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Report No: PAD1352

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT PAPER

ON A

PROPOSED ADDITIONAL CREDIT AND RESTRUCTURING

IN THE AMOUNT OF SDR 74.7 MILLION
(US\$105 MILLION EQUIVALENT)

FOR THE BUKHARA AND SAMARKAND SEWERAGE PROJECT

TO THE

REPUBLIC OF UZBEKISTAN

JUNE 2, 2015

Water Global Practice
Central Asia Country Unit
Europe And Central Asia

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CURRENCY EQUIVALENTS
 (Exchange Rate Effective as of April 30, 2015)
 Currency Unit = Uzbek Sum
 UZS 2480 = US\$1
 US\$ 1.406 = SDR 1

FISCAL YEAR
 January 1 – December 31
ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank	MFERIT	Ministry of Foreign Economic Relations, Investments and Trade
ADSCR	Annual Debt Service Coverage Ratio	MIS	Management Information System
AF	Additional Financing	MoE	Ministry of Economy
BOD	Biological Oxygen Demand	MoF	Ministry of Finance
BSSP	Bukhara and Samarkand Sewerage Project	NPV	Net Present Value
BVK	Bukhara Vodokanal	PAD	Project Appraisal Document
BWSSC	Bukhara Water Supply and Wastewater Company	PCU	Project Coordination Unit
CIFA	Country Integrated Fiduciary Assessment	PEFA	Public Expenditure and Financial Accountability
CPS	Country Partnership Strategy	PDO	Project Development Objective
CQS	Selection Based on Consultants' Qualifications	PIU	Project Implementation Unit
DC	Direct Contracting	PM	Project Management
EA	Environmental Assessment	POM	Project Operations Manual
EIA	Environmental Impact Assessment	PS	Pumping Station
EMP	Environmental Management Plan	QCBS	Quality and Cost Based Selection
FIRR	Financial Internal Rates of Return	QPR	Quarterly Progress Report
FM	Financial Management	RPF	Resettlement Policy Framework
FMM	Financial Management Manual	SBD	Standard Bidding Document
GIS	Geographic Information System	SCADA	Supervisory Control and Data Acquisition
GoU	Government of Uzbekistan	SDR	Special Drawing Rights
GRM	Grievance Redress Mechanism	SSC	Samarkand Wastewater Company
HRM	Human Resource Management	SSS	Single-source Selection
IC	Implementation Consultant	SVK	Samarkand Vodokanal
ICB	International Competitive Bidding	TA	Technical Assistance
IFR	Interim Financial Report	TOR	Terms of Reference
IMBC	Inter-Ministerial Bidding Committee	UNDB	United Nations Development Business
IMCC	Inter-Ministerial Coordination Council	WSS	Water Supply and Sanitation
LCS	Least-cost Selection	WWPS	Wastewater Pumping Station
LTD	Long-term Debt	WWTP	Wastewater Treatment Plant
M&E	Monitoring and Evaluation		

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UZBEKISTAN

ADDITIONAL FINANCING – BUKHARA AND SAMARKAND SEWERAGE PROJECT

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ADDITIONAL FINANCING DATA SHEET

Uzbekistan

AF for Bukhara and Samarkand Sewerage Project (P152801)

EUROPE AND CENTRAL ASIA

GWADR

Report No.: PAD1352

Basic Information - Parent									
Parent Project ID:	P112719	Original EA Category:	B – Partial Assessment						
Current Closing Date:	December 31, 2015								
Basic Information - Additional Financing (AF)									
Project ID:	P152801	Additional Financing Type (from AUS):	Scale-up						
Regional Vice President:	Laura Tuck	Proposed EA Category:	B - partial Assessment						
Country Director:	Saroj Kumar Jha	Expected Effectiveness Date:	October 1, 2015						
Senior Global Practice Director:	Junaid Kamal Ahmad	Expected Closing Date:	June 30, 2019						
Practice Manager/Manager:	Dina Umali-Deininger	Report No:	PAD1352						
Team Leader:	Sana Kh. H. Agha Al Nimer								
Borrower									
Organization Name	Contact	Title	Telephone	Email					
Republic of Uzbekistan Ministry of Finance	Mr. Rustom Azimov	Minister	+998712337073	iyuldashev@mf.uz					
Project Financing Data - Parent (Uzbekistan Bukhara and Samarkand Sewerage Project - P112719)									
Key Dates									
Project	Ln/Cr/TF	Status	Approval Date	Signing Date	Effectiveness Date	Original Closing Date	Revised Closing Date		
P112719	IDA	Effective	August 4, 2009	November 26, 2009	April 1, 2010	December 31, 2015	December 31, 2015		
Disbursements									
Project	Ln/Cr/TF	Status	Currency	Original	Revised	Cancelled	Disbursed	Undisbursed	% Disbursed
P112719	IDA-46330	Effective	SDR	35.60	35.60	0.00	24.46	10.34	70.95
Project Financing Data - Additional Financing for Bukhara and Samarkand Sewerage Project (P152801)									

<input type="checkbox"/>	Loan	<input type="checkbox"/>	Grant	<input type="checkbox"/>	IDA Grant
<input checked="" type="checkbox"/>	Credit	<input type="checkbox"/>	Guarantee	<input type="checkbox"/>	Other
Total Project Cost:		105.00		Total Bank Financing: 105.0	
Financing Gap:		0.00			
Financing Source - Additional Financing (AF)					Amount
Borrower					0.00
International Development Association Credit					105.00
Total					105.00
Policy Waivers					
Does the project depart from the CAS in content or in other significant respects?					No
Explanation					
Does the project require any policy waiver(s)?					No
Explanation					
No waivers are required, but exception to OP7.5 was granted. OPCS VP approved on exceptional basis to move forward with the project although PDO and IP ratings were MS for less than one year.					
Team Composition					
Bank Staff					
Name	Title		Specialization	Unit	
Sana Kh.H. Agha Al Nimer	Team Leader (ADM Responsible)		Water & Sanitation Engineer	GWADR	
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Rinat Iskhakov	Operations Officer		Team Member	GSURR	
Rumiya Garipova	Program Assistant		Team Member	ECCUZ	
Ruxandra Maria Floroiu	Senior Environmental Specialist		Environmental Engineer	GENDR	
Non Bank Staff					
Name	Title		City		
Locations					

Country	First Administrative Division	Location	Planned	Actual	Comments
Uzbekistan	Bukhara Samarkand		X	X	
Institutional Data					
Parent (Uzbekistan Bukhara and Samarkand Sewerage Project-P112719)					
Practice Area / Cross Cutting Solution Area					
Water					
Cross Cutting Areas					
[] Climate Change					
[] Fragile, Conflict & Violence					
[] Gender					
[] Jobs					
[] Public Private Partnership					
Sectors					
Sector (Maximum 5 and total % must equal 100)					
Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %	
Water, sanitation and flood protection	Wastewater Collection and Transportation	47			
Water, sanitation and flood protection	Wastewater Treatment and Disposal	47			
Public Administration, Law, and Justice	Public administration-Water, sanitation and flood protection	6			
Total		100			
Themes					
Theme (Maximum 5 and total % must equal 100)					
Major theme	Theme	%			
Urban development	Urban services and housing for the poor	94			
Environment and natural resources management	Pollution management and environmental health	3			
Environment and natural resources management	Water resource management	3			
Total		100			
AF for Bukhara and Samarkand Sewerage Project (P152801)					
Practice Area / Cross Cutting Solution Area					
Water					
Cross Cutting Areas					
[] Climate Change					

<input type="checkbox"/> Fragile, Conflict & Violence <input type="checkbox"/> Gender <input type="checkbox"/> Jobs <input type="checkbox"/> Public Private Partnership				
Sectors / Climate Change				
Sector (Maximum 5 and total % must equal 100)				
Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %
Water, sanitation and flood protection	Sanitation	100		
Total		100		
Themes				
Theme (Maximum 5 and total % must equal 100)				
Major theme	Theme	%		
Urban development	Municipal governance and institution building	20		
Urban development	City-wide Infrastructure and Service Delivery	80		
Total		100		
Consultants (Will be disclosed in the Monthly Operational Summary)				
Consultants Required ? Consultants will be required				

I. INTRODUCTION

1. This Project Paper seeks the approval of the Executive Directors to: (a) provide an additional credit in the amount of US\$105 million for the Uzbekistan Bukhara and Samarkand Sewerage Project (BSSP) (P112719, IDA - 46330 UZ); and (b) undertake a first-order restructuring to modify the project development objectives (PDOs) and results monitoring framework to reflect the additional financing (AF) activities and realign component structures and activities.
2. The proposed AF will be used to scale up activities under the BSSP; cover a financing gap enabling the completion of ongoing investments; and support improvements in wastewater management. This AF will cover the costs of capacity building, physical investments and technical assistance (TA) to the central and local government institutions and utilities to sustain and enhance the impact of the ongoing project; fund preparation of new designs for future operations; and provide support for project implementation.
3. There is no change to the safeguard category of the Project. The additional credit will finance interventions in sewerage systems in Bukhara and Samarkand. These interventions will bring additional economic, social, and quality-of-life improvements for the local residents.
4. All activities will be financed by the AF credit. No co-financing from the Government or from multilateral or bilateral agencies is foreseen.

