carried out in the other seven participating towns and therefore the results of those interventions could not be captured in survey form. Quantitative and qualitative methods were used in the design of the baseline and final evaluations. The final survey included 1,156 households that had 8,941 household members. In addition, individual face to face interviews were used as part of an experimental approach as a tool for quantitative research. The qualitative approach was employed through six focus group discussions, which included 54 participants. The qualitative and quantitative results from the beneficiary survey are consistent with the results reported in the results framework from administrative sources and indicate a significant increase in satisfaction with services, as can be seen in more detail in Annex 5.

68. **The project closing workshop**. Representatives of the local utilities and the central ministries agreed at the closing workshop in April 2016 that MIDP was successful in supporting the utilities, local self-governments and residents of small cities to have better basic municipal services. There was consensus that the project achieved its objectives and there was a call for such investments and institutional initiatives to continue in the future. For further details, see Annex 6.

4. Assessment of Risk to Development Outcome

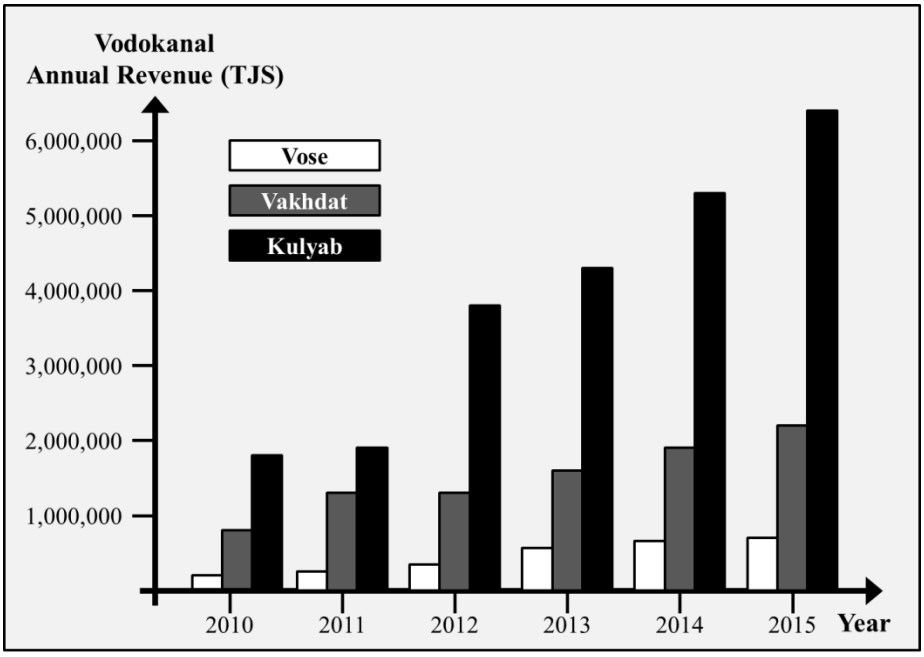
Rating: High

69. The risk to development outcome is high and is analyzed at three levels: utility, KMK and sector levels. The risks relate to (1) lack of financial resources for operation and maintenance (O&M) of rehabilitated or newly developed assets at the utility level; (2) lost capacity within the PMU at the KMK level; and (3) significant underfunding in the sector.

70. Regarding the *lack of financial resources for O&M*, the project made advancements towards financial sustainability but limitations continue to remain high. The financial analysis show that utility revenues increased threefold since 2010 (Figure 1) as a result of improved billing. However, tariffs for municipal services remain below cost recovery levels. On the other hand, evidence that the assets are not depreciating at a faster speed than expected are the assets delivered in 2012. During the ICR mission, the assets delivered in 2012 were observed and all but three small assets[7] were found in working order and under good maintenance. This is an indicator of good handling of the cost-recovery risk.

[7] That were improperly designed, see section 2.5.

Figure 1. ***Increase in selected vodokanals revenue year by year from 2010 to 2015***



71. The PMU was an external body to the KMK. As such, KMK will lose the capacity built in the PMU at project completion.

The municipal services sector is significantly underfunded and the sectoral context is rated "high risk". This situation jeopardizes the scaling-up of important institutional development pilots financed under MIDP. A dialogue is needed with the Government to consider local and national budgets to supplement regular O&M while working towards self-sustainability in the sector. In the long run, the overall investment needs – estimated at USD 2 billion – cannot be covered by national sources in the long run. The creation of a communal services development fund as a financing mechanism for the sector, tariff reform, and strengthening the autonomy of service providers are some of the key reforms to address this envisioned in the Municipal and Communal Services Development Strategy (MCSDS).

5. Assessment of Bank and Borrower Performance

5.1 Bank Performance

(a) Bank Performance in Ensuring Quality at Entry

Rating: **Satisfactory**

72. There was no official assessment of the quality at entry by the Quality Assurance Group but the project was well designed. It was informed by analytical evidence and took into consideration lessons of earlier experience. It was consistent with the Government's development priorities and the Bank's CPS. The Bank mobilized a team with all the necessary skills including expertise in water supply and sanitation, waste management and social participation. A number of alternatives were considered for the project design. Safeguards and fiduciary measures were appropriately designed, were consistent with the Bank's fiduciary role and ensured smooth project implementation. The Bank team facilitated the preparation, and appraised the project such that it was likely to achieve the planned outcome. The

risks and mitigation measures were adequately identified. The M&E target setting was based on a baseline assessment but two targets were determined during implementation to be incorrect (See section 2.3). At approval the project was ready to implement.

(b) Quality of Supervision

Rating: **Moderately Satisfactory**

73. The initial stages of the project delivered all outputs in a difficult context, but there were three small assets delivered before 2012 that were not appropriately designed from a technical viewpoint, which supervision should have corrected. Supervision created an enabling environment for the project to progress but still two extensions were required for implementation delays[8]. The Bank worked closely with the PMU providing continuous support and strengthening its capacity[9], even more so starting in 2012 with the approval of the AF. The M&E received substantial support from the supervising team, and improved in the last stages of the project. The increased focus on capacity building and the closer collaboration with the counterparts in the second half of the project facilitated the quick scale-up of project activities while adapting them technically (e.g. switching from public toilets to sanitation zones) and socially (e.g. through the powerful citizen engagement component).

(c) Justification of Rating for Overall Bank Performance

Rating: Moderately Satisfactory

74. Given the outcome rating for quality of entry as Satisfactory and supervision as Moderately Satisfactory, the overall Bank performance is rated Moderately Satisfactory as supervision accounts for longer amount of time (10 years) than preparation (about 4 in total counting AF Appraisal). Even though the project outcome is rated Satisfactory, the Bank supervision, in retrospect, should have avoided some of the small issues raised in section 5.1. (b).

5.2 Borrower Performance

(a) Government Performance

Rating: Moderately Satisfactory

75. The Government's commitment to the project remained strong throughout preparation and MIDP continued to enjoy high-level support throughout implementation. The Government caused the project to be implemented in accordance with the Financing Agreement and related fiduciary and safeguards requirements. Counterpart funding from the Treasury was never delayed; the counterpart funding by local governments was also provided throughout the project albeit with some delay. The financial statements for 2010 were delayed due to the late selection of the auditor by the State Committee on Investment and State Property that procures audit services for all World Bank financed projects in Tajikistan.

[8] Another two extensions were part of the AF restructuring.

[9] Also evidenced by the relatively high supervision staff costs of about USD 1m (see Annex 4 b)

(b) Implementing Agency or Agencies Performance
Rating: Moderately Satisfactory

76. Throughout the implementation of the project, the PMU was adequately staffed (with the exception of the M&E unit), provided adequate fiduciary controls, ensured safeguards compliance and led a dialogue with sector stakeholders, the central and municipal governments, and the Bank. The PMU staff, which remained unchanged during the duration of the project except for the M&E specialist, demonstrated resilience and dedication and played an important part in seeing the project through successfully. The PMU was active in reaching out to the communities and working with the Community Management Committees (CMCs). The procurement capacity of the PMU, however, was low as indicated in section 2.2 and there were missed opportunities to ease implementation. The PMU also started with low M&E capacity and improved with the project, as described in section 2.3. The technical capacity, as indicated in section 2.2, was not strong at start although significant learning occurred over time.

(c) Justification of Rating for Overall Borrower Performance
Rating: Moderately Satisfactory

77. Based on above, the overall Client's performance is rated Moderately Satisfactory.

6. Lessons Learned

78. *Paying close attention to cost effectiveness in choosing technical solutions worked well under MIDP*. The MIDP has good examples of introducing simple techniques with significant results, where a more complex solution might not have worked. Taking into account the level of technical expertise and funds for maintenance is important in choosing design solutions. An example of a simple solution is the septic tanks in Farkhor, which are a simple solution to starting an entire sanitation system. This was particularly important in the Tajikistan context due to the financial and capacity constraints of the sector.

79. *Institutional development should be embedded in a multi-year customized institutional development and technical assistance support for utilities and their municipalities.* This performed well under MIDP and contributed to improved service delivery. At the same time, a comprehensive understanding of local conditions and thorough communication strategy is needed when novel institutional approaches are chosen. The Household Connection Subsidy pilot in Farkhor started with a slow uptake due to distrust by the local population. The implementation of the pilot improved when the PMU deployed social mobilizers to engage the community and a concerted effort was made to improve public awareness.

80. *Strengthening the capacity of the private engineering and construction industry should be an element of project design and implementation in such low capacity environments.* To enhance the capacity of the local industry, structured training could be offered in the early stages of project implementation. The focus should be on the principles and procedures for planning, design, implementation and supervision of water supply and sanitation investments.

Annex 1. Project Costs and Financing

(a) Project Cost by Component (in USD Million equivalent)

Component	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
Component A:	12.5	22.03	1.76
Component B:	1.5	3.19	2.12
Component C:	2.5	4.24	1.69
Total Project Cost	16.5	29.46	1.78

(b) Financing

Source of Funds	Appraisal Estimate	Actual/Latest Estimate*	Percentage of Appraisal
Recipient**	1.5	2.53	1.69
IDA Grant	15	27.13	1.81
Total Financing	16.5	29.66	1.80

* Includes parent project and AF

**Central Government, Local Government and Community contributions (which is also inclusive of subsidy program contributions of households under AF MIDP in the amount of TJS 37432 (USD 4757))

Annex 2. Outputs by Component

MIDP targeted 9 cities: Danghara, Istaravshan, Kanibadam, Kulyab, Kurgan-Tyube, Rasht (Gharm), Vakhdat, Vose, and Farkhor. MIDP was prepared before 2006 and additional financing was provided in 2012. By 2006, essential and basic water supply and solid waste urban infrastructure in Tajik small towns had not received any support from public or any other financing sources for 15-20 years. A considerable part of the service delivery infrastructure was performing intermittently and unpredictably and the MIDP was meant to provide emergency investments in 2006.

In 2012, the project focused on providing integrated solutions to two towns and following an institutional agenda. In addition to direct influence on improvement of municipal infrastructure under MIDP AF, the Government has asked the Bank to finance the purchase of construction material to secure response to the floods of 2012. The packages for retroactive financing were part of the MIDP AF (in total, USD 1,988,158). This has covered the purchase of 400 tons of cement, 188,971 m2 of gabion wire mesh, and 285,760 liters of fuel resulting in the river banks enforcement with the length of about 4, 5 km.

COMPONENT A: MUNICIPAL INFRASTRUCTURE REHABILITATION

Under this component, the water supply and solid waste management services in the participating towns were supported through: (1) rehabilitation and new construction of water supply, solid waste management and sanitation infrastructure; (2) purchase of specialized vehicles and machinery, in accordance to the most urgent needs and priorities.

Town	Costs, USD
Danghara	1 172 860
Istravshan	682 212
Kanibodam	547 720
Kulyab	1 498 768
Kurgan Tube	1 425 658
Vosse	2 478 984
Vakhdat	707 642
Garm	499 135
Farkhor	4 854 187

Between 2006 and 2012, the sum of USD 2,950,111 was used to purchase 41 units of various specialized vehicles and machinery (mostly: water tanks, solid waste trucks, excavators, tractors and bulldozers) and 870 solid waste collection containers. The vehicles and containers were distributed among the utilities in 8 participating towns. Between 2012 and 2016, for the sum of USD 1,679,560, 13 units of heavy specialized vehicles were purchased by KMK headquarters to support emergency response. The utilities in Farkhor and Vose received 9 of these 13 specialized vehicles for water supply and solid waste management services.

Civil works contracts in participating towns: The following sums were invested for the improvement of water supply in all 9 towns and sanitation services such as VIP latrines, solid waste collection points, sanitary zones in Farkhor and Vose and fully serviced decentralized sewerage with septic tanks and a new modern landfill in Farkhor:

Outputs of civil works contracts:

Danghara:

Water supply (WS) network improvement. The rehabilitation of the network involved the replacement of 14,628 m of old asbestos cement (AC) pipes and other leaking pipes with new HDPE pipes. The network now supplies clean water to about 17,130 persons on 24-hour basis. Previously there were no individual household connections or sufficient working pressure in the system. Furthermore, all households relied on public standpipes, which were not operating regularly.

In addition, 62 fire hydrants were installed in key points of the network in the developed areas to be used for firefighting. Several new manholes were constructed and new valves were installed (network expansion). The current operation of the WS system is more efficient and sustainable.

The detailed list of outputs includes:

- Construction of Chlorination Facility (2 pcs)
- Installation of Chlorine Dosing Pump (2 pcs)
- Installation of Power Transformer (1 pc)
- Installation of bulk water meters (6 pcs)
- Installation of Fire Hydrants (62 pcs)
- Installation of HDPE WS network pipes (14,628 m)

One issue remains problematic in the implementation of the project in Danghara. The water source for the WS is an irrigation canal followed by sedimentation basins. No other water treatment is provided, and under such circumstances, water disinfection becomes crucially important. Under the MIDP a new Chlorination station was financed. During the design, the location of the station was chosen incorrectly, despite the recommendations of the Vodokanal, which resulted in the lack of chlorination through the dosing pumps, installed by the project, since there was not enough pressure for water to reach the station and go through the equipment. Unfortunately, the decision making disputes between the Vodokanal and the PMC were not effectively resolved by the PMU. The final water quality in the system was not impacted by the project, and as a result, currently the water in Danghara is still not potable.

Kulyab:

Improvement of ground water production. 4 submersible pumps were installed in the existing wells. Before the installation of the new pumps, about 39,604 persons in the town could receive water for only 4 hours/day. After the rehabilitation of WS system, water supply became stable and is now available for 24 hours/day with sufficient pressure to reach to the upper floors of the multistory apartment buildings. The constructed chlorination plant is operating efficiently, using liquid Chlorine. 59,604 persons have benefited from the WS improvements under the project.

Rehabilitation of the WS network. HDPE pipes were used in the construction of the new water supply network, replacing old AC pipes. An access road was constructed towards drilling wells No.1, 2 and 3 at the Jangalbashi Well Field. In addition, within the town 55 fire hydrants were installed at the critical social infrastructure locations.

As part of investment during 2011, the water supply system has been extended and the water has been supplied to residential area along M. Khakimov and Hisoriyon streets.

The detailed list of outputs includes:

- Construction of Fences and Gates – 80 and 320 (meters)
- Cleaning of 4 groundwater tube wells and the installation of High Efficiency Submersible Pumps - 4 (pcs)
- Installation of Water Meters - 6 (pcs)
- Construction of HV overhead power transmission lines – 0,4 kV and 6.0 kV -100 (meters)
- Rehabilitation of Chlorination Building - 1 (pc)

- Installation of HDPE pipes - 8,681 and 1,130 (meters)
- Installation of Water Meters – 3 (pcs)
- Construction of Gravel Road – 400 (meters)
- Installation of Steel Pipes – 145 (meters)
- Installation of power transformer – 1 (pcs)
- Installation of horizontal booster pumps – 2 (pcs)
- Construction of Water Reservoir, 100 m^3 - 1 (pcs)
- Installation of Fire Hydrants (55 pcs)

Kanibadam:

Improvement of ground water production capacity. 13 new submersible pumps were installed. The chlorination system was improved. The water, is now disinfected more efficiently and pumped to the town network at appropriate treatment levels and thus the public health risk has decreased.

Before the rehabilitation works, 200 m3/h of water were being pumped to the town network for only 4 hours/day. After the completion of the 2006-2007 project investment program, 800 m3/h of water started to be pumped to town network on a 24-hour basis. The water pressure is now high enough to supply water to multistory buildings. By replacing the old low efficiency pumps (6 pumps) with high efficiency pumps, about 60 kWh of electrical energy is saved daily.

WS network rehabilitation. The water supply network has been extended, and as a result:

a) water supply is available to the Sarikelatya residential area, previously not covered with WS services;
b) Stable water supply is available 24 h/day to 40% of population of "Osnovnaya" District. Previously availability was limited to 2 h/day for only 10% of the population of the same area.
c) Stable water supply is available 24 h/day to 80% of the population of the "Vodokanal" District. Previously, there was only 3 h/day water supply in this area, which covered about 50% of the area's population.
d) WS supply to the hospitals, where was no water supply before. Currently, the hospital is supplied at the rate of 40 m3/h on a 24 h/day basis.

Under the investments during 2008-2010, WS network replacing program: 2,200 m of HDPE pipes (DN400) were installed. The working pressure was increased to 4 bar (from previous 2 bar). A new submersible pump has been installed to supply 120 m3/h of additional water volume to the town WS network. Currently, 8,203 people receive stable water supply in sufficient quantities.

The detailed list of outputs includes:

- Construction of Chlorination Facility- 2 (pcs)
- Installation of Chlorine Metering Pump – 1 (pcs)
- Construction of Fences and Gates – 500 (meters)
- Installation of HDPE pipes – 2207 (meters)
- Cleaning of 13 existing ground water tube wells and the installation of High Efficiency Submersible Pumps – 13(pcs)
- Construction of Well Heads – 6 (pcs)
- Installation of Fire Hydrants – 7 (pcs)
- Installation of Water Meters – 3 (pcs)
- Construction of Power Transmission Lines- 04 & 6.0 kW – 510 (meters)

- Rehabilitation of Chlorination Building – 1 (pcs)
- Rehabilitation of Pump Stations – 1 (pcs)
- Installation of horizontal booster pumps – 5 (pcs)
- Construction of Public Toilets at the water source sites – 3 (pcs)
- Construction of Water Reservoir – 500 m^3

Kurgan-Tube:
Improved production capacity in WS system. Three sedimentation ponds were cleaned and their capacity has been doubled. The ponds were re-connected from parallel to consequent more efficient water treatment through sedimentation. The increased volume of sedimentation basins improved the quality of water in the system. The two old low efficiency booster pumps in the system were replaced with high efficiency pumps. Over 800 m of leaking steel transmission pipes (DN820, DN630 and DN520) were replaced.

Rehabilitation of the WS network. The water pressure in the network was increased to 3 bar from 0.5 bar. Currently, residents living on higher floors receive a sufficient amount of water. Two new high efficiency boosters and two submersible pumps were installed. Eight water meters were installed on the supply mains to measure the water supplied to the town. This resulted in the reduction of unaccounted for water in the town. 53,926 persons have benefited from improved water services under the project.

As part of investments during 2011, at Well Field No.2, a new 630 KVA power transformer has been installed and connected to electricity supply system.

The detailed list of outputs include:

- Installation of HDPE pipes – 728 and 7,206 (meters)
- Installation of Steel Pipes – 113 (pcs)
- Installation of Fire Hydrants – 41 (pcs)
- Construction of Chlorination Facility - 2 (pcs)
- Installation of Transformer – 1 (pcs)
- Cleaning of 4 existing ground water tube wells and installation of High Efficiency Submersible Pumps – 4 (pcs)
- Installation of Chlorination dosing pump – 2 (pcs)
- Construction of water tube well's head – 4 (pcs)
- Installation of Water Meters – 8 (pcs)
- Construction of water tube well – 110 (meters)
- Construction of overhead Power Transmission Lines- 04 & 6.0 kW – 1,610 (meters)
- Rehabilitation of Chlorination Building – 1 (pcs)

Vose:
Improved water production capacity. One submersible pump has been installed to the existing tube well and it is still under operation. Previously, the residents did not have access to tap water. After the completion of MIDP investments, the stable WS became technically available for a 24 h/days basis. The KMK supplies chlorine regularly and water is properly disinfected in all the newly constructed chlorination facilities. The water pumped to the town network is disinfected and therefore public health risk has been reduced. Since the new high efficiency pumps are sensitive to excessive voltage fluctuations, the transformer supplying power to the pumps has also been replaced under MIDP,

investment of 2006-2012. Consequently, the voltage stability has improved and the pumps operate safely.

Vose received the one of the smallest amounts of the investments between 2006 and 2012, compared to the other project towns, although only 25% of population had uninterrupted water supply and 29% of population was covered by solid waste collection services by 2012. It was therefore decided to include investments in Vose into AF, excluding further support for the production of water. Instead, the 2012-2016 investments were aimed to support rehabilitation and expansion of the WS network and water storage capacity. Activities under 2012-2016 program were spread among 4 water production sites in Vose. Major works were located in the Uchkhoz Intake Area and include the construction of a reservoir for 1000 m3, the construction of a chlorination building, the construction of a booster pumping station and the construction of the transmission line from Uchkhoz Water Intake to the distribution networks. Most of residents, which were lacking the permanent and easy access to water supply services, now have the opportunity to have individual household connections.

KMK supplies the Chlorine for water disinfection regularly and water is being properly disinfected in the newly constructed chlorination facilities. The water being pumped to the town network is disinfected, thus reducing public health risk.

The availability of water supply for the population for at least 16 h/day of water in both summer and winter has increased from 6 to 70%. The number of people in urban areas provided with access to improved water sources under the project in Vose increased to 15,617. Increased coverage is measured as population covered in the service area benefiting from project interventions, plus access to WS for public buildings such as school and hospitals.

Project interventions in Vose between 2012 and 2016 focused on the improvement of sanitation for selected groups of residents and solid waste management services for the population via developing sanitation zones. Each zone is built to serve to the residents of the barracks and has ventilated improved pits (VIP) latrines, and SW containers.

The detailed list of outputs include:

- Construction of Chlorination Facility (2 pc)*
- Installation of Chlorine dosing Pump (2 pc)*
- Installation of Transformer (1 pc)*
- Construction of Fences and Gates (175 meters)*
- Construction of Public Toilets and Landscaping (2 pc)*
- Cleaning of the groundwater tube well and installation of High Efficiency Submersible Pump (1 pc)*
- Construction of Well Heads (1 pc)*
- Installation of Water Meters (6 pc)*
- Procurement of Containers (80 pc)*
- Installation of HDPE pipes – (200 and 3,089 meters)
- Installation of Steel Pipes – (24 meters)
- Installation of Water Meters – (4 pcs)
- Construction of Laboratory Facility – (1 pcs)
- Construction of Public Toilets – (2 pcs)
- Installation of HDPE pipes - 8,681 and 1,130 (meters)

- Installation of Water Meters – 3 (pcs)
- Construction of Gravel Road – 400 (meters)
- Installation of Steel Pipes – 145 (meters)
- Installation of power transformer – 1 (pcs)
- Installation of horizontal booster pumps – 2 (pcs)
- Construction of Water Reservoir, 100 m^3 - 1 (pcs)
- Installation of Fire Hydrants (55 pcs)
- Installation of HDPE pipes - 8,681 and 1,130 (meters)
- Installation of Water Meters – 3 (pcs)
- Construction of Gravel Road – 400 (meters)
- Installation of Steel Pipes – 145 (meters)
- Installation of power transformer – 1 (pcs)
- Installation of horizontal booster pumps – 2 (pcs)
- Construction of Pump House for Second Stage Lifting – 1 (pcs)
- Construction of Transmission Line from Uchkhoz Water Intake to the Distribution Network
- Cleaning of Boreholes
- Construction of 9 sanitary zones (VIP latrines and SW containers site), i.e., a total of 36 toilet seats each building contains - 2 female & 2 male toilet seats). 9 solid waste collection points are constructed (8.4 m x 2.4) in the sanitary zones.

Istaravshan:

Improved water production capacity. Under the First Phase Program, 6 submersible pumps were installed. Under the Second Phase Program, 900 m of the main WS network pipelines were replaced. Since then, it has been possible to operate the newly installed pumps at full capacity. Today, 24 h/day WS is available to the inhabitants at proper working pressure. The newly constructed chlorination facilities are under operation. The KMK supplies the chlorine regularly and the water is being properly disinfected in newly constructed chlorination facilities. The treated water is being pumped to the town network, and therefore the public health risk has been reduced.

Under the Second Phase Program, 4 water tube wells were rehabilitated. One new tube well was constructed. The new high efficiency pumps were installed to these 5 tube wells. Thus, the supply capacity of the wells increased to 120 m3/h. A new power transformer has been installed to improve the voltage supply quality to the pumps. Under the existing conditions, the water is being supplied to 237 households sustainably with proper working pressure to reach higher floors. For example, in the Sarimezar District of the Town, 5,000 inhabitants who did not have WS services before, have potable water now (these 5,000 beneficiaries are part of total number of 27,291 beneficiaries in the town). The new chlorination facility, constructed at the Dusti Water Intake, makes it possible to chlorinate water from all four wells.

Under the 2008-2010 project investment program, 11 old low efficiency submersible pumps were replaced with high efficiency pumps, leading to daily energy savings of 100 kWh.

Detailed list of outputs includes:

- Construction of Chlorination Facility - 2 (pcs)
- Installation of Transformer - 6 (pcs)
- Construction of Fences and Gates - 400 and 110 and 220 (meters)

- Rehabilitation of Laboratory Building - 1 (pcs)
- Construction of Power Transmission Lines- 04 & 6.0 kW – 200 (meters)
- Rehabilitation of Chlorination Building – 1 (pcs)
- Rehabilitation of Well Houses – 3 (pcs)
- Installation of HDPE pipes – 1746 (meters)
- Construction of Chlorination Facility – 1 (pcs)
- Installation of Chlorine dosing Pump – 1 (pcs)
- Construction of Drilling Well Head – 5 (pcs)
- Installation of Bulk Water Meter – 1 (pcs)
- Construction of Drilling Well – 110 (meters)
- Construction of Power Transmission Lines: 04, 6.0 & 10 kW – 733 and 7,268 (meters)
- Installation of Horizontal Pumps – 4 (pcs)
- Cleaning of 11 existing groundwater tube wells and installation of High Efficiency Submersible Pumps – 11 (pcs)
- Construction of Public Toilets – 2 (pcs)
- Installation of Voltage Regulators – 11 (pcs)

Please note that 5 of the submersible pumps were burnt before the end of MIDP and were not replaced. This was due to a technical design failure for the parameters of the pump lifting heads.

Vakhdat:

Improved water production. Three submersible pumps were installed under the 2006-2007 project investment program with an overall pumping capacity of 400 m3/h. The working pressure in the networks was increased from 0.8 bar to 3.5 bar. Thus, the water now reaches higher floors efficiently. The KMK, supplies chlorine regularly and the water is being properly disinfected in newly constructed chlorination facilities. The water being pumped to the town network is treated, thus reducing the public health risk.

Under the 2008-2010 project investment program, four water tube wells were rehabilitated and one new water tube well has been constructed. Six new high efficiency pumps were installed to the wells. The pumping capacity of the well field was increased to 570 m3/h.

By the end of October 2009, the overall water pumping capacity of the town network had increased to 1,700 m3/h. Of those, 700 m3/h was supplied by 8 old low efficiency pumps. The remaining 1,000 m3/h was provided by 8 new high efficiency pumps installed under MIDP. By the use of the new high efficiency pumps, a daily electrical energy saving of 70 kWh was made possible. In addition, 1,560 m of HDPE pipes were installed under the Second Phase Program. 15,627 persons received sustainable water at proper working pressure.

The detailed list of outputs includes:

- Construction of Chlorination Facility - 3 (pcs)
- Installation of Chlorine dosing Pump – 3 (pcs)
- Installation of High Efficiency Submersible Pumps – 9 (pcs)
- Construction of Power Transmission Lines- 04 & 6.0 kW – 200 (meters)
- Rehabilitation of Well Houses – 3 (pcs)
- Installation of HDPE pipes – 1,631 (meters)

- Construction of Fences and Gates – 160 and 1,977 (meters)
- Construction of water tube wells' Head – 5 (pcs)
- Installation of Water Meters – 1 (pcs)
- Construction of water tube well – 157 (meters)
- Construction of Power Transmission Lines: 04, 6.0 & 10 kW – 1462 and 2,400 (meters)
- Installation of Transformer – 3 (pcs)
- Rehabilitation of water tube wells' head – 3 (pcs)
- Installation of Voltage Regulators – 9 (pcs)

The implementation in Vakhdat is underperformed in the sense that the new tube well in Vakhdat was poorly designed. The well was constructed in a sandy aquifer, but it was not suitably equipped with the appropriate aquifer filter screens – the needed size of the slot was 1 cm, instead of factory made filter screens of 0,3-0,5 mm. As no submersible pump can stand the high sand content in water, above the manufacturer's permitted concentration, the tube well was closed and it is currently not used in the WS system.

Gharm

Improved production and storage. A water reservoir of 500 m3 was constructed. The reservoir functions as a network balance reservoir to maintain permanent water pressure in the system, thus reducing the operation and maintenance cost of the system.

The KMK, supplies chlorine regularly and the water is being properly disinfected in newly constructed chlorination facilities. The water being pumped to the town network is treated, thus reducing the public health risk.

The Molla Husein spring has been rehabilitated. Its capacity is increased by 30% and measures were taken to protect the water source against floods and external pollution.

WS network rehabilitation. 504 m of steel pipe (DN426) was installed between the Loyak spring and the newly constructed pressure-reducing chamber. This location is in a mountainous area exposed to severe winter conditions as well as a risk of rock fall. The old pipeline had been severely damaged, but the new pipeline was embedded and protected against severe winter conditions and rock fall risk. Thus, water supply from this source is secured all year around. The water flows from the spring by gravity. The new pressure-reducing chamber regulates the water pressure and protects the transmission pipeline against the hydraulic hammer effect. In total, 13, 041 persons benefit from the project improvements.

The detailed list of outputs includes:

- Rehabilitation and expansion of "Molla Hossein" spring catchment;
- Construction of Chlorination Facility - 2 (pcs)
- Construction of Fences and Gates – 400 (meters)
- Construction of Power Transmission Lines- 04 & 6.0 kW – 105 (meters)
- Construction of Water Reservoir – 500 m^3 - 1 (pcs)
- Tank Construction – 2 (pcs)
- Procurement of Containers – 70 (pcs)
- Installation of HDPE pipes – 5,088 (meters)
- Installation of Steel Pipes – 504 (meters)

- Installation of Fire Hydrants – 5 (pcs)
- Installation of Water Meters – 5 (pcs)
- Construction of Guard Booths – 1 (pcs)
- Construction of Settling Tank – 1 (pcs)

Farkhor:

Improvement of production and storage capacity of WS system. The project funded the construction of two new water tube wells equipped with submersible pumps. The funding covered the construction of the boreholes, booster pumping station and site internal piping works (both suction of Ø 276 mm steel and delivery of Ø 325 mm steel with fittings and fixing). In addition the existing water reservoir of capacity 250 m3 at the well field site was rehabilitated and a new water reservoir of 2000 m3 was constructed for the town. An access road and overall rehabilitation of many components of the Water Intake at Zastava was also included, which will make operation easier, especially during the wet seasons.

Technical innovation/new technologies: The water aquifer in Farkhor is characterized by the high sand content. This was the problems for the old wells, which were able only to extract a small portion of the demanded flow due to the high sand content in water. The new wells were built, using the detailed guidelines developed for similar Bank's project in the region, in the Bishkek and Osh urban infrastructure improvement project, where the principle of modern and sophisticated well design, construction and development were provided. As a result, the project used the new type of modern filter screens and gravel pack – for the first time in Tajikistan, and managed to prevent sand from entering the pump while delivering safe and sufficient water yield.