II. BACKGROUND AND RATIONALE FOR ADDITIONAL FINANCING

A. Country Context

5. Uzbekistan is a resource-rich, fast-growing, lower-middle-income country, strategically located in Central Asia. Its 29.2 million inhabitants, of which 49.7 percent live in rural areas, represent half of Central Asia's population. Following independence in 1991, the home-grown, gradualist, state-led development strategy of the Government of Uzbekistan (GoU) has delivered consistent economic growth as well as gradual reforms.
6. Uzbekistan has enjoyed robust gross domestic product growth since the mid-2000s, averaging 8 percent annually according to official data, mainly due to three factors: (a) favorable terms of trade, in particular, the continued high world market prices of the country's key export commodities—copper, gold, and natural gas; (b) the Government's macroeconomic management, including its late-2008 stimulus; and (c) limited exposure to international financial markets, which shielded it from contagion effects.
7. Poverty rates declined from 26 percent in 2002/2003 to about 13.7 percent in 2015. Growth has been mostly driven by commodity exports (gold and gas). The structure of the economy has changed with the composition of output shifting away from primary agriculture in the late 1990s to industry and services by 2011.
8. The GoU is formulating a strategic vision for Uzbekistan to become an industrialized upper-middle-income country by 2030. Under this ambitious vision, per capita income presently estimated at US\$1,545 would need to increase almost tenfold over the next two decades, and the economy would need to grow at an average rate of 6 percent per year. The World Bank supports the GoU in articulating such a vision and is working with the country to focus on four pillars through the latest

Country Partnership Strategy (CPS): (a) improve efficiency of infrastructure; (b) enhance competitiveness of the economy; (c) diversify the economy; and (d) improve access to social services. As part of this strategy, the Bank is lending to the GoU for investments in more energy-efficient infrastructure and upgrades, including those for the water and sanitation (WSS) sector where infrastructure has become largely outdated as a result of poor management and neglect.

B. Sectoral and Institutional Context

9. Uzbekistan benefited from extensive and robust water services infrastructure built during the Soviet era, including major regional water transfer aqueducts and well-developed networks in urban and, to a lesser extent, rural areas. Although the country has been more proactive than most of its neighbors in attending to infrastructure needs during the economic transition, over time, the limited capacity of sector institutions to maintain, renew, and expand such assets has led to an extensive degradation of access to services.

10. In 1996, following independence, the GoU adopted a number of measures as part of its efforts to strengthen and reform the legal and institutional foundation of municipal services. In particular, new institutional arrangements were introduced by decentralizing the management of WSS to utilities operated by local governments with control over regional, municipal or district Vodokanals/utilities in charge of service provision. Although the introduction of private sector participation (PSP) was attempted as early as in 2002, and a partial corporatization reform was successfully enacted for the Tashkent Vodokanal, the institutional framework of the WSS sector remains weak, impaired by incomplete decentralization, inconsistent ownership of assets, fragmented responsibilities and legislation, inefficient financing and regulatory mechanisms, and low institutional capacity. Local governments and utilities do not have adequate autonomy and capacity, and lack effective policy support and regulatory incentives from the central administration. This, compounded by weak utility management capacity and an overall neglect of operations and maintenance has led to extensive deterioration of existing infrastructure.

11. Currently, there is no adequately funded and staffed ministry-level entity responsible for WSS services. Instead, sector development and oversight are entrusted to the *Uzbek Communal Services Agency* (UCSA), or *Uzkommunkhizmat*. Given its limited capacity to lead sector planning, policy or the performance agenda, the agency's focus is mostly limited to the implementation of investment programs and the operation of regional aqueducts. The Uzbek government has recognized the urgent need for institutional reforms and capacity building of the water agencies (especially the vodokanals) and for rehabilitating the deteriorated WSS infrastructure. The GOU continues to support institutional reforms and capacity strengthening of Bukhara and Samarkhand vodokanals. This support is aimed at promoting the overall efficiency and sustainability of utility operations.

12. Despite efforts to date, the service level in the water and sanitation sector is lagging behind. According to official data, while roughly 88 percent and 79 percent of the urban and rural population, respectively, receive piped water supply, only 17 percent of users have continuous service, and over 65 percent of users have less than six hours of service per day. The situation is particularly dire in rural areas, where previously served communities often cope with chronic service breakdown or no service at all. Demand management and operational efficiency are poor, with average hydraulic losses estimated at 42 percent and only about 33 percent of user connections metered.

13. Installed technology and systems operations are inefficient from an energy-use perspective. Adding to the sustainability challenge, the capital and operating costs of new infrastructure are

seldom optimized as a result of obsolete design and service standards. Compared to water supply, urban sewerage service is substantially less developed, with an estimated 17 percent effective coverage ratio, which is limited to about 70 cities and towns. Built in the 1970s and 1980s, and largely neglected since then, sewerage infrastructure is in poor condition and continues to deteriorate. Wastewater treatment capacity is also highly degraded, often only ensuring marginal pollution removal. The status of rural sanitation is not well documented and its development has been left to the initiative of households and communities.

14. Overall, water services sector rehabilitation, renewal, and expansion needs present a huge investment challenge for Uzbekistan. The GoU estimates urgent priority investments to amount to approximately US\$5.4 billion through 2020, of which US\$4.1 billion is needed for water supply and US\$1.3 billion for wastewater management. Existing sector financing is inadequate to cover investment needs. Tariff regulation is mostly driven by social concerns, somewhat disconnected from utility cost-recovery and investment imperatives. Even though water tariffs have increased in recent years, water and wastewater services still remain affordable, with a median price of US\$0.06/m³ (the average cost of water services is estimated to be below one percent of household expenditures). For most utilities, such low tariffs result in an inadequate revenue base, further eroded by unsatisfactory collection levels. Since the GoU's policies rule out any operating subsidies, utilities operate under extremely constrained operating budgets, unable to afford competitive salaries or adequate maintenance, let alone capital improvements.

15. Sector challenges are also rooted in capacity and governance issues. With few exceptions, the performance of the administrations and utilities is low due to inadequate technical and managerial capacity and a culture of limited efficiency and customer service. Technical capacity limitations also affect the local engineering design and construction market. With unattractive compensations and an aging workforce, the sector neither effectively motivates performance nor renewal of its skills base. This, along with outdated design standards and rigid procurement rules, is delaying the overdue introduction of modern management practices, efficient designs, and innovative technology to the sector. The GoU is increasingly aware of such sector deficiencies and is committed to addressing them more proactively with donor help, which is why the Bank as well as other bilaterals and multilaterals (State Secretariat for Economic Affairs (SECO), Swiss Agency for Development and Cooperation (SDC), and Asian Development Bank ADB), among others) have been supporting investments and improvements in the sector.

16. The BSSP is the first phase of a long-term government program to improve sanitation and wastewater management in the cities of Bukhara and Samarkand, as a means of improving overall energy efficiency and wastewater service coverage. At present, nearly 100 percent of Bukhara and Samarkand's population have piped water supply while an estimated 50 percent is connected to the sewerage system. All others use on-site facilities such as pit latrines and septic tanks of dubious standards. Most of the sewerage system had been constructed in the 1960s, and is in need of rehabilitation and reconstruction. The BSSP focuses mainly on ensuring the operation and maintenance of the existing sewers and wastewater treatment plants through a program of energy efficiency improvements and rehabilitation of the existing sewer systems.

Parent Credit

17. The parent credit (SDR 35.6 million) was approved on August 4, 2009, became effective on April 1, 2010, and is scheduled to close on December 31, 2015. The original PDO is *to mitigate the environmental impact from wastewater pollution and improve the efficiency and sustainability of*

wastewater management in Bukhara and Samarkand. This is expected to be achieved through: (a) rehabilitating select sections of the sewerage system that are deteriorated; (b) limited expansion of the sewerage system into currently unconnected central historical areas; (c) installing more energy-efficient equipment such as wastewater pumps and aeration systems at the wastewater treatment plants (WWTPs) and pumping stations (PSs); and (d) improving the capacity of water utilities (vodokanals) in the areas of management, communications, and public outreach.

18. The cost per component and funds allocated under the parent credit are summarized in Table 1. The original components include:

19. **Component A: Physical Investments.** This component is financing: (a) rehabilitation and replacement of existing sewers; (b) rehabilitation of existing wastewater pumping stations (WWPSs) and construction of a new station in Samarkand; (c) expansion of sewer system (2.5 km in Bukhara and 4.8 km in Samarkand); (d) rehabilitation of Bukhara WWTP and the Main and Farhood WWTPs in Samarkand, including rehabilitation of replacement of equipment, financing minor civil works, and enhancing the plant's energy efficiency; (e) providing operational equipment; and (f) providing engineering consultants and other rehabilitation-related TA.

20. **Component B: Institutional Strengthening and Capacity Building.** This component focuses on improving utility management and customer service orientation by training staff and introducing better communication and public awareness efforts in the two vodokanals. To accomplish these goals, the component is financing: (a) the development of communications strategies and public awareness campaigns; (b) staff training in utility management with an emphasis on improving customer service orientation; and (c) the establishment of a pilot Supervisory Control and Data Acquisition (SCADA) system to enhance responsiveness to emergencies and routine maintenance.