Under the 2012-2016 project investments, three Russian centrifugal pumps (Q= 400 m3/hr., Head, H= 105 m, Electric Consumption= 160 KW) of which only one was operational, were replaced by efficient centrifugal pumps (Q= 315 m3/hr., Head, H= 87 m, electric consumption = 110 KW/hr.). As a result, about 50 kW/hr. of electricity could be saved. In Farkhor, at baseline the system was underperforming, and the use of energy was low, at the end of the project, the system used more energy to comply with 16h/day service duration and therefore targets were assumed to be higher than planned. The systems were built to successfully provide 24 h/day supply, but due to electricity rationing and energy savings, the system is run 12-24 h/day/ depending on the season. 22,696 persons benefit from the project investments.

Reha

Rehabilitation of the WS network. Under the project around 14 km of new distribution HDPE pipes were laid in 15 streets. The water is delivered to the distribution networks with one short interruption per day due to rationing. There is no leakage or any other problem found in the distribution networks. In addition, 21 fire hydrants were installed, as well as new manholes and valves, making the overall system more efficient and safe.

Improved sanitation for the selected population groups. Investments in Farkhor under the 2012-2016 were focused on increasing sanitation access and solid waste management services for the population. Cumulatively, these comprised a construction of 16 VIP latrine buildings (blocks), i.e., a total of 64 toilet seats, located in 6 places (i.e. Sanitary Zones). These buildings were constructed only for multi-storied apartment buildings (2, 3 and 4 –storied). Meanwhile, 6 solid waste collection points were constructed (size 8.4 m x 2.4 m) in the same sanitary Zones. A total of 90 solid waste containers were

installed in Farkhor. 36 Solid Waste containers were installed in the 6 Sanitary Zones and the remaining 54 were installed outside of the sanitary zones.

Sanitation improvements. The project included septic tanks and recovered WS and sewerage services for three apartment buildings with 96 households. The Soviet time buildings originally had all the amenities, but later lost internal WS and sewerage services and were forced to fetch water outside of the building and use the external shared pit latrines. The project recovered internal plumbing, installed water taps, sinks for the kitchen and WC in the bathroom. The sewage treatment was organized with three septic tanks, one for each building. The unit cost of such improvements was USD 1,602 per apartment.

The detailed list of other outputs includes:

- Construction of two water reservoirs (2000 and 250 m3) and two boreholes;
- Rehabilitation of pumping station of second stage and office building;
- Boundary fencing;
- Construction of chlorination building works;
- Installation of Equipment for chlorination of water;
- Completed drilling of two Boreholes with subsequent well developments works;
- Installation of two submersible pumps (discharge Q = 250 m3/hr., H =35 m) are completed;
- Installation of discharge pipe lines (d= 315 mm, L = 281 m) from Boreholes to nearby reservoir;
- Construction of two pump houses and pumping equipment with electrical works including installation of electric motors;
- Electrification works in the water Intake area;
- Construction of public toilets (VIP latrines) in Farkhor and construction of solid waste collection points;
- Removal of existing illegal waste collection points and construction of landfill;
- Construction of new administration building and operation yard for water utility.

COMPONENT B: TECHNICAL AND INSTITUTIONAL STRENGTHENING

Additional Engineering Studies

The activity financed a series of studies and activities that were necessary to better define the scope and features of some of the investments under Component A in the second and subsequent years of project implementation. The studies and activities, which were carried out by consultants, included the following:

(a) Updating of inventory and mapping of existing water supply distribution and sewerage networks;
(b) Leak detection campaigns for water supply systems; and
(c) Other technical and hydro- geological studies that were needed.

KMK Institutional Strengthening

Evaluation of the results of activities undertaken to support the KMK are satisfactory. All actions were implemented. The sub-component financed technical assistance provided by international and domestic consultants in various areas to assist KMK and its local subsidiary utility enterprises in:

(d) Developing their capacity to more effectively address issues of operational and financial management; installation of 1C automated accounting software.
(e) Training of staff on occupational safety, business and environmental management, and operational planning;
(f) Addressing legal issues arising from both current arrangements for delivery of basic municipal services, and the expected larger role of local authorities in the future delivery of such services; and
(g) Strengthening the financial and technical management of the KMK local subsidiary utility enterprises in the participating towns through the implementation of enterprise specific Management Improvement Programs (MIPs) focused on improving billing and collection, accounting, and customer relations as well as on updating operating procedures and establishing and implementing preventive maintenance programs for utility installations and equipment.

Households Metering Program (USD 288, 465, part of component B) and pilot household subsidy for individual connections program (USD 865,343; part of component A)

Greater institutional strengthening activities under the AF introduced a pilot metering program in Farkhor, in an effort to contribute to the reduction in water loses through wastage, introduce a more equitable application of tariff collection based on consumption, and improve billing and collection. In total, 1200 water meters were installed in selected of the town.

In order to facilitate individual connection and reduce water losses from public standpipes, the project offered a household subsidy program in a pilot area. The households were offered a 60% subsidy to connection costs, and a meter was granted. By the end of the project, 627 households benefited from new individual connections, in addition to about 600 households with existing connections who received meters.

Communication and Public Awareness Campaigns

The communication and public outreach campaign contributed to the proper operation and management of the sanitation investments through the establishment and registration of Sanitary Zone Management Committees, which are comprised of community members who manage the operation of the zones and promote improved hygiene behavior, and also collect user fees. The communication and public awareness campaigns comprised conduct of training programs for Sanitary Zone Management Committee members, in Vose and Farkhor, focusing on community mobilization, better management of constructed infrastructure, both financial and operationally, improved hygiene, behavioral changes, habituating consumers to pay for the services they receive, etc. Brochures on relevant subject modules were printed and disseminated among Sanitation Zone members, for their guidance. Promotional and informational materials on the project and investments were developed and disseminated by a local firm.

Management Information System

SUE KMK and its subsidiary branch of the Kurgan-Tube vodokanal have installed and utilize a pilot Management Information System (MIS), which allows for tracking of water utility performance through the set of International Benchmarking Network (IBNET) indicators in the system. As part of the MIS learning, select representatives of KMK, and target water utilities, were taken for a study tour to Portugal's ERSAR water utility company to learn from successful examples of system utilization.

The KMK is planning to expand the system, with resources from development partners, should the pilot system prove to be successful.

Installation of Modern Billing and Collection Software

Water utilities in Kurgan-Tyube, Danghara, Kulyab, Farkhor, and Vose procured and installed a modern billing and collection system. The installed system allowed for all billing financial transactions to be done automatically. The system is meant to help utilities improve their financial operations and transactions.

Municipal Sector Strategy and the Design of Communal Services Development Financing Mechanism

The project financed the preparation of a Municipal Sector and Communal Services Development Strategy, as well as the Diagnostic Assessment of Housing and Communal Services in 26 Cities and Towns of the Republic of Tajikistan, so as to identify mid - to long-term reforms for the sector. Certain recommendations in the Strategy were reflected by the Government in its National Development Strategy for 2030, and also contributed to preparation of the Communal Services Development Fund Project, which was later cancelled.

The MIDP also supported the development of management improvement plans for each WS utility in the initial eight towns. The study was contracted to an international consulting company but unfortunately, the recommendations were very general and not easily applied by the utilities.

COMPONENT C: IMPLEMENTATION SUPPORT

The component financed operating costs of the PMU including staff salaries, in country travel costs, mandatory employer social charges, office consumables, staff training, miscellaneous project supervision costs, communications, vehicle insurance and maintenance, as well as office equipment, furniture and vehicles. It has also financed relevant annual audits of the project accounts, of SUE "KMK," and its relevant subsidiary branches (Kurgan Tyube and Kulyab Vodokanal, respectively). In addition, the project financed the hiring of relevant consultants for the PMU project implementation needs, such as an M&E specialist, which was of critical importance during the last phase of the project. International project management consultants (PMC) were hired under this component as well (cost USD 1, 7 mil for 2006-2012 and 0, 9 mil for 2013-2016).

Annex 3. Economic and Financial Analysis

This annex summarizes the results of the ex-post economic and financial analysis of the project. The ex-ante financial and economic analysis of the project was prepared on a mainly qualitative basis due to poor availability and reliability of data. The ex-ante economic and financial analysis of the additional financing was prepared based on a quantitative basis as well.

1. Financial analysis

The ex-ante financial analysis of the project was carried out solely on a qualitative basis due to limited reliability of data. The analysis concluded that full cost recovery of the water supply services would not be realistic. The analysis guided the identification of institutional and financial capacity building activities included in the project. At the additional financing the financial analysis included calculation of levels of cost recovery water tariffs. The tariffs were expected solely to recover costs of operation and maintenance. Furthermore, the financial analysis included financial forecasts of the Farkhor component to document the likelihood of moving towards cost recovery of O&M expenses by increasing fee collection rates to acceptable levels.

The ex-ante financial analysis was carried out primarily on the water supply services. For the solid waste services, the impact from the project on solid waste tariffs was investigated at the Appraisal of the AF. The small wastewater component in the AF phase was not included in the analysis.

The *ex-post* financial analysis of the project comprises investigation of financial sustainability related to the water supply services and the implemented facilities in operation. The analysis is supported by financial forecasts of the water supply companies.

The ex-post financial analysis does not include follow up on the financial forecast of Farkhor Vodokanal as reliable financial data for such is not available. The analysis moreover does not include financial analysis of the solid waste components due to lack of financial data.

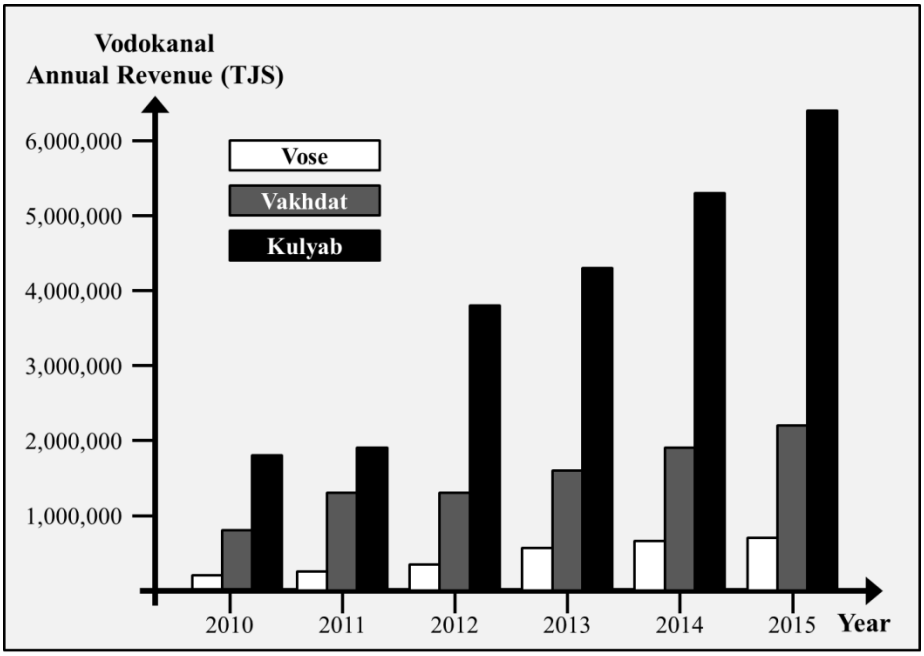
The aim of implementing the water supply sub-components, which accounts for far the largest share of the total project costs, was originally to reestablish a minimum water supply service from a very poor level in all project towns. This low service level caused poor willingness to pay for water overall and thereby low fee collection. All households were charged a flat tariff and some households were charged fully without being serviced with water. Comparing fee collection at an early time of the project in 2010 to collection in 2015, when most of the water supply facilities implemented were in full operation, shows that fee collection has increased significantly – see table 1 below. The result indicates that the project towns see increased willingness to pay for the improved water supply services provided.

Table 1. User Fee Collection for Water and wastewater services in selected Project Towns

Project Town	User fee collection (ex. VAT)				
	2010 *TJS*	2010 adj[1] *TJS*	2015 *TJS*	Increase *TJS*	*in pct.*
Istaravshan	Not analyzed				
Kanibadam	Not analyzed				
Rasht (Garm)	Not analyzed				
Vakhdat	802,501	1,146,953	2,209,030	1,062,077	93%
Danghara	299,138	427,535	978,972	551,437	129%
Kulyab	1,885,480	2,694,773	6,383,312	3,688,539	137%
Kurgan Tube	2,966,800	4,240,221	8,048,221	3,808,000	90%
Vose	176,600	252,401	692,800	440,399	174%
Farkhor	Not analyzed				

[1] Adjusted to 2015 prices using the exchange rate variations TJS/USD as a proxy for inflation

Figure 1. Increase in selected vodokanals revenue year by year from 2010 to 2015



Express Pay Billing & Collection

To improve billing and fee collection an automated mobile billing and payment system provided by the vendor Express Pay (EP), was introduced in the towns of Danghara, Kurgan-Tube, Kulyab, Vose, and Farkhor. The EP solution became operational September 2015. Significant results were made during the first 10 months of its operation with average monthly increase in collections of 2.9 % during the first 8 months. The potential for further increases in fee collection is significant as collection rates are low compared to the supply of water.

Table 2: Increased revenue from implementing Express Pay

Project Towns implemented Express Pay	Monthly WS fee collection using EP from September 2015 to May 2016		
	Average monthly collection *TJS*	Av. monthly growth[1] *TJS*	*- in pct.*
Danghara	Not analyzed		
Kulyab	173,019	4,373	2.5%
Kurgan Tube	425,584	12,104	2.8%
Vose	39,524	1,950	4.9%
Farkhor	Not analyzed		
All EP Towns	638,126	18,427	2.9%

[1] Regression analysis on the monthly collections from September 2015 to May 2016

Water Supply Tariffs

To support revenue collection and to cover for inflation, water supply tariffs have been revised regularly since project start, while the scope of the project did not include tariff reforms or any discussion with KMK or government to increase tariffs. As seen in the table below, tariffs have increased significantly since 2010 by the government. This is lower than the increases in revenue collection, which indicate improved fee collection rate.

Table 3. Development in effective Water Supply Tariffs

Project Town	Water Supply Tariff		
	2010 Average TJS/m^3	2015 Average TJS/m^3	2010-2015 Increase[3] %
Istaravshan	Not analyzed		
Kanibadam	Not analyzed		
Rasht (Garm)	Not analyzed		
Vakhdat	Not analyzed	-	-
Danghara	0.40	0.87	52%
Kulyab	0.40	0.75	31%
Kurgan Tube	0.39	0.89	60%
Vose	0.32	0.73	60%
Farkhor	Not analyzed		

[1]Norms for households without meters - in Liters per Capita per Day - LCD
[2]Water bill per household-member – houses with water supply connection
[3]Adjusted to 2015 prices using the exchange rate variations TJS/USD as a proxy for inflation

Financial status of the Vodokanals' Operations

Revenues consist of collected fees from: households, budget organizations, self-sustained organizations, and non-government organizations. Moreover government is charged for water (and wastewater) for the part of the population that is exempted from paying for water. This revenue from exempt population is a significant contribution to the finances of the Vodokanals.

According to their annual reporting to the KMK all the vodokanals are balancing their expenditures and depreciation to revenues collected. As the revenues collected have increased significantly (after inflation) since project start, the vodokanals are in a much improved financial situation, and the vodokanals can afford higher level of expenditures today. Financial forecasts of Kulyab and Kurgan Tube Vodokanals have been prepared and are presented below.

Financial status of Kulyab Vodokanal

The financial performance of Kulyab Vodokanal has developed positively over the last 4 years with increasing revenue from TJS 3.7m to TJS 6.4m in 2015. The high increase can be explained by increases in tariffs and fee collection rates, as well as to some extent increases in production. The fee collection rate from households has increased since the implementation of Express Pay, but the main effect of this is first expected to be seen at the 2016 accounts.