21. **Component C: Feasibility Studies for Future Investments.** This component is financing consultant studies for future government priority investments in the WSS sectors. It will be implemented by the central government.

22. **Component D: Project Management.** This component is financing the strengthening of Project Coordination Units (PCUs), including branches in Bukhara and Samarkand. Funds have also been provided for monitoring and evaluation (M&E) of project activities, including project audits, training, and financing of operating costs.

Table 1: Original Cost and Funding Allocation by Component (US\$, millions)

Component	Original Cost		* Total Estimate (Incl. VAT)
	Bukhara	Samarkand	
Component A: Physical Investments	33.84	28.56	62.40
Component B: Institutional Strengthening and Capacity Building	0.48	0.56	1.04
Sub-total	34.32	29.12	63.44
Component C: Feasibility Studies for Future Investments	0	0	1.07
Component D: Project Management:	0	0	1.64
Total Project Cost (Including Physical and Price Contingencies)	34.32	29.12	66.16

* Financing arrangements: IDA financing US\$55 million and government financing US\$11.16 million

Parent Project Performance

23. During project start-up, the project faced serious implementation delays. These arose due to: (a) the bidding document not being fully prepared at the time of project approval; (b) the delayed completion of infrastructure surveys and preliminary design of necessary works and subsequent delays in finalizing the detailed design packages for works; (c) quality and procedural issues in the processing of initial procurement packages; (d) the large number of small work contracts; and (e) the need for rebidding of more than three construction packages. Moreover, additional unforeseen factors such as the limited number of interested and eligible contractors (international and local) bidding for the contracts further delayed implementation. These problems plagued project implementation until early 2013.

24. Project implementation began to accelerate thereafter. A new implementation plan was prepared and executed based on a thorough assessment of the implementation arrangements and available capacities. The plan included: (a) close monitoring and follow-up by the Ministry of Economy (MoE) on a biweekly basis; (b) giving Project Implementation Units (PIUs) more responsibilities for awarding contracts; (c) the consolidation of small packages into larger contracts; and (d) the completion of the bidding documents and award of new contracts.

25. The project has achieved significant results on the ground. To date, out of the target of 6,000 households, 4,000 have been connected; 6.6 km out of the 7.7 km of new sewers have been laid out; 45 km of sewers have been rehabilitated out of 59 km; and the number of sewer blockages per year has dropped by 50 percent in both cities. Cumulative disbursements as of May 1, 2015 have reached an estimated US\$36 million (71 percent of the total credit amount), up by US\$22.64 million since January 2013. Total commitments represent roughly US\$50 million (100 percent of the credit amount), up by approximately US\$37 million since January 2013. Disbursements are expected to reach 75 percent of the total credit amount by the end of June 2015.

26. The project does not have any unresolved fiduciary, environmental, social, or safeguard issues. There is substantial compliance with all covenants. The project's impact has been consistent with the targets listed in the Project Appraisal Document (PAD). The Bank team upgraded the Project Implementation Status and Results rating for implementation progress to *Moderately Satisfactory* in July 2014, and was further upgraded to *Satisfactory* in May 2015, once there was strong and clear evidence of improved performance, including a substantial increase in project commitments that have been sustained to date.

Rationale for the Additional Financing

27. The GoU recognizes the positive impact that the original credit has had in terms of increased number of people being connected to sewerage systems, the notable reduction in blockages, and increased wastewater conveyed to the existing treatment plant. It, therefore, wants to extend these benefits and, on November 2014, requested an AF to further improve sewerage systems performance and service delivery. The proposed AF will support the GOU's long-term program by completing the rehabilitation and upgrading of the WWTPs, together with further rehabilitation works, and by connecting an estimated 100,000 people to the wastewater systems in the two cities. The proposed completion of the rehabilitation and upgrading of the treatment plants will allow for the reuse of the treated effluent for agricultural purposes and the replacement and construction of new sewers for residents who have not been served.

28. Although recent poverty data is not available for Uzbekistan at the *oblast* and city levels, investments in improving service delivery are expected to provide important benefits for the poor, who are disproportionally affected by the low quality of services and high coping costs (i.e. time used collecting water, high payments for alternative sources of water and wastewater collection). A recently prepared Poverty and Social Impact Analysis (PSIA) (Draft 2015) showed that water and wastewater services are very affordable to those connected, while those not connected deal with high costs to evacuate wastewater from their homes. Poorer households are willing to pay to connect to services, and all users are willing to pay higher tariffs in exchange for improved services. The project will benefit poorer households through access to sewers, and the overall environmental benefits of the project will have positive effects for households living downstream and for the tourism industry in Bukhara and Samarkand, which are both important tourist centers. The expanded and improved services will benefit both more and less well-off households in the project areas and contribute to shared prosperity

29. The additional credit will also support the Government's priority and urgent needs for improving the performance of the wastewater management systems in these two cities that are of significant economic and cultural importance to the country. More importantly, the AF serves as a catalyst to maintain the momentum for reforms towards improved service delivery and sustainability of the WSS sector, for which capacity building and institutional reforms in addition to physical investments are vital.

30. **Uzbekistan CPS.** Rehabilitating and expanding the country's WSS infrastructure remains a top Government priority. In addition to substantial investment and capacity needs of utilities in both urban and rural areas, a major challenge is to optimize their roles and capabilities for developing and implementing a more effective and sustainable water strategy. Recognizing these needs, the proposed AF addresses the GOU's priorities and also fits the objectives of the latest Uzbekistan CPS (FY12–15) by fulfilling the need to (a) increase the efficiency of infrastructure and (b) improve access to and outcomes of social services. The AF will also invest in activities to improve governance in the water sector and devote sufficient supervision capability and resources to continually monitor water utilities. This will involve planning for operations and maintenance of investments; capacity increases in line with demand growth; efficiency measures (to improve capacity and thereby services); and environmental and financial sustainability.

31. **GoU Development Program 2015-2019:** During the ongoing dialogue between the Bank and GoU, national agencies requested the Bank's support to continued sector reforms and government efforts to improve the overall quality of the WSS. As part of its investment plans, the GOU endorsed infrastructure projects and requested Bank financing - which included this AF, for: the reconstruction of the water treatment facilities in Pitnak city; the improvement of drinking water supply in Bagat, Gurlen, Kushkupir, Shavat, Hankin, and Khazarasp districts of Khoresm region; the improvement of water supply in Syrdarya, Gulistan and Sayhunabad districts of Syrdarya region; the improvement of the drinking water supply system in Jizzak region from Zarafshan river; the improvement of drinking water supply in Namangan city of Namangan region (with due account of reconstruction of drinking water supply networks); and the reconstruction of sewerage systems in Nukus and Tahiatash cities. The AF will support the preparation of the feasibility studies and the preliminary design of these proposed projects.

32. **Phased Scaling-up of Interventions.** The investment needed in both cities is larger than the amount of the parent project financing. The GoU estimated that roughly US\$200 million is needed to rehabilitate and improve the overall wastewater systems in the two cities. To meet these needs, the Government has adopted a three-phased investment program. The BSSP is financing phase I of the government investment plan. The AF will finance phase II of the plan, which includes (i) the completion of the rehabilitation and upgrade of the WWTPs up to design year 2030; (ii) the provision of sewerage services to new areas requiring the construction of new pumping stations (PSs) and sewers.

33. **Enhance vodokanals' capacity.** To further improve the overall sustainability of the water/wastewater sector, the proposed AF will support the strengthening of the institutional capacity of the utilities (vodokanals) through the provision of TA. The AF will support studies to improve the financial sustainability and overall performance of the vodokanals. It will also finance improvements in the customer information system, including the billing system and linking this system to a geographic information system (GIS) to simulate the discharge in the sewer systems. The amount of water a customer uses will roughly predict the amount of material that will be discharged into the sewer systems so that areas with heavy sewage discharge or blockage can be located using a GIS. The AF will support studies and surveys that will address regulation and social accountability in the sector.

34. **Financing gap and modification to original scope.** The feasibility studies and engineering designs completed during the implementation of the parent project identified the scope of work and investments required, especially for the WWTPs. The total cost was larger than the works envisaged during the appraisal of the parent project. This resulted in the need to phase implementation and prioritize investments. The original scope of the Farhood wastewater treatment plant included in the parent project has been modified under the proposed AF to include construction of new plant instead of general rehabilitation. Sewer rehabilitation contracts came at a higher price than estimated resulting in a financing gap of about US\$ 2 million. In addition, due to the Special Drawing Rights (SDR) currency fluctuations, the U.S. dollar value of the credit is now approximately US\$5 million less than the value estimated at the parent project appraisal (the appraisal amount was US\$55 million; the IDA credit's value currently stands at about US\$50 million). The total estimated financing gap is, therefore, roughly US\$7 million.

35. **Improving the sustainability of the initial credit.** The BSSP is designed to assist the GoU to improve wastewater management and to reduce pollution by rehabilitating deteriorated sewerage systems. In addition to physical investments, the proposed AF will focus on supporting the strengthening of the institutional capacity of the Bukhara and Samarkand vodokanals through the provision of TA to enhance overall sustainability of the water/wastewater sector. The main challenge is the financial sustainability of these vodokanals. The AF will support studies to improve the overall performance of the vodokanals (including a study on implementing a systematic non-revenue water (NRW) management program, setting up pressure zones, and identifying priorities for future network rehabilitation investment programs) and a financial performance study (including tariff studies for the vodokanals). The AF will finance priority activities as recommended by the studies.

III. PROPOSED CHANGES

Summary of Proposed Changes	
The changes associated with this additional credit comprise (a) a refinement of the PDO; (b) an adjustment to the results monitoring framework; and (c) realignment of the components and addition of new activities.	
Change in Implementing Agency	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change in Project's Development Objectives	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Change in Results Framework	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Change in Safeguard Policies Triggered	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change of Environmental Assessment (EA) category	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Other Changes to Safeguards	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change in Legal Covenants	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Change in Loan Closing Date(s)	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Cancellations Proposed	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change in Disbursement Arrangements	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Reallocation between Disbursement Categories	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change in Disbursement Estimates	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Change to Components and Cost	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Change in Institutional Arrangements	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change in Financial Management	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change in Procurement	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change in Implementation Schedule	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Other Change(s)	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Development Objective/Results	
Project's Development Objectives	
The original PDOs are to mitigate the environmental impact from wastewater pollution and improve the efficiency and sustainability of wastewater management in Bukhara and Samarkand.	
Change in Project's Development Objectives	
Explanation:	

The PDO will be refined and made more concretely measurable.

Under this AF project, improved performance relates to technical, financial, managerial, and customer relations aspects. This will be achieved through (a) rehabilitating selected sections of the sewerage system that have deteriorated; (b) limited expansion of the sewerage system into currently unconnected areas, (c) wastewater pumping stations and WWTPs rehabilitation and upgrading; and (d) improving the capacity of the water utilities (vodokanals) in the areas of technical, financial, procurement, planning, management, communications, and public outreach.

Proposed New PDO - AF

The proposed PDOs are to reduce wastewater pollution and improve the performance of utilities responsible for wastewater management in Bukhara and Samarkand.

Change in Results Framework

Explanation:

The results monitoring framework will be adjusted to include targets and a few additional indicators to monitor the impact of the AF credit.

Compliance

Covenants - AF for Bukhara and Samarkand Sewerage Project (P152801)

Source of Funds	Finance Agreement Reference	Description of Covenants	Date Due	Recurrent	Frequency	Action
IDA	Schedule 2 to the Financing Agreement	The Recipient shall maintain IMCC, PCU, BVK, and SVK until completion of the Project. The POM shall not be amended without prior approval of the Association. Recipient shall take all measures necessary to ensure that the BVK and SVK shall not incur any debt unless a reasonable forecast of their respective revenues and expenditures (See FA in its entirety).		<input checked="" type="checkbox"/>	CONTINUOUS	New

Covenants - Parent (Uzbekistan Bukhara and Samarkand Sewerage Project - P112719)

Ln/Cr/TF	Finance Agreement Reference	Description of Covenants	Date Due	Status	Recurrent	Frequency	Action
IDA-46330		Finance Agreement :FA, Schedule 2, Section 1.A.1 Description :Recipient shall maintain the ICC until		Complied with	<input type="checkbox"/>		No Change

		completion of the Project with the composition and terms of reference satisfactory to IDA Frequency :Yearly					
IDA-46330		Finance Agreement :FA, Schedule 2, Section 1.A.2 Description :Recipient shall maintain the PCU until completion of the Project, with staff, resources and terms of reference satisfactory to IDA Frequency :Yearly		Complied with	<input type="checkbox"/>		No Change
IDA-46330		Finance Agreement :FA, Schedule 2, Section 1.A.3 Description :Recipient shall carry out the project according to the Financing Agreement, the Project Operational Manual and shall not amend, suspend, abrogate, repeal or waive any provision of the manual Frequency :Yearly		Complied with	<input type="checkbox"/>		No Change
IDA-46330		Finance Agreement :FA, Schedule 2, Section 1.A.4 Description :Recipient shall streamline procedures for connecting ind households to sewer systems in B&S incl provision of MT financing if needed Frequency :Yearly		Complied with	<input type="checkbox"/>		No Change
IDA-46330		Finance Agreement :FA, Schedule 2, Section 1.A.5 Description :Recipient shall take all measures to maintain for the BVK and SVK a ratio of total cash operating expenses to total cash operating revenues not higher than 0.90 and collect effectively all revenues Frequency :Yearly		Complied with	<input type="checkbox"/>		Revised
IDA-46330	See Section I.A.2 of Schedule 2 to the Financing Agreement for the AF	Except as the Association shall otherwise agree, the Recipient shall take measures to ensure that BVK and SVK, during Project implementation, shall be able to maintain, for each of their fiscal years after December 31, 2016 a ratio of total operating revenues		Complied with	<input checked="" type="checkbox"/>	Yearly	Proposed

		to total operating expenses of at least 1.40 for BVK, and 1.50 for SVK.					
IDA-46330		Finance Agreement :FA, Schedule 2, Section 1.A.6(a) Description :Except as IDA shall otherwise agree, Recipient shall take all measures to ensure that the BVK and SVK shall not incur any debt unless forecast shows net revenues shall be 1.2 tms higher est. debt srv Frequency :Yearly		Complied with	<input type="checkbox"/>		No Change
IDA-46330		Finance Agreement :FA, Schedule 2, Section 1.B.1 Description :Make proceeds of the Financing available to BVK&SVK under Subsidiary Agreements to facilitate carrying out BVK&SVK's Parts fo the Project Frequency :Yearly		Complied with	<input type="checkbox"/>		No Change
IDA-46330		Finance Agreement :FA, Schedule 2, Section 2.B.1 Description :Recipient shall maintain or cause to be maintained a FM system according to provisions of Section 4.09 of the GC Frequency :Yearly		Partially complied with	<input type="checkbox"/>		No Change
IDA-46330		Finance Agreement :FA, Schedule 2, Section 2.B.2 Description :Recipient via PCU shall prepare and furnish to IDA no later than 45 days after each calendar quarter interim unaudited financial reports for the Project, in form satisfactory to IDA Frequency :Quarterly		Complied with	<input type="checkbox"/>		No Change
IDA-46330		Finance Agreement :FA, Schedule 2, Section 2.B.3 Description :Recipient shall have its Financial Statements audited annually according to provisions of Section 4.09 of the GC, and furnish audited annual FS to IDA no later than six months after end of fiscal year Due Date :15-Dec-2014		Expected soon	<input type="checkbox"/>		No Change

Conditions		
Source Of Fund	Name	Type
IDAW	BVK Subsidiary Agreement	Effectiveness
Description of Condition		
The BVK Subsidiary Credit Agreement has been executed on behalf of the Recipient and the BVK.		
Source Of Fund	Name	Type
IDAW	SVK Subsidiary Agreement	Effectiveness
Description of Condition		
The SVK Subsidiary Credit Agreement has been executed on behalf of the Recipient and the SVK.		
Source Of Fund	Name	Type
IDAW	Project Operational Manual	Effectiveness
Description of Condition		
The Project Operational Manual has been updated/amended by the Recipient in a manner satisfactory to the Association.		
Risk		
Risk Category		Rating (H, S, M, L)
1. Political and Governance		Substantial
2. Macroeconomic		Low
3. Sector Strategies and Policies		Moderate
4. Technical Design of Project or Program		Moderate
5. Institutional Capacity for Implementation and Sustainability		Substantial
6. Fiduciary		Substantial
7. Environment and Social		Moderate
8. Stakeholders		Low
9. Other		n.a.
OVERALL		Substantial
Finance		
Credit Closing Date - AF for Bukhara and Samarkand Sewerage Project (P152801)		
Source of Funds	Proposed AF Credit Closing Date	
International Development Association	June 30, 2019	

Explanation: The additional activities described in the components were assessed during appraisal and implementation was estimated to take three years and six months. The closing date will therefore be extended by three years and six months from December 31, 2015 to June 30, 2019.										
Change in Disbursement Arrangements										
Explanation: New disbursement percentage for the AF credit resources.										
Change in Disbursement Estimates (including all sources of Financing)										
Explanation: Disbursement schedule changed to incorporate disbursements up until the closing date of the AF credit.										
Expected Disbursements (in US\$, millions) (including all Sources of Financing)										
Fiscal Year	2015	2016	2017	2018	2019					
Annual	38.00	20.00	50.00	30.00	22.00					
Cumulative	38.00	58.00	108.00	138.00	160.00					
Allocations - AF for Bukhara and Samarkand Sewerage Project (P152801)										
Source of Fund	Currency	Category of Expenditure	Allocation		Disbursement % (Type Total)					
			Proposed		Proposed					
IDA	XDR	Goods, works, non-consulting and consultanting services, Training and Operating Costs for Parts A.1, A.2, B.1 and B.2.	71.64		100					
		Goods, consultants' services, Training and Operating Costs under Parts A.3, A.4 and C of the Project	3.06		100					
		Total:	74.70							