The financial forecast of Kulyab Vodokanal is presented below in table 4. The forecast has been prepared under a general assumption that increases in revenue will be spent for improving salaries and for repair & maintenance activities rather than producing higher margins. The forecast shows that there is room for increases in salaries and expenses for repair and maintenance over the next three years by more than 50% in real terms due to expected improvements in fee collection rates from households. The forecast assumptions include: Fee collection from households will increase further in real terms by 25% in 2016, 15% in 2017 and 10% in 2018 due to utilization of Express Pay; tariffs and general expenses will increase by 5% annually due to inflation; financial charges and depreciation will be as 2015; and profit before tax will remain at zero. Based on these forecast assumptions the Company's revenue will increase to TJS 8.4 million in 2018.

Table 4. Financial status of Kulyab Vodokanal's operation

Kulyab Vodokanal **Revenue, expenditures and margins** (TJS 000')	2012 Actual	2013 Actual	2014 Actual	2015 Actual	2016 Forecast	2017 Forecast	2018 Forecast
Revenue	3,726	4,340	5,381	6,383	7,109	7,784	8,431
Expenditures	3,571	3,500	4,553	4,990	5,709	6,384	7,031
- staff (including 25% in social fees)	1,541	1,241	2,152	1,393	1,700	2,011	2,308
- electricity	508	497	701	580	580	580	580
- fuel and lubricants	125	126	161	589	589	589	589
- repair & maintenance	560	1,101	518	819	1,126	1,436	1,734
- 8% SEU KMK	297	283	442	464	569	623	674
- other costs	539	251	580	1,145	1,145	1,145	1,145
EBITDA	154	840	828	1,393	1,400	1,400	1,400
- depreciation	159	676	467	986	990	990	990
EBIT	-4	165	360	407	410	410	410
- financial costs	21	165	360	407	410	410	410
EBT	-25	0	0	0	0	0	0

Financial status of Kurgan Tube Vodokanal

The financial performance of Kulyab Vodokanal has developed positively over the last 4 years with increasing revenue from TJS 4.1m to TJS 8.0m in 2015. Financial forecast of Kurgan Tube Vodokanal has been prepared under the same assumption as Kurgan Tube, and is presented below. The forecast shows the Company's revenue will increase to TJS 10.4 million in 2018, and that there will be room for additional expenditures for repair & maintenance and salaries.

Table 5. Financial status of Kurgan Tube Vodokanal's operations

Kurgan Tube Vodokanal **Revenue, expenditures and margins** (TJS 000)	2012 Actual	2013 Actual	2014 Actual	2015 Actual	2016 Forecast	2017 Forecast	2018 Forecast
Revenue from fees	4,065	5,474	6,784	8,048	8,873	9,650	10,400
Expenditures	3,350	4,206	5,355	6,438	7,259	8,036	8,786
- staff (including 25% in social fees)	1,567	1,457	1,674	1,924	2,268	2,625	2,970
- electricity	222	293	330	372	372	372	372
- fuel and lubricants	232	248	279	315	315	315	315
- repair & maintenance	161	392	254	450	794	1,151	1,496
- 8% SEU KMK	308	419	491	576	710	772	832
- other costs	860	1,398	2,327	2,801	2,801	2,801	2,801
EBITDA	715	1,268	1,429	1,610	1,614	1,614	1,614
- depreciation	1,165	1,257	1,417	1,597	1,600	1,600	1,600
EBIT	-450	11	12	14	14	14	14
- financial costs	11	11	12	14	14	14	14
EBT	-461	0	0	0	0	0	0

2. Affordability of improved water supply services

The affordability of water supply tariffs was analyzed at Appraisal of the additional financing phase of the project. The analysis showed the tariffs in Vose and Farkhor were affordable to low-income households in the two project towns. The two towns do not charge for wastewater services. The ex-post affordability analysis of the project town of Kurgan Tube shows that the current charged fees are affordable to low-income households with the project facilities implemented. The Vodokanal charge for both water and wastewater and has highest normed water consumption level of all project towns implementing EP. The analysis shows in particular that a combined water and wastewater bill for a low-income household with connection accounts for around 2.5% of the disposable income. This is above an acceptable threshold of around 5%. The normed supply, which provides the basis for calculating the water and wastewater bill, is set to 130 liter per capita per day for connected households. Experience from other projects shows this level to be reasonable compared to consumptions from metered households, where consumption levels are more likely to be at around or below 100 liters per capita per day. For other consumers than connected households on normed supply and for consumers not charged for wastewater serviced, the tariffs are found to be fully affordable also.

Table 6. Affordability of Water Supply and Wastewater Services

Kurgan Tube 2015		Metered Supply		Normed Supply				
				House		Apartment		Street[1]
Service		WS & WW	WS only	WS & WW	WS only	WS & WW	WS only	WS only
Urban Low Income	*TJS/C/M*[2]	168	168	168	168	168	168	168
Water Supply Tariff	*TJS/m*^{3}	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Wastewater Tariff	*TJS/m*^{3}	0.34		0.34		0.34		
Total Tariff	*TJS/m*^{3}	1.02	0.68	1.02	0.68	1.02	0.68	0.68
- including tax (18%)	*TJS/m*^{3}	1.20	0.80	1.20	0.80	1.20	0.80	0.80
Metered Consumption	*LCD*	100	100					
Normed Consumption	*LCD*			130	130	130	130	90
Consumption per month	*m*^{3}	3.0	3.0	3.9	3.9	3.9	3.9	2.7
Cost per month	*TJS*	3.1	2.0	4.0	2.7	4.0	2.7	1.8
Percentage of Income	*%*	1.8%	1.2%	2.4%	1.6%	2.4%	1.6%	1.1%

[1] Access to Street Stand Pipe
[2] Tajikistan Somoni per capita per month

3. Economic Analysis

Ex-ante Economic Analysis of the project was carried out on a qualitative basis with identification of potential economic benefits. Replacement and optimization of pumping systems were expected to decrease unit energy consumption by about 25%. Reduction of technical water losses was further expected to reduce costs of energy, chemical etc. as well as to avoid costs of expanding the services. Repair of leakages would further reduce costs of repairing roads and other infrastructure damages. With the overall upgrading of the water services the willingness to pay was expected to increase from a very low level. Residents' as well as commercial/government services' coping costs related to the poor service, such as costs of boiling water, were expected to be reduced. According to surveys 75% of the population was estimated to boil water for drinking purposes. Expected other savings were related to the coping costs of fetching water: the population and commercial/government services spend significant time, either to wait for irregularly poor supply at street stand pipes or for adequate pressure in house connections. 50% of households surveyed indicated that they had no pressure at all in the pipes. Furthermore, reduction of morbidity was expected to reduce the coping costs of medicine and treatment at doctor/hospital.

For the additional financing, *ex-ante* economic analysis comprised cost effectiveness analysis for both water supply and solid waste sub-components. The cost effectiveness analysis guided priority intervention in Farkhor concerning: water abstraction area (rehabilitation vs. replacement); water storage (high-level vs. low-level tank); and, collection logistics (house collection vs. collection points). Rehabilitation of the existing water extraction area was selected from replacing the intake to Panj River partly due to lower costs associated. A high-level tank solution was selected from a low-level tank for costs and energy saving reasons, as the selected option would create distribution by gravity. For the solid waste component the option of combined house collection and collection points was selected as it was found most favorable due to lower number of collection points. The ex-ante economic analysis did not on a quantitative basis include the wastewater sub-component.

The *ex-post* economic analysis includes cost benefit analysis of implemented water supply sub-components and a simple follow up on the analysis of the least cost solutions established. The cost benefit analysis has been included to show the positive economic return of the water supply services improved as a part of the project. As the financial analysis shows, the project has had a direct financial positive impact on the operation of the vodokanals, since revenue has increased significantly in real term. Apart from direct financial benefits due to significant higher customer payments as a result of the improved service, the users are considered to gain additional direct and indirect benefits of receiving a proper water supply service. It is however difficult to separate and estimate the total benefits in a fully reliable manner, and the result of the analysis is based on assumptions rather than being a comprehensive result based on detailed studies.

3.1 Ex-Post Cost Benefit Analysis of Project Returns

The cost benefit analysis comprises quantification of economic benefits and costs with calculation of economic rate of return for key water supply investments. Main economic benefits cover basically the ones identified at the ex-ante analysis. The ex-post analysis shows the increased willingness to pay for water supply services overall is the main contributor to the economic benefits. For project towns, which have obtained drinkable water supply from implementing the project, reduction of coping costs for treatment of water for drinking purposes contributes as well. Reduced time to fetch water is a medium size benefit together with reduced consumption of electricity. The economic benefits are presented below together with the calculated EIRR.

Table 7. Project Towns and Water Supply Investment Characteristics

Project Town	**Water Supply Investment Characteristics**			**Economic Analysis**
	Targeted rehabilitation of Water Supply System	Larger investments with extension of Water Supply System	Implemented Electronic Billing & Collection	
Istaravshan	X			
Kanibadam	X			
Rasht (Garm)	X			
Vakhdat	X			Analyzed
Danghara	X		X	
Kulyab	X		X	Analyzed
Kurgan Tube	X		X	
Vose	X	X	X	Analyzed
Farkhor	X	X	X	

Economic benefits of implementing the project

A number of benefits from implementing the water supply investments were identified at project completion. Most of the benefits were sought quantified based partly on operational data from KMK and the Vodokanals and partly on data from the surveys carried out in Farkhor and Vose as a part of the additional financing. Solely direct benefits such as coping costs and financial benefits to the operations were quantified.

Table 8. Economic Benefits' Characteristics

Benefit		Type	Project Characteristic	Beneficiary	Quantification
B1	Reduced morbidity	Coping costs	Provision of clean piped water supply	Households with new access to piped water	*No*
B2	Reduced time to collect water	Coping cost	Improved service	All households with access to piped water	Yes
B3	Cleaning of water for drinking purposes	Coping cost	Provision of improved service with safer water	All households	Yes
B4	Cleaning water for other consuming purposes	Coping cost	Provision of improved service with cleaner water	All households	*No*
B5	Reduced cost of electricity for production	Financial benefit	Installation of new pumps and reduction of leakages	Water Company	Yes
B6	Increased collection of fees	Financial benefit	Improved water supply services	Water Company	Yes
B7	Improved collection efficiency	Financial benefit	Introduction of Express pay	Water Company	Yes

B1 - Reduced morbidity (not quantified)

Easier access to clean water improves health and reduces morbidity related to water borne diseases. The project has improved delivery of drinking water supply from municipal sources and reduced the collection of water from irrigation channels and other raw water sources. The follow-up household beneficiary survey in Farkhor and Vose indicates that morbidity related to waterborne diseases seems to have been reduced for all household members and children if compared to the baseline survey. However, the survey was conducted at different times of the year, which could have impacted the final result. When comparing to the control group, households benefitting from the project did not see significantly higher reduction in morbidity. In Group A (555 respondents) and B (719 respondents), which benefitted from the project, the number of respondents visiting a doctor during a 30 days period fell from 27 to 11. While in Group C (874 respondents), which did not benefit from the project, the number of respondents visiting the doctor fell from 6 to 0.

B2 - Reduced time to collect water

The quantification of the economic benefits of reduced time to collect water was made possible through the results from the follow-up household beneficiary survey in Farkhor and Vose. Improved provision of household connections and better delivery of water supply has reduced time spent to collect water from communal water taps or informal sources such as irrigation canals. The survey in Farkhor and Vose indicates that women spent 1.8 hours per day while men spent 0.4 hours per day. Taking employment rate and typical salaries into account the time spent fetching water amounts to approximately TJS 650 per household per year. The survey does not clearly indicate the number of households fetching water before and after the project and the effect on the time spent. However, for fetching water at the public stand pipes ("public pumps") in Vose, the survey shows that time spent has reduced significantly for each visit from 1 hour 40 minutes to just 30 minutes. There are some uncertainties in the data and the survey does not provide any information of fetching water at stand pipes in Farkhor. But in general the survey shows the positive impact the improved supply has on the livelihood of the population in the towns.

The reduced time for collecting water naturally results in increased willingness to pay for the service as seen in the increased fee collection of the vodokanals and as defined as economic benefit B6 – please see below. However, for simplifying the economic benefit calculations a conservative assumption has been made that additional economic benefits from time savings, beyond increased willingness to pay, corresponds to the time spent for collecting water has been reduced by 10% in Farkhor and Vose, and 5% in the other Project Towns.

The economic benefits of reduced time for fetching water moreover apply to communal and commercial activities in the Project Towns, but these have not been included in the quantification of the economic benefits.

Table 9.1. Quantification of Economic Benefits

B2 Reduced time of collecting water	**Value of Economic Benefit**	**Beneficiaries**
Coping costs of fetching water from Communal Stand Pipes	TJS 650 per HH per year – total benefits correspond to 10% average reduction in coping costs for households in Farkhor and Vose and 5% of households in other project towns.	All consumers benefit from the improved service – residential as well as institutional and commercial consumers.

B3 - Cleaning of water for drinking purposes

The investments under MIDP in Vose and Farkhor have provided significant improvements to water quality, improving it to a level where it is safe for drinking purposes. This is a significant economic benefit to the population in Farkhor and Vose as such improvement reduces the coping cost of individual treatment for drinking purposes. For other project towns provision of drinkable water has not been a result of the project's investments – and the economic benefit is claimed solely for Vose and Farkhor. Based on a consumption of 2 liters treated water per capita per day at the treatment costs of TJS 16 /m^3, the benefit amounts to TJS 60 annually for a household of five. Improving water quality is a significant benefit for households – as well as for communal and commercial activities in the towns. The survey does not indicate number of households treating water for drinking purposes, but a level of 75% of all households was estimated at the preparation of MIDP. For the purpose of economic benefit calculation it is however assumed that the benefit can be claimed for all households in Farkhor and Vose, where significant investments have been made as a part of the project to provide clean drinkable water. This rationale is further supported by not claiming quantitative economic benefits for reduced morbidity. The survey indicates that only few of the residents rely on bottled water, and the number of residents purchasing bottled water for drinking has been increased over the last year.

Table 9.2. Quantification of Economic Benefits

B3 Treatment of water for drinking	**Value of Economic Benefit**	**Beneficiaries**
Coping costs of treating water for drinking purposes.	TJS 60 per HH per year	Applies to all households in Vose and Farkhor

B4 - Cleaning water for other consumption purposes than drinking (not quantified)

The project will provide cleaner water to the residents, and the costs of treatment such as filtering might be reduced providing a financial benefit to the consumer. However, any reduction in costs of cleaning water for consuming purposes has not been identified.

B5 - Reduced cost of electricity for production

The introduction of efficient pumps as well as the reduction of water loss has naturally reduced the consumption of electricity compared to the amount of delivered water to the households and other consumer segments. The share of cost of electricity to total operating costs is measured as an indicator in the results framework. Analyzing the cost of electricity consumption in the towns of Vakhdat, Danghara, Kulyab, Kurgan Tube and Vose shows that cost of electricity has been reduced by an average of 42% (after inflation) from 2010 to 2015. Even though that there are differences from Vodokanal to Vodokanal a general assumption for the economic benefit calculation has been made, that cost of electricity would be no less than 40% higher without the project.

Table 9.3. Quantification of Economic Benefits

B5 Expenses for electricity	**Value of Economic Benefit**	**Beneficiaries**
Savings in cost of electricity	40% of actual costs of electricity from 2015	The individual vodokanal is the direct beneficiary.

B6 - Increased collection of fees

At project entry the water supply to the project towns was severely depleted leaving the population and public/commercial activities with either extremely poor services or no service at all. This has naturally limited the amount of water fees that could be collected by the vodokanal. Service provision has significantly improved as a result of the project and along this collection of fees, which has increased likely due to improved willingness to pay for the service. The amount of collected fees has increased by 90% to 175% in real terms for the vodokanals of Vakhdat, Danghara, Kulyab, Kurgan Tube and Vose from 2010 to 2015. The highest increase of all is seen in Vose, which has benefitted from both the original MIDP and the AF phase of the project. This increase is a direct economic benefit of the project and has had a positive effect on the financial sustainability of the local vodokanals. The improved service with the increase in fees does not introduce additional expenses for operation and maintenance.

Table 9.4. Quantification of Economic Benefits

B6 Collection of fees	**Value of Economic Benefit**	**Beneficiaries**
Increased collection of fees due to higher customer satisfaction and willingness to pay	50% of current fees collected Vose and Farkhor: 65% of the current fees collected	Vodokanals are the direct beneficiaries - based on increased willingness to pay for the improved services.

B7 - Improved fee collection efficiency

The introduction of modern automated payment systems via electronic kiosks and handheld terminals through the company Express Pay in the towns of Danghara, Kulyab, Kurgan Tube, Vose and Farkhor, has increased the vodokanals collection of fees since its introduction in September 2015. Since introduction of EP the collected fees have increased between 2.5% and 4.9% from month to month – with Vose as having the highest increase of all. For the economic benefit calculation, it is conservatively assumed that fee collection by introducing EP will increase by 15% in 2016, additional 5% in 2017 and further 5% in 2018 for the beneficiary of the vodokanals. For Vose and Farkhor the increase is assumed to be 20% in 2016, additional 10% in 2017 and further 10% in 2018.

Table 9.5. Quantification of Economic Benefits

B6 Collection of fees	Value of Economic Benefit	Beneficiaries
Increased collection of fees due to modernization of billing and collection	2016: +15% increase in fees 2017: +5% increase in fees 2018: +5% increase in fees Vose and Farkhor 2016: +20% increase in fees 2017: +10% increase in fees 2018: +10% increase in fees	Participating vodokanals are the direct beneficiaries.

Cost Benefit Analysis

The economic return based on the cost benefit is calculated for the water supply investments in Vakhdat, Kulyab and Vose. The results show high economic rate of return especially for Kulyab, which has invested in targeted rehabilitation of the supply system along with implementation of electronic billing and collection systems.

Table 10. Economic Internal Rate of Return for representative Water Supply Investments

Project Town	EIRR	ENPV (6%)	Main benefits ranked high to low
Vakhdat Water Supply	17%	USD 1.3 mill.	B6, B2 and B5
Kulyab Water Supply	26%	USD 6.5 mill.	B6, B7, B2 and B5
Vose Water Supply	6%	USD -0.1 mill.	B6, B7, B2, B3 and B5

The Cost Benefit calculation of the water supply investments in Vose Town is presented below in Table 11. Based on the result of the analysis of Vakhdat, Kulyab and Vose a benefit transfer approach is used to determine the ENPV and EIRR of the water supply investments in the other project towns. It is assumed that the same level of return on the invested capital can be obtained by towns within each of the three types of water supply investments made: A. basic rehabilitation of water supply system (Istaravshan, Kanibadam, Rasht, Vakhdat); B. basic rehabilitation of water supply system with electronic billing and collection implemented (Danghara, Kurgan Tube, Kulyab); C. larger investments in the water supply system with electronic billing and collection implemented (Farkhor, Vose). By this

approach, the economic return of the total water supply investments is estimated to an ENPV on USD 23 mill. and an EIRR of 14% - as presented in Table 11.

Table 11. Economic Return result for the project's water supply investments

Project Town	Type	Investment in USD	ENPV/ inv. USD	ENPV in USD	EIRR
Istaravshan	A	660,216	1.83	1,210,018	17%
Kanibadam		686,351		1,257,917	
Rasht (Garm)		612,210		1,122,035	
Vakhdat*		730,258		1,338,388	
Danghara	B	1,509,838	4.16	6,275,982	26%
Kulyab*		1,567,892		6,517,296	
Kurgan Tube		1,312,918		5,457,439	
Vose*	C	2,181,294	-0.03	-68,937	6%
Farkhor		4,807,566		-151,937	
* Analyzed investments				**22,958,202**	**14%**

3.2 Ex-Post follow-up on Cost Effectiveness Analysis

Cost effectiveness analysis was introduced at Appraisal of the additional financing in order to select priority investments among alternative solutions presented. The ex-post evaluation of the least cost analysis prepared for the water supply and the solid waste sub- components does not reject the priority investments selected. The actual costs of implementing the solutions are lower than the costs estimated at Appraisal. This indicates that the least cost selections were made on a conservative basis. Details are presented below.

Water Attraction Area in Farkhor: The existing water attraction was preferred compared to an alternative solution of replacing the existing with an intake from Panj River. The choice was made partly due to lower capital expenditures at USD 815,000 compared to USD 3,500,000 of the alternative solution. The alternative solution was also estimated of having higher cost of O&M due to longer distance from intake to distribution area. The capital expenditure of the selected solution was further reduced to USD 227,000 during implementation.

Water Tank Solution in Farkhor: A high-level tank was preferred compared to an alternative solution of a marginally less costly low-level tank – USD 715,000 to USD 650.000. The preferred high-level solution was chosen, as it provides water distribution by gravity and as a result expected significant lower costs of operation and maintenance. At implementation the capital expenditure was further reduced to USD 565,000.

Solid Waste Collection in Farkhor: The existing solution of combined house collection and collection points was selected from a solution based on limited house connection with higher number of communal collection points. The deselected solution would have required additional capital investments for establishing and equipping the additional collecting points and would only marginally have reduced costs of operation and maintenance compared to the selected solution. The basic assumptions for the analysis at project preparation have not changed during project implementation and the solution selected is still found to be the solution of preference.

Table 12. Economic Internal Rate of Return Calculation for Vose Water Supply Investments

Vose Water Supply Cost Benefit	**Year**												
All numbers in TJS thousands	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**		**2034**	**2035**
Benefits TJS thousands													
B-1 Morbidity	0	0	0	0	0	0	0	0	0	0		0	0
B-2 Water collection	0	0	0	0	0	0	0	0	204	204		204	204
B-3 Water cleaning for drinking	0	0	0	0	0	0	0	0	182	182		182	182
B-4 Water cleaning for other purposes	0	0	0	0	0	0	0	0	0	0		0	0
B-5 Electricity Consumption	0	0	1	3	3	6	9	8	8	8		8	8
B-6 Fee Collection Willingness	0	0	25	67	124	281	437	443	443	443		443	443
B-7 Fee Collection Efficiency	0	0	0	0	0	0	0	0	139	229		332	332
Total Benefits	*0*	*0*	*27*	*70*	*127*	*287*	*446*	*452*	977	1,067		1,171	1,171
Costs													
C-1 Capital Expenditures	-776	-47	-768	-776	-657	-2,963	-5,683	-1,984	0	0		0	0
C-2 Additional Operational Expenditures	0	0	0	0	0	0	0	0	0	0		0	0
Total Costs	*-776*	*-47*	*-768*	*-776*	*-657*	*-2,963*	*-5,683*	*-1,984*	*0*	*0*		*0*	*0*
Result													
Net Flow of Benefits + Costs	-776	-47	-741	-706	-530	-2,676	-5,237	-1,533	977	1,067		1,171	1,171
EIRR	***6%***												
ENPV (6%)	***USD -0.1 mill.***												

Annex 4. Bank Lending and Implementation Support/Supervision Processes

a) **Task Team members**

Names	Title	Unit	Responsibility/ Specialty
Lending			
Ahmed A. R. Eiweida	Lead Urban Specialist	GSU08	
Rinat Iskhakov	Operations Officer	GSU09	
Felix A. Jakob	Consultant	GWADR	
Jonathan S. Kamkwalala	Practice Manager	GWA01	TTL
Naushad A. Khan	Consultant	GGODR	Procurement
Alfiya Mirzagalyamova	Consultant	FEUSE - HIS	
Milane De Jesus Reyes	Program Assistant	GWADR	
Mark Walker	Chief Counsel	LEGSG	
Allen Wazny	Sr Financial Management Specialist	ECADE - His	FM
Supervision/ICR			
Mirlan Aldayarov	Senior Energy Specialist	GEE01	
Alexander Balakov	Senior Procurement Specialist	GGO03	
Anna Cestari	Senior Water Resources Specialist	GWA03	
Norpulat Daniyarov	Sr. Financial Management Specialist	GGODR	
Ruxandra Maria Floroiu	Lead Environmental Specialist	GEN03	
Rinat Iskhakov	Operations Officer	GSU09	
Felix A. Jakob	Consultant	GWADR	
Serdar Jepbarov	Senior Operations Officer	ECCTM	
Sodyk Khaitov	Operations Officer	ECSSD - HIS	
Pier Francesco Mantovani	Lead Water and Sanitation Spec	GWA03	TTL
Takhmina Mukhamedova	Energy Specialist	GEE03	
Farzona Mukhitdinova	Consultant	GWADR	
Kishore Laxmikant Nadkarni	Consultant	GCCCF	
Shodi Nazarov	Financial Management Analyst	ECSO3 - HIS	
Fasliddin Rakhimov	Procurement Specialist	GGO03	
Klas B. Ringskog	Consultant	GWASL	
Leyla Talipova	Consultant	GSUGP	Implementation supervision
Alexandru Ursul	Consultant	ECSSO - HIS	
Yarissa Sommer	Senior Urban Planning Specialist	GSU09	TTL
Anna Gueorguieva	Senior Economist	GSU09	ICR TTL
Bianca Moldovean	Consultant	GSU09	ICR analyst
Faridun Sanginov	Operations Officer	GSU09	
Rustam Arstanov	Safeguards Specialist	GEN03	
Niso Bazidova	Financial Management Specialist	GG021	
Jasna Mestnik	Finance Officer	WFALA	
Lisa Liu	Country Lawyer	LEGLE	
Dilshod Karimova	Procurement Specialist	GGO03	
Angela Nayawira Khaminwa	Safeguards Specialist	GSU03	

Svetlana Sharipova	Consultant	GSU03	
Knud Lauritzen	Consultant	GSU08	
Delphine Hamilton	Sr. Program Assistant	GSU09	
Lorraine McCann Kosinski	Program Assistant	GSU09	
Lisa Fonick Haworth	Office Manager	GSU09	

b) **Staff Time and Cost**

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD Thousands (including travel and consultant costs)
Lending		
FY03	1.50	10.86
FY04	1.54	125.39
FY05	26.16	183.14
FY06	20.53	146.03
Total:	49.73	465.42
Supervision/ICR		
FY06	12.71	52.81
FY07	24.29	47.86
FY08	23.65	83.76
FY09	16.21	101.48
FY10	24.73	80.44
FY11	32.40	88.67
FY12	14.42	46.05
FY13	41.09	184.62
FY14	29.80	122.83
FY15	31.54	106.21
FY16	41.59	97.94
Total:	292.43	1,012.67

Annex 5. Beneficiary Survey Results

(The summary focuses on the survey results most directly relevant to the impact of the project)

In December 2015 a beneficiary survey was carried out to capture the impact of the project in the cities of Vose and Farkhor. The results were compared to a 2014 baseline survey carried out in the same towns. Unfortunately work on the completion of all projects would only be finalized in January-March 2016, and therefore satisfaction results may reflect that context. No baseline survey was carried out in the other seven participating towns and therefore the results of those interventions could not be captured in survey form.

Quantitative and qualitative methods were used in the design of the baseline and final evaluations. The final survey included 1,156 households that had 8,941 household members. In addition, individual face to face interviews were used as part of an experimental as a tool for quantitative research. The qualitative approach was employed through six focus group discussions, which included 54 participants.

Due to requests from the clients, the sampling approach varies between the two towns. In Farkhor the survey included three groups: Group A, in which participants received water and subsidies; Group B, in which participants received only water and Group C which was the control group. By contrast, in Vose the survey included inhabitants of all streets, on the basis of proportional random sampling.

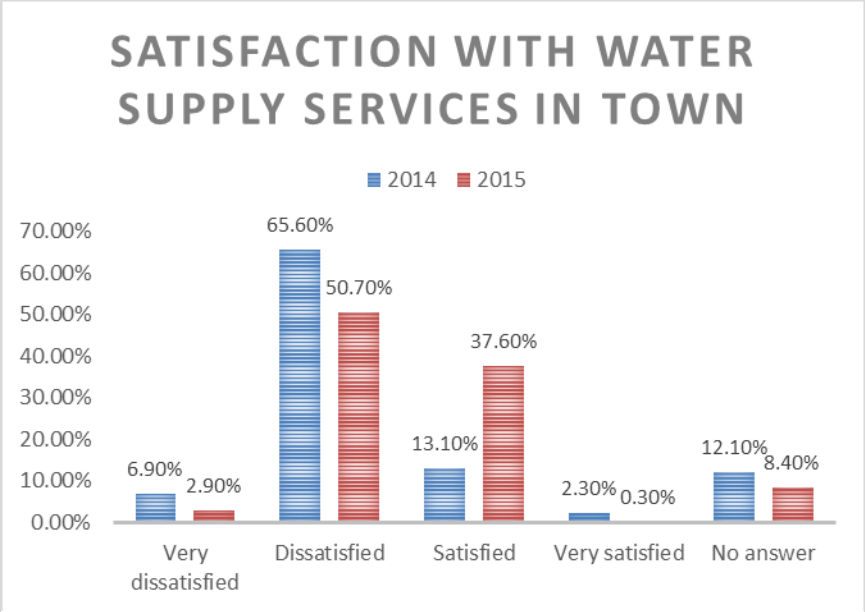


Figure 1: Satisfaction with water supply services in town

Access to water

In 2014 neither of the towns had good public service coverage of the population. In Vose only 25% of the population had regular access to water supply, while in Farkhor the water network was essentially nonfunctioning and over 50% of the population used the irrigation canals as their water source. See Figure 2 and 3 for an illustration of the dire situation in Farkhor prior to the interventions. Unfortunately, though some changes were registered, as the 13% increase in the number of households in Vose using public wells, overall the average water sources used were not significantly changed by the time the final survey was completed, outside of some seasonal changes.

The overall satisfaction with water supply services has increased across all households surveyed, as seen in Figure 3. Furthermore, it should be noted that not all work pertaining to the project had been completed by the time the final survey was taking place.

The total number of respondents connected to the municipal water network increased as a result of project activities by 39.5%. Within Farkhor's Group A the share of participants connected to the water network increased more than fourfold. By comparison in Group B the share had decreased by 10 points and within Vose there had been no change. This was echoed in a reduction in the percentage of respondents who used irrigation canals as a water source, with the greatest reduction being for group A and B.

There was an increase of 22% in the number of respondents who had noted that water supply was now reliable in the town pipe networks, and Group A and B saw the supply as the most stable. Public wells were also seen as cleaner and easier to access in terms of time needed to transport water and queue time.

The project had a positive impact on the tension between neighbors over water. There was a decrease of 7% from the baseline in the number of participants who believed that water was a matter of dispute between neighbors.

Sanitation and hygiene

Compared to the baseline respondents had reduced the use of outdoor baths and showers, and instead chose to bathe at home or use public bathhouses, though some of the changes in practices was due to the difference in season between the winter final survey and the summer baseline survey. Handwashing is still disregarded by a significant number of respondents, though the slight change was positive from 53.7% to 60.2%. It was particularly visible for those with increased access to water as in in Group A and B in Farkhor as well as in Vose.

According to the baseline survey 92.4 percent of respondents used pit latrines. In 2015 that number had not changed as the timing of the survey did not capture the new sanitation zones. The ICR mission found that the sanitation zones were operational in April 2016 and were being utilized. Nevertheless, a constant between surveys is that over 70% of the households still do not have access to running water in the toilet.

Waste management

Waste collection services were severely limited at the time the project was initiated, with only 29% of the population in Vose being covered by waste collection services. The situation in Farkhor in 2014 is illustrated by Figure 4, with much of the population preferring to feed food waste to animals, dispose of waste in their own courtyards or burn wood, paper and plastics. Waste collection frequency was perceived to not have changed by 2015, outside of some seasonal variations.

Across all those surveyed the belief was that there was more space in the waste collection space closest to their home. In fact, satisfaction with waste collection services had improved in all groups compared to the control group, most notably within Group A and Vose.

The proportion of households that use the town's garbage trucks to recycle metal and glass has doubled, from 11% to 23% in the final survey. This was associated with the improved performance of the municipal waste collection services.