Components				
Change to Components and Cost				
<p>Explanation:</p> <p>The structure and order of the components will be revised. The changes include consolidating the original Components B and C into Component B, and renaming it as Component A. Physical investments will be recategorized as Component B. Component D, Project Management, will be recategorized as Component C. Below is a summary of activities included in the project. A detailed description of the activities to be financed under each of the components can be found in Annex 2.</p> <p>The proposed credit amount is divided into two portions, Portion A and Portion B. Portion A is on regular blend terms: SDR 67.9 million (equivalent to US\$ 95.44 million); and Portion B is on hard terms: SDR 6.8 million (equivalent to US\$ 9.56 million).</p> <p>Project Components</p> <p>Component A: Institutional Strengthening and Capacity Building. This component will support a range of institutional strengthening activities to be implemented at the vodokanal and national levels. It will strengthen the capacity and performance of the Bukhara vodokanal (BVK) and the Samarkand vodokanal (SVK) to operate, plan, and manage their systems and social accountability mechanisms.</p> <p>At the national level, it will support sector strategy development/update including policies and technical standards for improved service delivery and regulations. Specific activities targeting these issues have been incorporated under this component.</p> <p>It will also include preparation of feasibility studies, preliminary designs, and bidding documents for future investments.</p> <p>Component B: Physical Investments. This component will finance the provision of goods, works, and consultant services in Bukhara and Samarkand for: (a) rehabilitation/construction and upgrade of WWTPs, including effluent quality-monitoring laboratories and reuse facilities; (b) replacement and construction of new wastewater collection systems (about 110 km in both cities); and (c) rehabilitation and construction of sewage PSs. This component will incorporate the lessons learned during implementation of the parent project.</p> <p>Component C: Project Management. This component will finance the PCU in Uzkomunkhizmat in Tashkent and two PIUs in each of the BVK and SVK. Support will include training, staffing, and M&E, as well as the annual project financial and technical audits of the utilities.</p>				
Current Component Name	Proposed Component Name	Current Cost (US\$, millions)	Proposed Cost (US\$, millions)	Action
Component A: Physical Investments	Component A: Institutional Strengthening and Capacity Building	0.87	5.17	Revised

Component B: Institutional Strengthening and Capacity Building	Component B: Physical Investments	51.88	151.08	Revised
Component C: Feasibility Studies for Future Investments	Included as part of Component A	0.89	0.89	Revised
Component D: Project Management	Component C: Project Management	1.35	2.85	
	Total	54.99	159.99	
Other Change(s)				
Change in Implementation Schedule				
Explanation:				
The AF credit will be implemented between June 22, 2015 and June 30, 2019.				

IV. APPRAISAL SUMMARY

Appraisal Summary
Financial and Economic Analysis
<p><i>Financial Analysis</i></p> <p>The financial analysis of the AF for the Samarkand Wastewater Company (SSC/SVK) and Bukhara Water Supply and Wastewater Company (BWSSC/BVK) was undertaken by reviewing the historic financial performance of both companies and making financial projections for the next 25 years with the help of financial models. The financial models were built on the financial statements of the SSC (2011–2013) and BWSSC (2012–2014) and focused on the minimum cash flow required for adequate operation and maintenance of the existing and newly constructed assets and enabling the companies to service the debt. The financial analysis was done at the utility level taking into account not only investments financed by the project but also all business-as-usual decisions.</p> <p>The financial analysis assessed the minimum conditions for utilities to generate sufficient cash flow to sustain an Annual Debt Service Coverage Ratio (ADSCR) of at least 1.2. The analysis proposes a combination of measures which will enable sustainable financial performance. The operating costs coverage ratio of the two utilities is consistently above 1, indicating that the companies are covering their operating costs. Nevertheless, the companies have been incurring significant losses in the past couple of years (the only exception is the financial statement of the BWSSC for 2014 with a profit of UZS 77 million (US\$31,000), which is mainly due to a change in accounting practices of long-term debt (LTD) interest obligations affected by exchange rate differences (further information provided in annex 5).</p>

The GoU is making efforts to put in place cost recovery tariffs while at the same time subsidizing loan interest and repayment obligations. Over the past four years, the tariffs for households in Samarkand increased by 182 percent and in Bukhara by 142 percent for water supply and 221 percent for wastewater. Although these are nominal increases, the tariff increases in real terms were also significant; about 9 percent per year in Samarkand and 14 percent in Bukhara (for wastewater). Despite this progress, there are signs that the pace of tariff increases is slowing down and the financial projections of tariff increases in the financial models were done in a conservative way just to ensure the coverage of operating costs and an ADSCR of at least 1.2. There is obviously a trade-off between the required tariff increases and government support for loan interest and repayment obligations, which is further explained in annex 5.

The main financial challenges for the utilities are (a) the applied accounting policies and presentation of the financial statements by the companies and (b) depreciation policies.¹ Both policies are resulting in constant financial losses for both utilities due to insufficient revenues to cover the total costs. The equity of the BWSSC is already negative (due to the accumulated losses) and the equity of the SSC is slightly 'above water', with projections set to become negative in future years. The companies are highly leveraged and exposed to significant exchange rate risks. Government support and mitigation measures are necessary to provide comfort to lenders about the debt service and consumers that they will not face significant tariff increases because of the risk being passed on to them.

Financial analyses for both utilities show that there will be cost savings, however, they will not outpace the new financing costs associated with the investments. The new funding will pose additional challenges to full cost recovery. Both the GoU and the companies should consider changing their accounting policies to fairly represent the financial situation, revise the depreciation charges to match the actual WSS assets lifetime, and set up a clear path to full cost recovery so as to break the chain of constant financial losses. More details can be found in annex 5.

Table 2 shows the main results of the financial analysis. Both utilities generate positive financial internal rates of return (FIRR) when the AF is implemented, but these rates of return are very low. The net present value (NPV) is negative, indicating that the investments will not generate sufficient benefits for the utilities. This is what can be expected when financing wastewater investments; many of the benefits related to such investments not only benefit the utility but also the wider society because of the implied environmental and health benefits and project spillovers.

The sensitivity analysis showed that there is a clear benefit from changes to depreciation rates (to curb the current accelerated depreciation charges); optimization of operating costs; and constant efforts toward achieving a full cost recovery tariff.

¹ (i) The Financial Statement for both companies include 'exchange rate difference' under financial expenditures presenting the difference between the total outstanding interest payments (using the exchange rate at the beginning of the loans) and total interest payments due calculated at the current exchange rate. (ii) The applied depreciation rates do not reflect the useful life of the WSS assets. Both companies are using severe depreciation charges, leading to a rapid decrease of the asset base and high annual depreciation charges. As a result, (i) and (ii) impose significant costs on the companies' income statement.

Table 2: Results of the Utility Financial Analysis

Subproject	Cost-benefit Analysis with Financial Prices	
	NPV @10% (US\$, millions)	FIRR %
SSC	-29.6	1.0
BWSSC	-15.2	4.9

Economic Analysis

The economic analysis followed a conventional approach where the financial cash flows have been translated into economic cash flows by using standard conversion factors to translate financial prices into economic prices and adding externalities where appropriate. It compares ‘with’ and ‘without’ project scenarios.

The economic analysis was undertaken at the city level. By improving the quality and efficiency of select wastewater services in the two targeted cities, the project will contribute directly to reducing the burden that the wastewater sector currently puts on government and consumer budgets. The project will result in a decline in the real costs of the utilities and hence improve the efficiency with which the services are provided. The benefits of the project will include (a) reduction in maintenance costs associated with the poor state of the water and wastewater assets; (b) reduction in staff costs due to reduction in maintenance and automatization of processes; (c) reduction in the coping costs for consumers currently not connected to the sewer network; (d) increase in access to wastewater services for commercial consumers in areas that will gain access to the sewer network; and (e) reduction in the pollution loads associated with the lack of reliable wastewater treatment. The project is likely to provide more additional benefits than the ones mentioned above, but these are more difficult to quantify. These may include public health benefits due to the reduction of untreated or poorly treated wastewater being disposed of in the environment and a reduction in groundwater pollution (because of the dependence on poorly constructed cesspools). Yet, the reduction of these benefits are assumed to be captured in the reduction of pollution loads. The reduction of water pollution and public health risks are likely to have a positive impact on tourism—an important economic mainstay in the two cities—but little information is available regarding the effect of improved wastewater management on tourism flows.

The net benefit is the difference between the incremental benefits and the incremental costs of two scenarios: ‘with’ and ‘without’ the project. The ‘with’ project scenario considers the proposed project and its associated targets. The ‘without’ project scenario considers that utility consumers will face continuous deteriorating wastewater services, which will result in an acceleration of maintenance, both emergency and preventive maintenance, to deal with the increase in collapses of part of the sewer network.

The activities were appraised, measuring their flow of costs and benefits for the lifetime of the project, estimated as 25 years. Costs and benefits were expressed in constant prices as of early 2015.² The discount rate corresponded to the opportunity cost of capital, estimated to be 10 percent, as used in other projects in the Europe and Central Asia region. Standard conversion factors were used especially for the exchange rate, labor, and electricity.

² The exchange rate used was US\$1 which was equivalent to UZS 2,500.

Further details on the economic analysis are presented in annex 5. The results show that both projects have NPVs above ten percent and hence can be deemed economically feasible.