Payment

Respondents felt they had not been sufficiently informed on the distribution of subsidies available for connecting to the water network, and many believed that the subsidies were loans. Note that according to the data, in Farkhor subsidies for connection were issued in all groups, including the control group. This circumstance has violated the purity of the research approach.

On average the total cost of the connection to the water main paid by respondents was 34.33 TJS less than the baseline assessment, although the trend is reversed in Farkhor's Group A where the price increased by 43.65 TJS.

Monthly water service fees have increased during the implementation of the project, and billing of clients had improved by 8.5 points compared to the baseline, with 52.8% of respondents now having received a water bill.

The system of payments for toilet management has also extended, with over half (52.7%) of households now making monthly payments per household and a quarter (25.0%) making payments per member.

Summary of the focus group discussions

The six focus group discussions took place in December 2015. There were 12-14 participants per group from the surveyed cities, separated among men and women, or so called "specialist" groups, which included health workers, school representatives, mahala and community activists.

The participants were aware that the project had helped to install water pipes, built community toilets and installed water collection containers and platforms. Although water access practices had only changed in part, participants felt that the water situation overall had improved greatly. It is important to note that work on the project was ongoing during the time when the focus group discussions took place, and some of the participants were also still waiting to be connected, or experiencing low water pressure and discontinued service. However, queues at public water pumps were already much shorter.

For so many years nobody could solve the problem with the water here. For so many years people have suffered, children got sick, there were so many conflicts over the water. No one tried to help us… even though we asked everybody. And then the Project came and the problem is being addressed step by step.

We are grateful to the Bank for this work.

The groups were also asked to identify the strengths and weaknesses of the project. Among the strengths participants mentioned: collaboration with local authorities, use of modern technical solutions, professionalism of the staff, involvement of local communities in project implementation, and keeping population informed about the project. The professionalism of the work and the use of local contractors seemed to be particularly appreciated, especially by the specialist groups.

One important weakness discussed across all groups was the implementation of the connection subsidy. The procedure was criticized from two perspectives: the fact that household poverty status was not considered in the selection of subsidy beneficiaries and that there was a lack of information and unclear procedures related to access to the subsidies. The other weakness identified by the participants was the length of time taken to collect community contributions, which led to delayed implementation for all.

Most discussion participants believed that everybody benefited from the project, across gender and age lines, although women and children benefited most since they are seen as responsible for providing households with water. Furthermore, community ties and the connection to public authorities had improved, as water became less of a cause for conflict and public health improved.

Figure 2: Survey results on sufficient access to water to cover needs in Farkhor

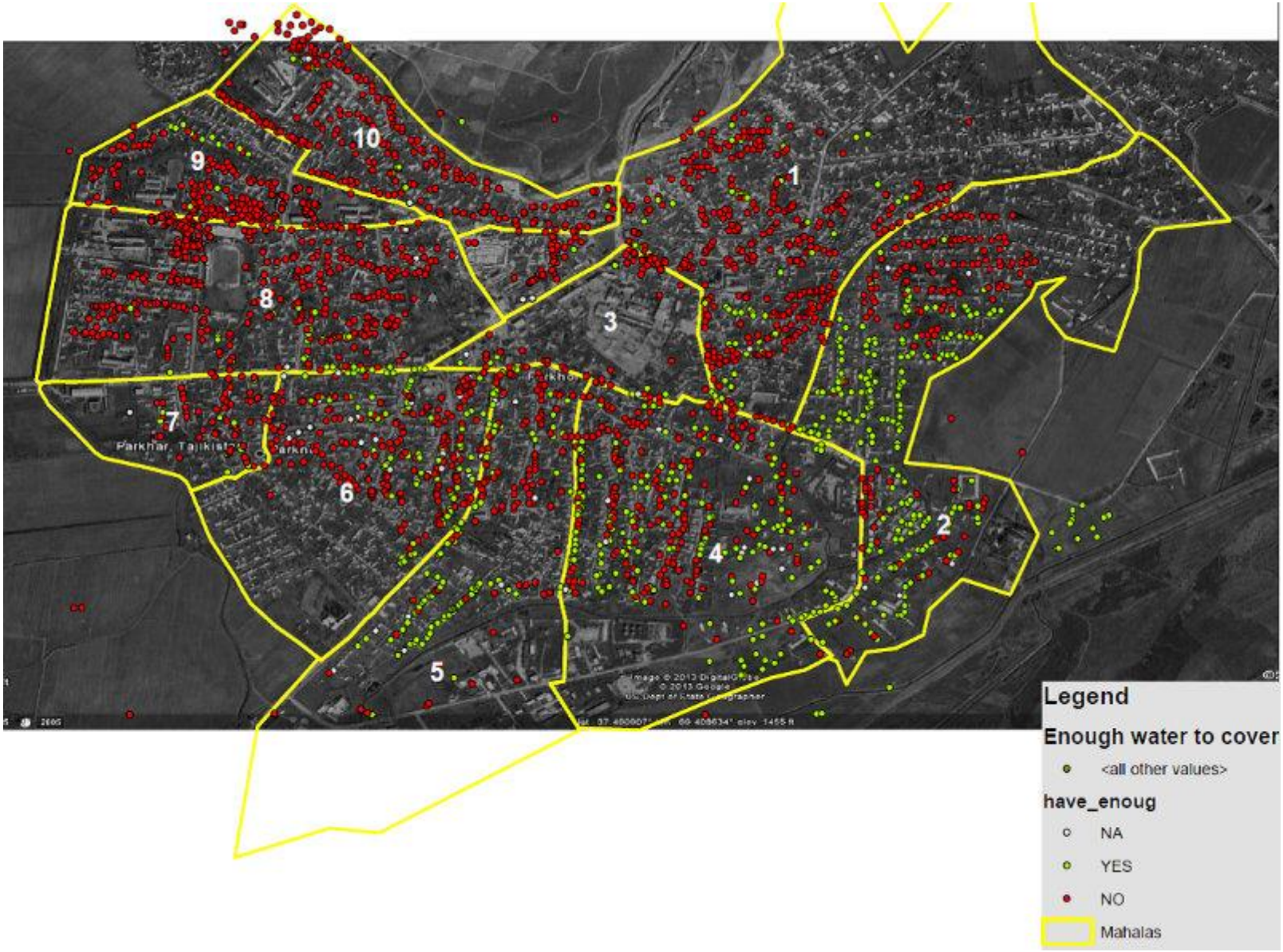


Figure 3: Survey result on the main source of water used by Farkhor residents

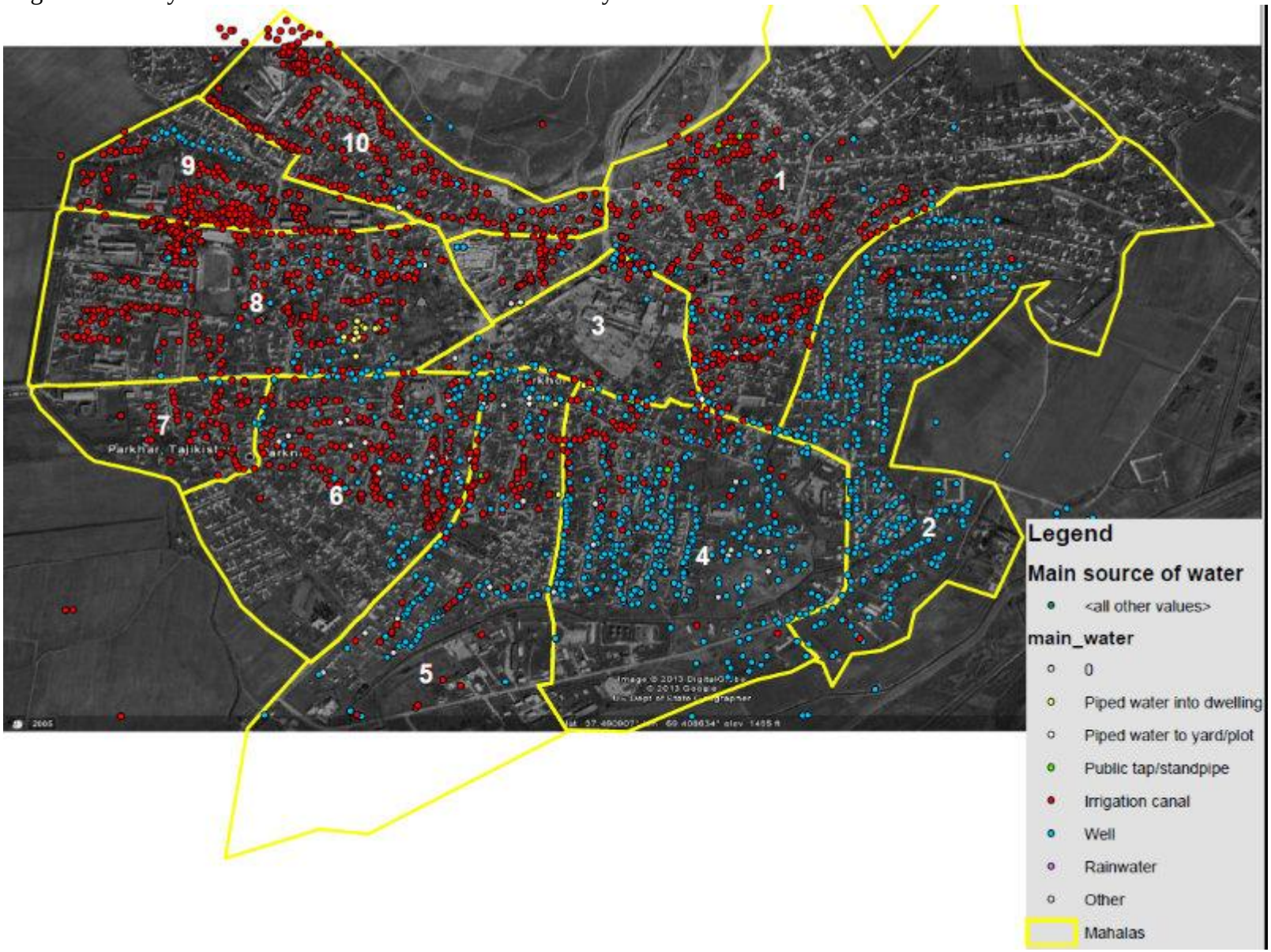
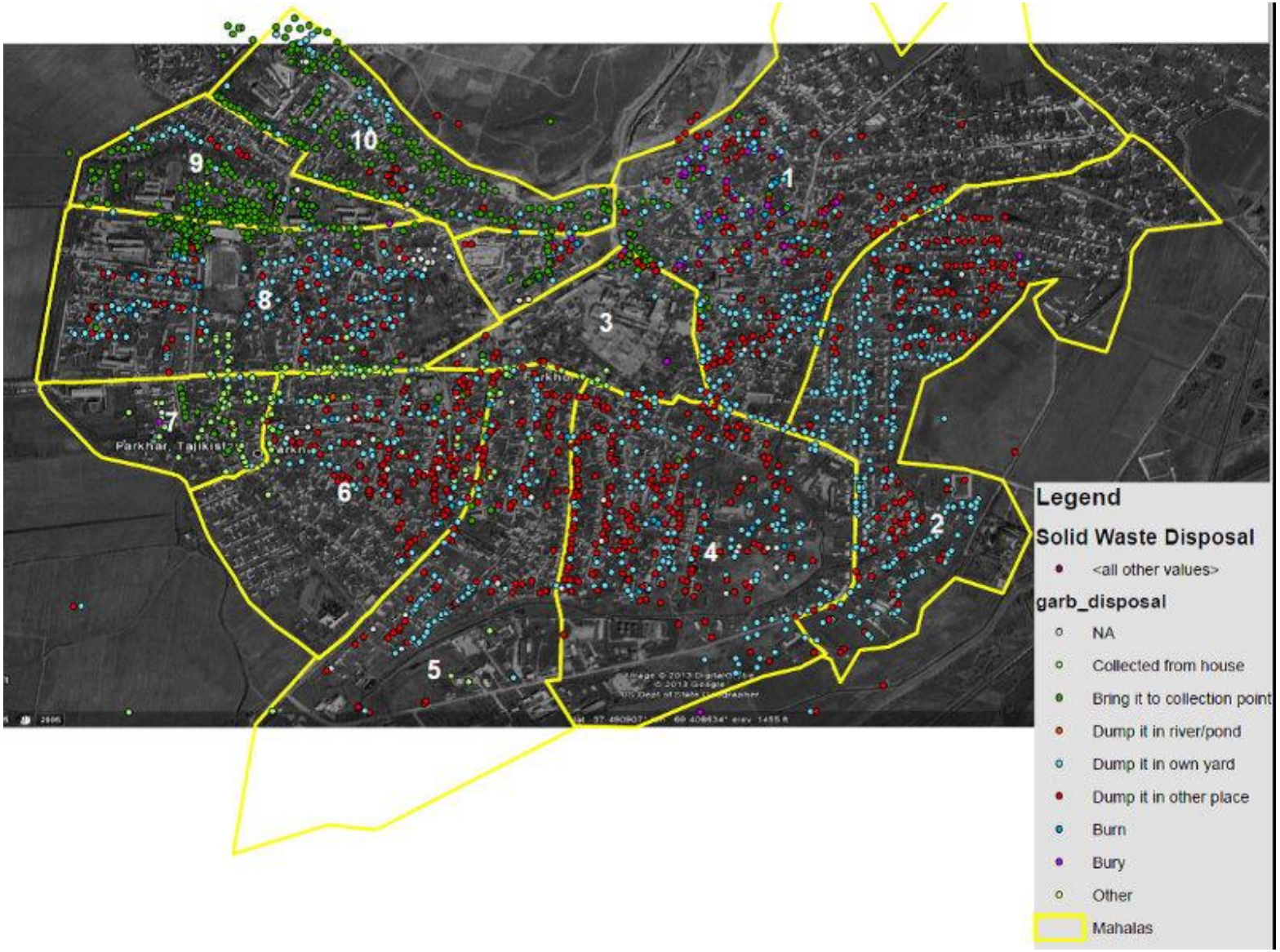


Figure 4: Solid waste disposal among Farkhor residents



Annex 6. Stakeholder Workshop Report and Results

Date: April 20, 2016

Venue: Main Conference Hall of the Ministry of Economic Development and Trade of the Republic of Tajikistan

Total participants: 50

The final stakeholder Workshop was held at the Main Conference Hall of the Ministry of Economic Development and Trade of the Republic of Tajikistan. The event convened around 50 participants from the Ministry of Finance, Ministry of Economic Development and Trade, State Unitary Enterprise "Khojagii Manziliyu Kommunali," MIDP Project Management Unit, Local Self Government officials and utility managers from the towns of Kurgan-Tyube, Istaravshan, Farkhor, Vose, Kulyab, Danghara, Rasht, Kanibadam, and Vakhdat, as well as members of the World Bank missions.

The main objective was to summarize and assess the MIDP implementation outcomes and present them to the stakeholders and attendees of the workshop. The presentations and discussions included and covered achievements under each relevant component of the project, and were presented by relevant staff of the Project Management Unit, Project Management Consultant, representatives of the water utilities, as well as select contractors. A short results video was presented at the end, providing description of the project, its components, coverage area, and main results achieved, with a particular emphasis on some of the institutional pilots in Farkhor.

The workshop was opened by the Director of the State Unitary Enterprise "Khojagii Manziliyu Kommunali," Mr. Islomzoda, who talked about the context of the communal and municipal services sector, its development dynamics, some of its achievements over the years, reflecting the work done as part of MIDP and other development partners, as well as the needs and priorities going forward for the sector. Then the floor was passed on to the Director of the MIDP Project Management Unit, Mr. Jamshed Sattorzoda.

Mr. Sattorzoda informed the participants about the timeline of the project and its inception, provided figures on the financing and co-financing, including household contributions, summing up to above 29 million USD, and touched upon each component briefly, also emphasizing some of the innovative pilots conducted in Farkhor, particularly the metering pilot and introduction of decentralized sanitation solutions for residents of high rise apartments. He noted that over its implementation period, MIDP has helped tackle some of the pending challenges in terms of the adequate provision of basic municipal services, including water supply, sanitation and solid waste management, with a consistent emphasis on the living conditions of the population of each of the 9 towns. In particular, Mr. Sattorzoda focused on describing some of main civil work contracts and pilot activities.

Mr. Sattorzoda also mentioned some of the achievements under the project, thus elaborating on the results framework outcomes under the project, which helped improve water supply services to over 220,000 people in target towns, out of which 53% are women, as well as increase solid waste collection services up to 90% in some of the select towns. He also noted that that the main works included rehabilitation of water intakes, installation of first level and second level pumps, construction of large volume reservoirs, chlorination facility

improvements or rehabilitation, thus improving water safety and quality, rehabilitation of old network pipes with better and improved high density pipes, proper cleaning of sedimentation ponds, thus increasing their storing capacity, procurement of specialized machinery and equipment for utilities, as well as construction of solid waste polygons, among many others.

Given the importance of innovative pilots and interventions under the Additional Financing, the Project Management Unit has accordingly dedicated a big share of the workshop to highlighting those pilots.

The first pilot discussed fell under institutional activity, under component B: the installation of the modern Billing and Collection system, presented by the contractor firm "Avfar." They presentation focused on highlighting the increased number of registered customers and improvements in bills issued and collected, as a result of the introduction and installation of the modern billing and collections system in respective vodokanals. Charts in the said presentation have clearly demonstrated that in vodokanals of Farkhor, Vose, Kulyab, Kurgan-Tube, and Danghara, for example, a visible increase in number of registered customers was observed when comparing results in 2014 with 2015. Particularly, in Danghara, the number of registered customers increased from 1500 plus to over 3000 plus, in Vose from 2000 plus to over 3000 plus, in Farkhor from 500 to nearly a 1000 customers, in Kulyab from 12,000 plus to 16,000 plus, and in Kurgan-Tube from 10,000 plus to nearly 18,000 plus. Accordingly, these improvements have also translated into higher bills issued, collected, and greater number of payments made by customers for services provided in all target towns under the billing and collection system. The presentation also highlighted the convenience of the system, which allows users to take remote oversight and control of payment transactions of utility bill collectors, thus giving the managers and finance staff of the Vodokanal greater control and flexibility to perform their tasks more diligently.

Another institutional support under component B was presented on the Management Information System and IBNET benchmarking, by the contractor firm "Digit Zone." The contractor informed participants that as part of the institutional component, two of the main goals of the project were the development of the software and of a Data Base which would allow water supply and sewerage utilities to collect and analyze production data according to IBNET standards (developed by the World Bank). It was noted that the software was built as a web-application and works as a part of a web-server and a Data Base which are deployed on the server installed in the head quarter of KMK in Dushanbe, Tajikistan and which is connected to the Internet. The software tracks up to 91 IBNET based numeric performance indicators, and although as part of the installation for SUE "KMK" only a certain number of parameters are utilized at the initial stages, the system can accommodate the addition of other parameters as needed in the future. Users – the employees in the utilities – can connect to the server from their workstations by means of web browsers and then work and enter the data. As of now, the installation of the software and its utilization was done for central KMK and its subsidiary enterprise in Kurgan-Tube, and in the future the system allows for potentially other utilities to also be integrated into the system.

Presentation on the Household Subsidy Metering Program in Farkhor under Additional Financing was done by the Project Management Consultant Director, Mr. Mizanur Rahman of "BETS Consulting." He focused on describing the selection process of locations for the Subsidy Program that included: neighborhoods (mahala) with sizeable number of households;

almost fulltime availability of water to the houses from the nearby distribution lines; no serious bottlenecks to increase in investment costs; reliable pipeline network either built newly or to be built as per the plan under MIDP AF; willingness of the consumers to bear a portion (cost sharing) of household connection costs; and willingness of the consumers to agree with water meter installation and to bear the costs for replacement in case of damage, i.e., shall take full responsibility to operate and maintain the meter. The cost sharing for the pilot was based on 60% to 40%, where the former is covered by the Project resources and later by the targeted households of the neighborhoods (also known as 'mahala'). Mr. Rahman also noted that active communication and public awareness raising campaign preceded and accompanied the subsidy program process, and households were also given the flexibility to pay their contributions in four installments via a secure payment process set up by the Project Management Unit. On the results, Mr. Mizanur noted that not all of the targeted households had decided to make the payments for water connections (versus their initial expression of willingness to get connected and pay) and thus at the end collections amounted to 52 households having paid in full. All other households in those streets where collections were not full or were partial, were returned their funds.

Environmental and Social Safeguards activities were presented by the Deputy Chief Engineer of the Project Management Unit, Mr. Khurshed Olimov. Mr. Olimov noted that the project was implemented in strict compliance with environmental standards and successfully applied the World Bank's Resettlement Policy measures. He noted that project activities were supported by active public awareness raising and outreach efforts, which contributed to better understanding and engagement of the local governments and local communities in said project activities.

Representatives of water utilities and local self-governments from the target towns also took the opportunity to express their gratitude for the investments and financing under the project extended to their cities. At the end, all parties agreed that investments, such as MIDP, help the utilities, local self-governments and residents of small cities to have better basic municipal services, and accordingly, such investments should continue in the future, as much more remains to be done in improving the basic municipal services on the national level.

Annex 7. Summary of Borrower's ICR

Summary of the Recipient ICR Report

(*This is a summary of the client ICR. Only relevant sections were covered here and the listing of outputs was omitted as this is covered in other Annexes*)

In 2003 Tajikistan was the poorest country in Central Asia and among the poorest in the world with 65 % of the population of about 6.2 million people living below the poverty line. Much of the infrastructure inherited from the Soviet Union as well as the capacity to deliver public services continued to break down due to a lack of investment and maintenance expenditure. In fact, according to the UNDP '2003 National Human Development Report', 43% of the population was without access to drinking water.

The breakdown in infrastructure was accompanied by low administrative capacity, which became particularly problematic in terms of urban water supply, sanitation and solid waste management. National assessments had estimated water supply coverage was as low as 14%, solid waste collection coverage of 1% and sanitation coverage of 0-1% in some towns as late as 2011. The management of public services was under national authority, though attempts were made beginning in 2009 to decentralize, with limited results due to lack of capacity and funding at the local level.

Based on the above, in 2003 the Government of the Republic of Tajikistan and the World Bank began preparing the Municipal Infrastructure Development Project. Although the WB had already been active in supporting Tajikistan, it became more involved due to the considerable deterioration in the provision of basic public services carrying serious health and economic risks, particularly for low income populations. The project was an opportunity to help Tajikistan towards meeting the Millennium Development Goals and towards increasing the quality of life of urban populations through improving access to municipal public services.

By May 2004 the GoRT selected the eight towns that participated in the project: Danghara, Istaravshan, Kanibadam, Kulyab, Kurgan-Tyube, Rasht (Gharm), Vakhdat, and Vose, were selected by the Government in May 2004. The selection of smaller, underdeveloped towns while ensuring a regionally balanced distribution of benefits throughout the country. Moreover, the eight selected towns had high and fairly equal rates of poverty and contained nearly 50% of the urban population outside of the capital city.

The project was signed in February 2006 with funding amounting to USD 16.5 million, of which the World Bank provided a grant of USD 15 million, and the GoRT contributed USD 1.5 million. The implementing agency was the project management unit of the KMK and the overall goal of the project was to improve the availability, quality and efficiency of basic municipal services for the population of the eight selected towns.

Noting the contribution made to the living conditions of the towns, in 2012 the GoRT and the World Bank agreed to expand the project and provide additional financing to support it. Therefore, USD 12.97 million were made available, of which the World Bank provided a total of USD 11.85 million and the GoRT contributed USD 1.12 million. The AF was provided in order to promote an integrated urban development approach in two towns (Farkhor and Vose), but also as a means to enhance the overall impact of the project. Furthermore, both towns were under significant public health threat, with nearly no functioning sanitation or water delivery services available, particularly in Farkhor. The AF also functioned as reform impetus for the GoRT in their efforts to improve institutional effectiveness and the sustainability of water service provision.

Since the beginning the project was structured along three components: Component A: Municipal Infrastructure Rehabilitation, Component B: Technical and Institutional Strengthening and finally Component C: Implementation Support. The general approach to implementation was integrated, but each component contained specific tasks and relevant indicators in order to ensure that all objectives are met.

Environmental safeguards, occupational safety and health

The overall project met the World Bank Category B standard in accordance with safeguard policies and procedures, including OP/BP/GP 4.01 Environmental Assessment, and therefore generic and specific mitigation measures were included in the EMPs of relevant sub projects.

The EMPs included generic provisions on health and safety measures to minimize accidents during construction. The provisions constituted special conditions included in the contracts in the tendering stage.

Construction contractors are responsible for complying with the outputs of the safeguard assessments (EIAs and EMPs) and ensuring that construction-related environmental impacts are mitigated.

The work funded through this project in the nine towns will have associated environmental and socio-economic impacts. Experience in past projects highlighted potential risks for water supply, sanitation, domestic wastewater and sewage, waste management and electrification.

Resettlements and the acquisition of land

Construction work under this project at times required the acquisition of land and involuntary resettlement, both of which were handled under the land code, the Regulation on order of compensation of the land users' losses and other relevant legislation, and in accordance with the WB's Policy (WB OP 4.12) on the matters of involuntary resettlement. Wherever there has been a disparity of gap between Tajikistan's law and the OP 4.12 the latter was held as a minimum standard. Occurrences of resettlement encountered during the implementation of the project are detailed below.

Table 4: Implementation of Environmental Protection Plans Under the MIDP

Contract	Persons affected by the project (PAP)	Resolution
Contract MIDP 040 "Construction of overhead power transmission line 10 kilowatt in Istaravshan"	6 farms were affected by the construction	The evaluation carried out by the responsible commission found that six small farms were located along the lines, having a total area of 3,936 ha. An Appraisal report assessed damages at TJS 4980 considering the market cost of a hectare of irrigated agricultural land. The construction contractor compensated the losses incurred according to the Action plan.
Contract MIDP 043 "Construction of overhead power transmission line 10 kilowatt in Vakhdat."	9 farms were affected by the construction	The evaluation carried out by the responsible commission found that nine small farms were located along the lines, with an area of 0.92 ha. An Appraisal report assessed damages at TJS 4581 considering the market cost of a hectare of irrigated agricultural land. The construction contractor compensated the losses incurred according to the Action plan.
Contract MIDP 044 A	4 PAPs were	The evaluation carried out by the responsible

"Construction of overhead power transmission line 10 kilowatt in Kurgan-tube."	affected	commission found that along the line 6ps trees belonging to four families would be affected and that a fenced wall belonged to a household that needed to be removed and compensated at market value. The construction contractor compensated the losses incurred according to the Action plan.
Contract MIDP AF 002 "Construction of new Water tank of 2000m^3 capacity in Farkhor."	1 PAP was affected	The evaluation carried out by the responsible commission found that a residential home concrete foundation was within the construction area of the reservoir. An Appraisal report assessed damages at 9922 TJS and a different plod of land was given to the owner by the local government of Farkhor. Furthermore, the construction contractor compensated the losses incurred according to the Appraisal report and Resettlement Action plan.
Contract MIDP AF 003 "Reconstruction of transmission mains in Farkhor"	1 PAP was affected	The evaluation carried out by the responsible commission found that a cotton field owned by a farm the temporarily occupied 5000m^3 was affected by the work. An Appraisal report assessed damages at 4635 TJS and the owner was compensated according to the Appraisal report and Resettlement Action plan.

Implementation results by town

Kulyab

More than 1200 families have had their lives improved by the investments made to make Kulyab a safer more sustainable city. Old asbestos cement pipes were replaced and the water network, now maintained by retrained staff, was rehabilitated so that it provided properly chlorinated water at all hours at the necessary pressure. The addition of the four submersible pumps has made it feasible for two new streets to be connected to the water system. Public safety and services were further improved through the addition of fire hydrants, a rehabilitated sewage system and access roads towards the Jangalbashi Well Field.

Kanibadam

The water system in Kanibadam was also made safer through the improved chlorination system and the addition of five centrifugal pumps, a submersible pump and new pipes so that the volume of water pumped a day has increased by 300% and the water pressure has doubled. This has meant that the network has been extended so that hospitals in the city now have access to water, as well as the Sarikelatya district, 40% of the households in the Asnavnaya district and 60% of those in the Vodokanal district. Within the city 10 000 inhabitants are now reaping the benefits of these investments.

The three sedimentation ponds in Qurghonteppa have been rehabilitated, greatly improving their water treatment capacity. Replacing the low efficiency pumps has also made the water pressure high enough that it now also reaches apartments on higher floors. In fact a transformer was installed at Well Field No. 2 for the new pumps. In addition to making the system more sustainable, meters have been installed on the mains in order to have a clearer picture of water use.

Danghara

The town resolved two significant public safety threats: water chlorination and the presence of asbestos piping. The rehabilitation of the network means that now 1100 families are reliably supplied with potable water at the appropriate pressure. Manholes and new valves were also added to make the system easier to manage and maintain. The risk to public safety was further reduced by the installation of sixty-two fire hydrants throughout the town.

Vose

The investment in one submersible pump was what the town of Vose needed to ensure that water was supplied 24h a day. Further investment was needed to make the water system more effective, including replacing the faulty transformer supplying the water pumps and adding chlorination facilities. However, while the system has now been created, most of the households in Vose are not connected to the water network, and further work will be needed in order to ensure the situation is remedied.

Additional financing funds were used to improve Vose's water system, sanitation and solid waste management. Water supply was improved through the construction of a new water storage tank at the Uchkhoz intake, replacement and repair of the water main and damaged sections of the network and the addition of chlorination stations and fences as needed. The construction of block ventilated improved pit (VIP) latrines for multistory buildings greatly improved overall sanitation. This was complimented by changes to solid waste management and collection practices, including the purchase of waste containers and the redesign of collection zones in consultation with the local community. Septic tank pilots and a sanitation zone were also added in order to improve the town's sanitation.

Istaravshan

Istaravshan needed more sizeable investment to make the water system functional, including the installation of six submersible water pumps, 900m of pipeline, chlorination facilities. Four drilling wells were rehabilitated and a new one was constructed along with high efficiency pumps for each well and a transformer that would support their operation. As a result 237 households and 5000 inhabitants, who had not had access to the water system, can now use a safe and reliable source of potable water. In order to further improve efficiency 11 more low functioning submersible pumps were replaced, leading to savings of an average of 100kWh daily.

Vakhdat

Work on rebuilding the water system in Vakhdat occurred in several stages, until the system became sustainable and reliably delivers water to 630 households. Four drilling wells were rehabilitated, and by the end the town had eight older and less efficient pumps and eight new ones. Due to the rehabilitation, the water pressure increased by more than four times, so that it can now reach inhabitants of high buildings reliably. In order to make the system more secure and efficient 1560m of HDPE pipes were also installed.

Gharm

Gharm required the construction of a new reservoir of 500m3, which functions as a balance reservoir that maintains the balance in the system and thus reduces operation and maintenance cost. A chlorination station was added so the water reaching the town is now properly treated and therefore public health risks were decreased. In addition, the Molla Husein spring was rehabilitated, protected from pollution and had its overall capacity increased by 30%. In turn, the spring Loyak which was in a precarious position, was connected to the system through new pipeline and a new pressure reducing chamber. These

changes amounted to a system that is far more reliable, safe, efficient and capable of servicing all the needs of the local inhabitants.

Farkhor

Investments in Farkhor had a somewhat broader scope, including water system improvements, sanitation measures and solid waste management. Prior to the implementation of the project the town had an essentially nonfunctioning water delivery system and no sustainable sanitation options, as can be seen in Figures 2, 3 and 4 of Annex 5. The water system rehabilitation included work on the wells, pumps, pipe network, a new water tank and the installation of water meters. In order to improve public sanitation block latrines were added and vacuum trucks and excavators were purchased. In terms of solid waste both collection containers and transport equipment were purchased and the local landfill got improved access and facilities.