Table 3: Results of the Cost-benefit Analysis

Subproject	Cost-benefit Analysis with Economic Prices	
	NPV (UZS, billions)	Economic Internal Rate of Return
BWSSC	42.3	12.5%
SSC	56.8	13.9%

The results of an extensive risk analysis confirms the robustness of the project. The probability of having positive economic rates of return is more than 93 percent in each of the cities. The risk evaluation shows that the likelihood of a negative economic outcome—once market distortions are eliminated and the benefits (including those to society) are captured—is small under a base case scenario with limited real tariff increases (much smaller than the real tariff increases that have taken place in recent years). Even when these real tariff increases are reduced significantly, the projects remain economically feasible.

Technical Analysis

The proposed project relies on approaches, methodologies, and technical designs appropriate for the Uzbekistan contexts and no significant technical obstacles are expected during implementation.

The parent credit financed the preparation of engineering designs for the main WWTPs. These designs were prepared taking into account phased construction based on the availability of funds. Phase I is being implemented with financing from the parent credit. The detailed engineering designs for Phase II works are currently being reviewed and updated, and bidding documents are being prepared. Procurement processes for these packages will be completed by the end of 2015. For the Farhood treatment plant, the available technical alternative options have been discussed during appraisal. The procurement process for preparation of the detailed design has started. The tender documents are planned to be finalized by early 2016.

The sewer and PS works have been prioritized for inclusion under the proposed AF to maximize the positive impact in both cities and consequently make the greatest contribution to the achievement of the PDO. Procurement processes for these sewers and PSs is planned to be completed in the first year. The cost of the works will be revised based on a review of the parent credit's implementation and other similar project experience.

The proposed implementation period (three years and nine months from the expected effectiveness date) is considered adequate, considering that the design update for the WWTPs is being prepared. A general implementation plan can be found in annex 2.

Procurement

The country procurement assessment conducted in 2003 (by the Bank and ADB) identified the following weaknesses in the public procurement system in Uzbekistan. These weaknesses largely remain: (a) absence of a unified legislative framework; (b) inefficient and nontransparent procurement practices; (c) absence of a single institution with oversight or regulatory authority for public procurement; (d) complicated internal review/approval of bid evaluation reports which leads

to low accountability and delays; (e) no comprehensive anti-corruption measures; and (f) low skills/capacity of the staff handling public procurement at every administrative level. Private sector, including suppliers, contractors, and consultancy firms, remain unsatisfied with the rules governing public procurement and have little confidence in the system's fairness. Though the government has started extensive reforms of its public procurement system, the recent assessments under the Country Integrated Fiduciary Assessment (CIFA) and Public Expenditure and Financial Accountability (PEFA) studies indicate that there is not much change in the public procurement environment yet. Thus, the procurement environment is considered a high risk.

The capacity of the PCU and PIUs has been assessed and found satisfactory. The procurement capacity assessment identified the following additional risks related to government decrees, rules, and regulations that weaken accountability of the vodokanal, PCU, PIUs, and project implementation: (a) price verification which has internal conflict in major provisions; (b) requirement to get clearance from an eleven-member Interministerial Bidding Committee (IMBC) at each stage of procurement leads to tremendous delays—from bid opening to the start of contract implementation takes a minimum of 6 to 12 months, signing minutes take at least 2 months; (c) considerable procurement delays caused by contract expertise of the Ministry of Foreign Economic Relations, Investments and Trade (MFERIT) that involves contracts with international contractors and consultants and imported goods contracts; and (d) difficulties to obtain a bank guarantee for bid security and performance security by the local bidders and no availability of alternative instruments for such purposes in the country banking system, in particular, joint ventures. The mitigation plan is included in annex 3.

The ongoing project experienced tremendous delays in procurement processes. Contract registration by the MFERIT, after signing the contract, led to delays in contract implementation. Bidding document preparation and bid evaluation were completed by the PCU in Tashkent while the PIUs at Bukhara and Samarkand were assisting the PCU causing delays and multiple revisions on the same document. The World Bank is pursuing intensive dialogue with the government on mechanisms to reduce these procurement delays in the overall portfolio.

Procurement for the AF, will be the responsibility of the PIUs in Bukhara and Samarkand and the vodokanals. The PIUs have experience working with ongoing Bank-financed projects, and with the support of procurement consultants, procurement capacity is considered adequate. Procurement training will be provided to the PCU procurement specialists throughout the project implementation. The PCU in Tashkent will only coordinate and monitor procurement activities included in the procurement plan.

Procurement for the project will be carried out according to the Bank's Guidelines: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers, published in January 2011 (Procurement Guidelines) and revised in July 2014 and Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by World Bank Borrowers, published in January 2011 (Consultant Guidelines) and revised in July 2014. More detailed information concerning procurement under the project is described in annex 3.

Financial Management

There will be no changes in financial management (FM) arrangements under this proposed AF. The overall FM functions, including the flow of funds, staffing, accounting, reporting, and auditing, will be handled by the PCU and PIUs. The PCU employs full time staff headed by the PCU Coordinator.

Daily FM related activities will continue to be supervised by the PCU, which employs the full time staff headed by the PCU Head. The PCU and PIUs within the vodokanals will manage the project funds, maintain accounts and have them audited, facilitate consultants' work and review their output. The PCU and Vodokanals will ensure that resources are used in a way that promotes economy, efficiency and effectiveness, and that funds are earmarked solely for project objectives.

The FM arrangements of the parent project implemented by the PCU have been reviewed periodically as part of project supervision and are currently rated as Moderately Satisfactory³. The main FM weaknesses under the parent project remain the following: 1) Delays in submission of the project and entities audit reports; 2) disclaimer of the audit opinion on the entities audit reports signaling serious accountability and internal control weaknesses at Vodokanals; 3) delays in introduction of fully operational management information system (MIS) that will support elimination of residual internal control weaknesses. Following implementation of several fiduciary risk and capacity-building measures, some progress was achieved with regard to timely submissions of interim financial reports (IFRs), establishment of better controls from the PCU's side over financial information received from the PIUs, and recruitment of FM staff. However, there is a still scope for improvement. Additional measures are being implemented and monitored closely by the Bank to ensure adequate FM arrangements. The overall FM risk for the project remains substantial.

The Project will follow transaction-based disbursement procedures (advances to the DA, documentation of the advances based on statements of expenditures and supporting documents, direct payments and special commitments). All funds will be disbursed to BVK and SVK through the designated account (DA) within PCU in Uzkomunkhizmat. Withdrawals from the Credit Account will be requested according to requirements in the Disbursement Letter by the PCU. The PCU will be also responsible for verifying all the payment supporting documents before processing them from the Bank and government sources.

Similar audit arrangements from the parent project will be adopted for the AF. The project audit will be conducted by independent private auditors and on TOR acceptable to the Bank and procured by the PCU. Significant improvements with regard to the timely submission of the audit reports are expected as there is an ongoing valid audit contract for fiscal 2015 and 2016, and the audit selection process for the next period will be initiated in advance. The annual audited project financial statements will be submitted to the Bank within six months of the end of each fiscal year and also at the closing of the project. The cost of the audit will be financed from the proceeds of the credit. Project management (PM)-oriented IFRs will be used for monitoring and supervision. The PCU will produce a full set of IFRs every quarter throughout the life of the project and will submit them to the Bank no later than 45 days after the calendar year quarter ends.

Social Analysis

Increased access to wastewater services and improved quality of sewerage services under the AF will contribute to enhanced social welfare for the beneficiary population in the project areas. Increased access and better disposal of sewerage will contribute to a cleaner environment and bring health benefits and increased comfort. Although the project will benefit both women and men, given women's responsibility for the hygiene of children and other family members, as well as their greater

³ The FM rating of the parent project has been upgraded to Moderately Satisfactory due to improvements in internal controls and timeliness of submission of the quarterly financial reports as well as settlement of the long overdue audit reports issues.

propensity to work in the home, the project will bring particular benefits for women. Indirectly, as both Bukhara and Samarkand are important tourist centers, improved sewerage services could have a positive impact on tourism through associated tourist facilities, such as guest houses and cafes. The expanded and improved services will benefit both more and less well-off households in the project areas and contribute to shared prosperity.

The AF places renewed emphasis on improving customer service and public communications. A three-year public communications and public awareness strategy is currently being developed. Its implementation in Bukhara and Samarkand forms an integral part of the AF. A range of activities will benefit the vodokanals and municipalities by strengthening their capacity in this regard through a series of training events and expert support in developing communication materials as well as improving mechanisms for managing inquiries, complaints, and information. These will be user-friendly and tailored to the needs of different stakeholders (such as schoolchildren or people responsible for paying utility bills) while the timing and location of public outreach sessions will be selected to ensure participation of people with family responsibilities, typically women. To measure improved performance of customer relations aspects, the project will carry out yearly beneficiary surveys and the data will be disaggregated by gender.