Solid waste management

Before the implementation of the project waste collection was not done efficiently or on a regular basis, resulting in large waste piles with rodents, insects and leachate accumulating on the streets or at collection sites. The project led to a marked improvement to the life of the beneficiaries through the purchase and delivery of solid waste trucks, tractors, trailers and water tank trucks as well as containers for the collection of solid waste from households. Beyond the benefits to public health as a whole, the delivery of efficient equipment made waste collection less labor intensive and far less dangerous for the health of the collector staff. Water tank trucks were used during the repairs to the water system pipes, or during bursts or leakages. These investments made quite positive impressions on locals and improved their living conditions substantially.

Overall implementation and performance assessment

The project has made a marked difference in the quality of life of 221 554 direct beneficiaries, and greatly improved the national service provision infrastructure and performance as well as the ability to respond to floods. Throughout the implementation of the project performance was evaluated as moderately satisfactory or satisfactory, with very few moderately unsatisfactory results and no outstanding issues. Local professionals were often engaged in the project and local attitudes improved post-implementation.

Implementation of Component A: Municipal Infrastructure Rehabilitation

The component financed the rehabilitation of public service infrastructure in Danghara, Istaravshan, Kanibadam, Kulyab, Kurgan-Tyube, Rasht (Gharm), Vakhdat, and Vose, as described in the section above. The GoRT selected the investments based on local priorities, feasibility, World Bank safeguard and guideline compliance and lack of overlap with other donor financed investments.

The implementation occurred in three phases, each including the purchase and distribution of necessary machinery and solid waste containers as well as construction contracts for the larger public service infrastructure projects. The First Phase included the signing and implementation of seven contracts that were completed by November 2009. The second phase saw the implementation of nine more work contracts completed by 2012. Finally, the third phase included thirteen contracts completed by 2013.

Additional financing for Component A was used towards further infrastructure rehabilitation projects is Farkhor and Vose. Furthermore, a few additional types of actions were included as sub-components, such as a pilot household connections subsidy and the acquisition of disaster response equipment and flood protection resources. The pilot projects were innovative approaches that the GoRT could later apply elsewhere, and the sanitation pilot

proved to be particularly effective in Farkhor, were no other option would have been financially feasible.

Despite some implementation challenges, all the desired goals were reached and the GoRT found the outputs of this component satisfactory. Over two hundred thousand beneficiaries now have access to sustainable and safer water supply and waste management services have improved in all participating towns. In addition, by replacing obsolete or even dangerous equipment such as old asbestos pipes, the project also contributed substantially to lowering the level of public health risks. The replacement of low efficiency pumps also increased energy efficiency and decreased public energy costs. The changes caused positive attitude changes within the local populations.

Implementation of Component B: Technical and Institutional Strengthening

Subcomponent B1 financed the performance of additional technical and engineering studies needed for the preparation of activities undertaken under component A, including mapping and leak detection campaigns. All actions described within the component were implemented and the overall result was evaluated as satisfactory.

Subcomponent B2 consisted of technical assistance provided by international and local consultants aimed at strengthening the KMK as an institution. The support consisted of capacity development and training, legal aid and enhancing the financial and technical management of regional sub-units. All the undertaken tasks were performed and the overall results were considered satisfactory.

The additional financing added a new dimension to the implementation of this component, through the addition of more modern evaluation and implementation practices. This included a pilot metering, billing and collection programs, IBNET benchmarking of water utilities, training and feasibility programs communication campaigns, and more. These activities received a rating of either moderately satisfactory of satisfactory due to some difficulties in implementation.

Implementation of Component C: Implementation Support

The overall results of the first, second and fourth sub-components were evaluated as satisfactory, seeing as all actions were implemented successfully. The first sub-component was concerned with supporting the activity of the PMU, primarily through covering operation costs. The second component concerned the annual auditing of the project accounts as well as the auditing of the two largest subsidiary enterprises of the KMK. The fourth sub-component helped ensure technical and financial efficiency in project management.

The third sub-component was considered moderately unsuccessful although all actions were implemented. The financing was used for the creation and maintenance of a monitoring and evaluation system for the project, including acquiring consultancy services. Unfortunately, while targeting and data collection was performed by particular employees, no functioning monitoring and evaluation system was effectively instituted, despite the efforts of the PMU and the WB.

Project disbursement
Overall the project had good disbursement results, as seen in the tables below:

Table 5: Disbursements under each grant

Grant	Approval Date	Closing Date	Grant amount (m USD)	Disbursed (m USD)
IDAH2000	2006-01-19	2012-08-31	15,00	16,25
IDAH7690	2012-05-08	2016-04-30	11,85	9,79
Total			26,85	26,04

Table 6: Disbursements by project component

Components	Budget	Actual Disbursed	Actual Disbursement in %
Municipal Infrastructure Rehabilitation	20 068 574	20 126 766	100,29%
Technical and Institutional Strengthening	3 331 491	3 689 453	110,74%
Implementation Support	4 981 334	4 911 791	98,60%
Total	28 381 399	28 728 009	101,22%

Performance of the Government of Tajikistan

The GoRT appointed the KMK as the executory agency of the project, which in turn designated the PMU to be responsible for the coordination and supervision of the project. The unit had four divisions and relevant technical staff, with the exception of an environmental protection specialist. Particulars technical tasks, such as technical audits, were performed with the aid of third party consultants and contractors. The overall activity of the PMU was evaluated as satisfactory.

Performance of the Project Management Consultants (PMC)

The overall performance of the PMC was evaluated as satisfactory. The PMU required the assistance of project management consultants throughout the implementation of the project. Since 2006 the PMU collaborated with SEYAŞ Sey Architecture, Engineering, Consultancy, Inc. on procurement, preparation of tender documents, construction supervision and administration and other services specified under component A of the project. Following the approval of the additional financing, the work began without the aid of a new consultant until a year later, in 2013, when BETS were contracted. The tasks of this company included the supervision of the projects and support of the PMU, the review and improvement of engineering designs and the preparation of tender documents.

Performance of the Contractors and Consultants

All components of the project required collaboration between the PMU, contractors and consultants. In general their activity was evaluated as moderately satisfactory in the case of

construction contracts and satisfactory in the case of consultants. All work has been performed by local contractors and their performance has been evaluated as satisfactory, and any recommendations received following the technical audits have been adopted by the respective contractors.

Performance of the World Bank

The overall performance of the World Bank was evaluated as good. The Bank provided ample and timely support and feedback throughout the project preparation and implementation. WB missions and site visits kept lines of communication open with the GoRT, PMU, KMK and PMC. The procedures and implementation mechanisms proposed by the bank were helpful in setting out development paths beyond the completion of this project.

Challenges encountered and lessons learned

1. The subsidy for connection to the water system in Farkhor was not implemented effectively due to low income levels and the attitude of the local population, despite the initial interest for connecting to the water network. The subsidy covered households newly connecting to the network or rehabilitation of existing connections, but not to apartment dwellers and internal plumbing. Lack of funds and distrust in the unequal application of the policy led to a general reluctance to engage with the process throughout the local population.

   ⇒ Decision: Local authorities made a joint effort towards community outreach, including an unsuccessful attempt to provided financial support for the poorest households from the town budget. Finally, the PMU worked with local authorities to identify the streets with the lowest interest and contribution rates and replace them with streets that had more inhabitants willing to participate within the time limits of the project.

   ⇒ Lesson learned: A more transparent and equitable approach to such public initiatives is recommended for the future. The local Khukumats could create supervisory boards, inviting the participation of relevant NGOs and residential associations, in order to manage the public utilities while upholding transparency and the efficiency of services.

2. The implementation of the pilot metering program in Farkhor was also problematic due to the poor condition of pipes in households and the overall water network. However, while the funding covered the rehabilitation of internal pipes and the installation of meters, for over 90% of the households the external pipes connecting them to the network also needed to be replaced. Furthermore, many of the other pipes forming the network are clogged and neither households nor the Vodokanal were flushing the pipes as needed, either due to cost or capacity, meaning that overall water pressure was quite low. Therefore, many of the connections to the network are not functional in one way or the other, which makes the installation of meters unjustified.

   ⇒ Decision: Two new boreholes and the replacement of 20 km of pipes will help improve the system and increase overall pressure to some extent. Meters were finally installed in 600 of the 1041 households. The savings were invested in pipelines and water meter installations in the new area of Urtabuz, raising the total number of meters to 1200, of the initial target of 3400.

   ⇒ Lesson learned: Better understanding of local conditions and the income level of the population will be needed prior to this type of project. In addition, any further attempts to continue this project should be accompanied by investments in the quality of the water supply.

3. Low pay and lack of motivation made administration of local aspects of the implementation be difficult and the training of staff on the ground had limited impact. The issue was particularly visible in the case of the Monitoring Information System which was never implemented successfully not least due to the low capacity of local units.

- ⇒ Decision: Training was provided by the WB to the relevant staff.
- ⇒ Lesson learned: New units, staffing standards and training programs are recommended for future attempts at maintaining such a complex system. However, attracting experienced professionals to the field will be difficult unless pay levels are raised. Extensive training is recommended particularly for the management staff of public utilities, including exchanges with successful companies operating utilities in other Central Asia countries. Alternatively, the solution could be modifying to legal framework to allow for independent operators to manage the sector or hiring external experts.

4. During implementation work with contractors was hindered by two issues: the low organization and logistical capacity of contracted companies and low participation in tenders. There have been two cases of contracts that needed to be terminated during the implementation of the project, in Vose and Farkhor, due to the failure to the obligations of the contract. Furthermore, all construction contracts have gone through original price or completion dates modifications, from two to eighteen months. The extensions were necessary due to the time needed for importing materials, bureaucratic procedures, variations in the type and scope of the contracted work and the transfer of tasks between contracts.

- ⇒ Decision: When needed the contracts were terminated and new tender procedures were initiated in order to identify new contractors.
- ⇒ Lesson learned: A more careful preparation of technical documentation is needed, since errors and omissions in evaluating the duration and funding needed for particular tasks led to repeated revision of terms for the PMU and contractors. Furthermore, the selection of contractors should be performed carefully and implementation should be monitored regularly by consultants, to ensure quality results.

Outlook and recommendations

The highest challenge for basic municipal infrastructure in Tajikistan remains funding. Access to drinking water is a pressing need for human and economic development in the country. The need is pervasive not only in towns like those involved in this project but also in rural settings. Without appropriate funding for maintenance and new investments where needed, the current infrastructure is likely to fall under further disrepair, leading to higher public health risks from the spread of disease and lower economic performance.

The issues of irrigation, rehabilitation and reconstruction of landfills remain pressing, although they are connected but outside the scope of this project. Many of the towns in Tajikistan have poor waste disposal services, which carry substantial environmental and health risks. The country will need a comprehensive approach to the sanitary and environmental challenges it faces and it will need to engage with modern technologies that allow for sorting, recycling and disposing of waste.

Annex 8. List of Supporting Documents

Country Partnership Strategy, FY 2010-2013

Country Partnership Strategy, FY2015-2018

The National Development Strategy (NDS) of the Republic of Tajikistan for 2016-2030

Project Appraisal Document for a Municipal Infrastructure Development Project, Republic of Tajikistan

Project Paper for Additional Financing

Note on Cancelled Operation for the Communal Services Development Fund Project

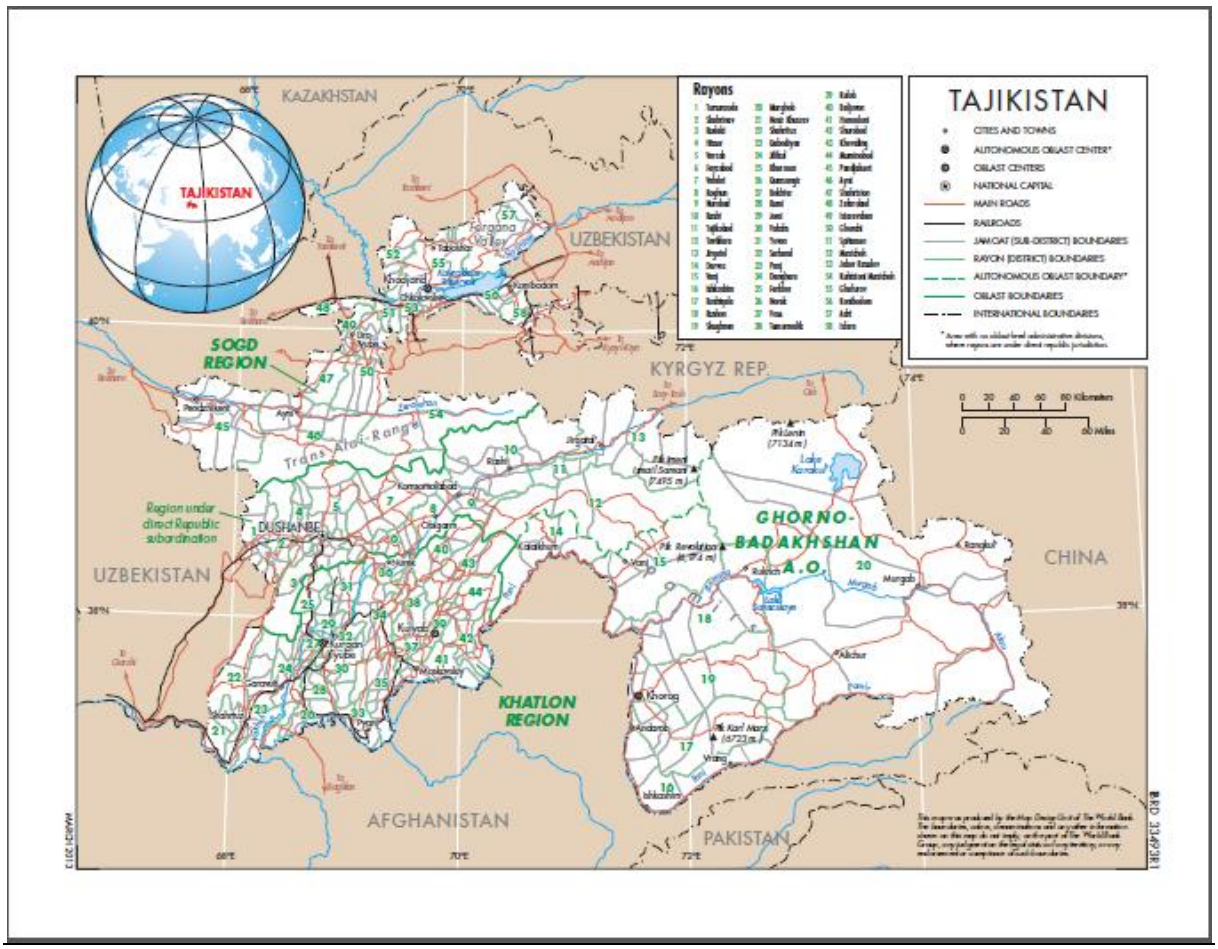
Financing Agreement, Municipal Infrastructure Development Project, Republic of Tajikistan

Financing Agreement for Municipal Infrastructure Development Project – Additional Financing, Republic of Tajikistan

Tajikistan Government's ICR

Supplemental Letters, 2006 and 2012.

MAP


TAJIKISTAN
KAZAKHSTAN
UZBEKISTAN
KYRGYZ REP.
CHINA
AFGHANISTAN
PAKISTAN
SOGD REGION
KHATLON REGION
GHORNO-BADAKHSHAN A.O.
DUSHANBE
Region under direct Republic subordination
Trans Alai Range
Fergana Valley
Lake Karakul
Rayons
TAJIKISTAN
CITIES AND TOWNS
AUTONOMOUS OBLAST CENTER*
OBLAST CENTERS
NATIONAL CAPITAL
MAIN ROADS
RAILROADS
JAMOAT (SUB-DISTRICT) BOUNDARIES
RAYON (DISTRICT) BOUNDARIES
AUTONOMOUS OBLAST BOUNDARY*
OBLAST BOUNDARIES
INTERNATIONAL BOUNDARIES