The prefeasibility assessments indicate that some new construction will be necessary under the AF. This would likely occur on publicly owned land, but might entail impacts on privately used land. The exact locations for the new sewers and PSs are not yet known as the final design has not yet been finalized. A reconnaissance of potential sites where the new construction is likely to occur indicate possible temporary impacts upon small enterprises (for example, kiosks along the pipeline right of way) or permanent impacts on small structures that have been informally built (or crops/fruit trees that have been planted) within the right of way or on public land. No physical relocation of households is expected. The existing Resettlement Policy Framework (RPF) in place for the parent project has been revised to reflect the investments under the AF. The draft revised RPF was disclosed in country on April 14, 2015. The final documents has been disclosed in info shop on June 2, 2015 . The RPF will guide the preparation of site-specific Resettlement Action Plans (RAPs), should they be required. The team will screen for social impacts (for example, informal occupants, vendors, and small structures such as fences) by ensuring that the TOR for the detailed design includes verifying every right-of-way for the sewerage expansion and network improvements at the two project sites. Dedicated PIU members also carry out screening upon receiving the detailed design. The PIUs in Bukhara and Samarkand have acquired sufficient capacity for managing social safeguards under the current project and include dedicated safeguard specialists (one at each PIU) responsible for the screening of social impacts and the implementation of the RAPs.

Environmental Analysis

The original BSSP is rated Category B. Environmental impact assessments (EIAs), including environmental management plans (EMPs) have been prepared according to OP/BP 4.01 to assess potential impacts of the proposed works, help the BVK and SVK adopt measures needed to minimize potential negative impacts during construction and afterwards, and enhance project operation in an environmentally sustainable manner. Public consultation and disclosure processes were undertaken in accordance with Bank policy and guidelines.

The existing EIAs and EMPs were revised and amended for the activities being considered for the AF and based on the revision of the relevant feasibility studies. The scale-up works are no different than those of the initial scope of general rehabilitation, although they are expected to include reconstruction and upgrading of the Farhood WWTP in Samarkand, construction of three sewerage PSs, and rehabilitation of deteriorated sewerage in new areas within the two cities. The document has been revised and have been disclosed and discussed with stakeholders and project-affected people in both cities during one public consultation on April 15, 2015. The documents also have been disclosed in draft in info shop on April 2, 2015 and will be disclosed in final form before Board date.

The agreed AF investments will not include construction of new significant facilities or changing current rights-of-way. Physical cultural resources are likely to be affected given the important cultural monuments and architecturally significant *mahallas* in Bukhara and Samarkand. Therefore, the policy on Physical Cultural Resources will remain triggered as in the parent project and detailed provisions for dealing with chance finds while pipes are being rehabilitated are included in the EMPs and attached to the works' contracts.

The current BSSP project compliance with environmental safeguard policies and applicable national laws related to the civil works performed had been found to be satisfactory at the project's midterm review and until now. No major environmental issues have been noticed during project supervision so far. The Bank's recommendations on the EMP implementation primarily included better enforcement of aspects related to workers' occupational health and safety measures. Also, advice was provided on the presentation of findings in the progress report to include evidence on the collection and evaluation of the agreed main environmental mitigation measures (air pollution, noise, traffic disturbance, and worker's safety to construction site) and monitoring parameters, as stipulated in the environmental authorization and the EMP.

Climate and disaster risk screening were completed and predicts that according to global climate models there will be slight temperature and rainfall changes. The primary risk factor is Uzbekistan location within a zone of high seismic activity. The seismic risk is being mitigated by the engineering design.

36. OP 7.50 - Project on International Waterways. The project will finance: (i) the rehabilitation of existing wastewater treatment plants (WWTPs), pumping stations and sewers; (ii) the construction of three new pumping stations and additional sewer lines within the existing scheme of sanitation services in the cities of Bukhara and Samarkand; and (iii) feasibility studies for future water and wastewater projects. Due to the potential implications on the Zerasfshan and Amu Darya rivers, both of which are international waterways flowing from Tajikistan through Uzbekistan's territory and into the former delta of the Aral Sea, OP 7.50 was triggered for this operation. However, because of the focus on rehabilitation of existing infrastructure or feasibility studies nature of the activities to be financed, the team sought an exception to the riparian

notification requirements in accordance with paragraphs 7(a) and 7(b) of OP 7.50. As part of the request for the exception, the team confirmed that the proposed project activities will not: (i) adversely change the quality or quantity of water flows to the other riparians; and (ii) be adversely affected by the other riparians' possible water use. As required by OP 7.50 the team advised the client to include an examination of any potential riparian issues in the terms of reference for the feasibility studies of future investments in the water and wastewater sectors. The exception was approved by the RVP on February 11, 2015. Given the additional information that was obtained during the appraisal mission in March 2015, an addendum to the original request for the exception memorandum was prepared confirming that the project would finance the construction of two new pumping stations and additional sewer lines. Final clearance from the RVP of the requested exception taking into account the additional information was received on May 14, 2015.

Risk

The main challenges under the BSSP have been the lack of readiness of bidding documents, the use of a large number of small contracts, and the lack of interested and eligible contractors and the financing gap. The AF incorporates lessons from the original project. During the AF preparation, engineering designs have been reviewed and bidding documents will be prepared for proper-sized packages, which will allow for timely procurement and implementation. The bidding documents for the initial set of contracts will be prepared and ready to be launched by the time of Board approval in June 2015. To address the challenges of interested contractors participating in the bidding process, a Contractors Outreach workshop was held in 2013 that resulted in a number of international contractors participating in the bidding. A follow-up workshop will be organized during project preparation. Invitations to competent local and international contractors will be sent. Possibilities of advertising tenders for larger contracts will also be considered to attract qualified international contractors. Additional training on procurement, financial, and contract management will be held for the staff of the PCUs. To avoid the risk of financing gap that might affect achieving the PDO, activities included under the physical investment component are prioritized.

World Bank Grievance Redress

Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the WB's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the WB's corporate GRS, please visit <http://www.worldbank.org/GRS>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org."

Annex 1: Results Framework

Country: Uzbekistan

AF for Bukhara and Samarkand Sewerage Project: P152801

Revisions to the Results Framework		Comments/ Rationale for Change
PDO		
<i>Current</i>	<i>Proposed</i>	
The PDOs are to mitigate the environmental impact from wastewater pollution and improve the efficiency and sustainability of wastewater management in Bukhara and Samarkand. This will be achieved through (a) rehabilitating select sections of the sewerage system that are deteriorated; (b) limited expansion of the sewerage system into currently unconnected central historical areas, (c) installing more energy-efficient equipment such as wastewater pumps and aeration systems at the WWTPs and PSs; and (d) improving the capacity of the water utilities (vodokanals) in the areas of management, communications, and public outreach.	<p>The PDO is to reduce wastewater pollution and improve the performance of utilities responsible for wastewater management in Bukhara and Samarkand.</p> <p>Under this project, improved performance relates to technical, financial, and customer relations aspects.</p>	As advised at the project concept note review meeting, the PDO was revised so that the PDO-level indicators can be easily monitored and measured.
PDO indicators		
<i>Current (PAD)</i>	<i>Proposed change</i>	
Direct project beneficiaries	New	Core indicator
Of which female (beneficiaries)	New	Gender disaggregated data is introduced to ensure that the project is gender-informed.
1.1 Pollution load on downstream communities measured by amount of sewerage/BOD ₅ removed at the WWTP in the BVK	Revised: Volume (mass) of BOD pollution loads removed by the treatment plant supported under the project - BVK - SVK	Revised to reflect the core sector indicator
1.2 Pollution load on downstream communities measured by amount of sewerage/BOD ₅ removed at the WWTP in the SVK		
Collection of sewage into the WWTP in the BVK	Dropped	
Collection of sewage into the WWTP in the SVK	Dropped	
Energy efficiency at the WWTP and WWPS	No change	

Revisions to the Results Framework		Comments/ Rationale for Change
Financial working ratio	Revised: Operating cost coverage ratio	Added more specificity to the indicator to better monitor results
Number of sewer blockages per year	No change	
% of customers satisfied with the services received (disaggregated by gender)	New	Added to reflect improved performance with respect to customer relation aspects
Intermediate Results indicators		
<i>Current</i>	<i>Proposed change</i>	
Component A		
Development of Communication and Public Awareness Strategy for the BVK and SVK	Communication and Public Awareness Strategy for the BVK and SVK developed and implemented	Revised to make it more specific to better monitor results
% of Vodokanals and Makhalla staff trained in utility management, operation and maintenance (O&M), and communications	Number of VK staff trained in utility management, O&M, finance, and communications	Revised to reflect training on financial aspects as well and the fact that Makhalla staff receive only communications training
Number of people who participated in the public outreach workshops conducted - Of which female (5)	New	
Feasibility studies for future investments	Feasibility studies and detailed engineering design for future investments completed	Revised to add detailed engineering designs as well
Improved management and emergency responsiveness of the BVK and SVK due to installation of a pilot SCADA system	Pilot SCADA system installed and operationalized	Revised to make it more specific to better monitor results
Component B		
Cumulative length of sewer lines replaced	No change	
Cumulative length of new sewer lines constructed	No change	
Cumulative number of new households connected to the public sewer system	New household sewer connections constructed under the project	Revised to reflect the core sector indicator

Note: BOD - Biological Oxygen Demand.

REVISED PROJECT RESULTS FRAMEWORK

<u>Project Development Objective (PDO):</u> The objective of the project is to reduce wastewater pollution and improve the performance of utilities responsible for wastewater management in Bukhara and Samarkand.											
Results Indicators	Core	Unit of Measure	Baseline	Actual Current	YR5	YR6	YR7	End Target	Frequency	Data Source/ Methodology	Responsibility for Data Collection
PDO Level											
Direct project beneficiaries	<input checked="" type="checkbox"/>	Number	350,000	370,000	400,000	400,000	450,000	500,000	Annual	Analysis/ survey reports	PIUs, SVK and BVK
Female beneficiaries	<input checked="" type="checkbox"/>	%	52	52	52	52	52	52			
Volume (mass) of BOD pollution loads removed by the treatment plant supported under the project	<input checked="" type="checkbox"/>	(tons/ year)							Semi - Annual	Daily flow measurement and BOD analysis progress reports	PIUs, SVK and BVK
BVK	<input checked="" type="checkbox"/>		1,590	1,680	1,680	1,680	2,000	2,000			
SVK	<input checked="" type="checkbox"/>		2,450	2,450	2,450	2,450	3,100	3,100			
Energy efficiency at the WWTP		kWh/kg BOD ₅ eliminated							Annual	Progress reports	PIUs, SVK and BVK
BVK			4.1	4.3	-	-	-	3			
SVK			4	4.0	-	-	-	3			
Operating cost coverage ratio		Ratio							Semi - Annual	Utilities Financial Reports	PIUs, SVK and BVK
BVK			1.28	1.28	1.41	1.43	1.44	1.45			
SVK			1.08	1.08	1.35	1.37	1.39	1.40			
Number of sewer blockages per year in the		Number							Semi - Annual	Progress Reports	PIUs, SVK and BVK
BVK			1,404	1,200	1,000	900	800	600			
SVK			1,056	1,000	1,000	900	800	700			
% of customers satisfied with the services received		%							Annual	customer satisfaction survey Reports	PIUs, SVK and BVK
BVK			0	30	40	50	55	60			
Of which female (%)			0	30	40	50	55	60			
SVK			0	30	40	50	55	60			

Of which female (%)			0	30	40	50	55	60			
INTERMEDIATE RESULTS											
Component A											
Communication and Public Awareness Strategy for the BVK and SVK developed and implemented		Text	0	Draft developed	Draft developed	Draft developed	implemented	implemented	Semi - Annual	Progress Reports,	PCU/ PIUs, SVK and BVK
VK staff trained in utility management, O&M, finance, and communications, procurement		Number	0	51	500	700	900	1,000	Semi - Annual	Progress Reports, Training reports	PCU/PIUs, SVK and BVK
Number of people who participated in the public outreach workshops conducted		Number	0	0	500	1000	1,500	2,000	Semi - Annual	Progress reports Public outreach Workshops Reports	PCU/PIUs, SVK and BVK
- Of which female (%)		%	0	0	30	50	50	50			
Pilot SCADA system installed and operational		Text	None	Installed	installed	installed	installed	operational	Monthly	Progress Reports	PCU/PIUs, SVK and BVK
Feasibility studies and detailed engineering design for future investments completed		Yes/No	No	No	No	No	No	Yes	Monthly, semi-annual	Feasibility Study report	PCU
Component B											
Cumulative length of sewer lines replaced in:		kilometers							Quarterly	Progress reports, Mid-term Review Report	PIUs, SVK and BVK
BVK			0	15	15	40	65	82.7			
SVK			0	27.75	27.75	34.35	34.35	34.35			
Cumulative length of new sewer lines constructed in Bukhara		kilometers							Quarterly	Progress reports, Mid-term Review Report	PIUs, SVK and BVK
BVK			0	1.4	1.4	7.4	9.0	11.2			
SVK			0	5.2	5.2	20	40	59.2			
New household sewer connections constructed under the project	<input checked="" type="checkbox"/>	Number							Quarterly	Progress reports, Mid-term Review Report	PIUs, SVK and BVK
BVK	<input checked="" type="checkbox"/>		0	1,170	2,000	2,500	3,500	4,500			
SVK	<input checked="" type="checkbox"/>		0	2,675	4,000	7,000	11,000	14,000			

Notes:

1. **Customers in project areas reporting improved wastewater services.** This PDO indicator directly relates to the quality of wastewater services in project areas affected by the investments. It will be measured through the average ratings derived from the satisfaction survey; a detailed methodology will be developed, including the identification of control groups, so that benefits resulting from project interventions can be correctly attributed.
2. **Volume (mass) of BOD pollution loads removed by treatment plants.** This PDO indicator directly relates to the quality of wastewater services in targeted cities. This indicator measures the cumulative volume (mass) of BOD pollution loads removed by the treatment plant supported under the project. The BOD level for the raw sewage (influent) and treated effluent will be measured by utilities as part of their operating procedures on a daily basis. Cumulative values will be reported to the Bank on a semiannual basis. Project interventions are designed to improve wastewater collection and treatment capacity and as such, BOD loads removed are set to increase in the targeted cities.
3. **Operating cost coverage ratio (OCCR).** This PDO indicator directly relates to efficiency of wastewater services in cities. Specifically, the indicator reflects the financial performance of the utility as a ratio of total revenues and total operating expenses (which exclude depreciation and debt servicing). The OCCR will capture impacts of project interventions designed to support efficiency, including reductions in operating costs and revenue enhancement. It will be measured by vodokanals as part of their operating procedures and average values will be reported to the Bank semiannually.
4. **Project beneficiaries.** This indicator reflects an estimate of the population that is directly benefiting from activities and interventions supported by the project. This will be recorded as a cumulative amount, consisting of an estimate of the population which is directly benefiting from wastewater interventions in the two cities. Census data will be used to determine average household size and to estimate the proportion of beneficiaries that are female.
5. **Prepare new design standards for water supply and wastewater.** This indicator will monitor progress of a key activity to be implemented under Component 2, which involves updating design standards for water and wastewater systems. This activity will support cost-effective designs and future operational efficiencies.

Annex 2: Detailed Description of Modified and New Project Activities

UZBEKISTAN: AF for Bukhara and Samarkand Sewerage Project

1. The BSSP is the first phase of a long-term government program to improve sanitation and wastewater management in the cities of Bukhara and Samarkand, as a means of improving overall energy efficiency and wastewater service coverage. The overall structure of the project components remains the same.
2. **Bukhara Sewerage System.** At present, nearly 100 percent of Bukhara's (including neighboring town Kagan's) total population of 300,000 have piped water supply and only 50 percent are connected to the sewerage system. All others use on-site facilities such as pit latrines and septic tanks of dubious standards. The sewer system which is 220.3 km long (203.9 km in Bukhara and 16.4 km in adjacent Kagan) was built in the 1960s and is a pseudo-separate system. There are 16 WWPSs. There are 12 WWPSs being rehabilitated under the original project. Bukhara's only municipal conventional activated sludge WWTP was built in 1966, and the last substantial investment in it was approximately 25 years ago. The effluent is treated by two ponds, chlorinated, and then discharged. The sludge treatment is done using drying beds. The average flow rate arriving at the WWTP equaled 43,300 m³/d with the average influent pollution load equaling 5,500 kg BOD₅/d, that is, 37 g BOD₅/cap/d.
3. **Samarkand Sewerage Project.** At present only about 54 percent of Samarkand's total population of roughly 407,215 is connected to the sewer system. The remaining population depends on on-site facilities such as pit latrines and septic tanks of dubious standards. Almost 100 percent of the population has piped water supply. The sewer system is a pseudo-separate system with a total length of 277 km and a total of six WWPSs. Most of the sewerage system had been constructed in the 1960s. The groundwater table is low, which means there is no infiltration except in a few areas. There are three municipal WWTPs: (a) Main WWTP; (b) Geofizika WWTP; and (c) Farhood WWTP. The Geofizika WWTP is in good condition and working relatively well. The Main WWTP is a conventional activated sludge process type with sludge treatment done using drying beds.
4. The activities proposed to be financed under each component of the project are listed below:

Component A: Institutional Strengthening and Capacity Building (Total Estimated Cost: US\$4.3 million)

5. This component will support a range of institutional-strengthening activities to be implemented at the vodokanal and national levels. At the vodokanal level, it will strengthen the capacity and performance of the BVK and SVK to operate, plan, and manage their systems and social accountability mechanisms. At the national level, it will support strategy development for improved service delivery and regulations. It will also include preparation of feasibility studies, preliminary designs, and bidding documents for future investments.
6. **Subcomponent A1 Bukhara and A2 Samarkand:** will finance activities to improve the vodokanals' capacity to deliver better services. A recently completed short review identified challenges that the utilities are currently facing that include weaknesses in the organizational

structure that impair the utilities from fulfilling its responsibilities; the current commercial and management systems do not support strategic decision-making; and the operational income does not cover operational costs in addition to staffing deficiencies and training needs. The GOU has demonstrated a strong commitment to improve the utility's performance and has requested the Bank to identify a list of technical assistance activities. The technical assistance and capacity building activities are intended to address those challenges over the project duration.

7. The list of activities will include improvement to the managerial competence in the sector through a combination of overseas and local training of managers. Technical and skilled staff require training in the field such as: general management, water and wastewater systems operation and maintenance, consumer accounting, and customer orientation, in addition to:

- Developing an evaluation of long-term wastewater treatment control strategies.
- Diagnosing the condition of existing infrastructure (asset management) and conduct preventive maintenance.
- Enhancing the accounting system and developing the supporting management information system (MIS).
- Improving the internal controls at both entities and introduce and implement effective internal audit activity.
- Improving the transparency and accountability of vodokanals.
- Revising tariffs to support an improved system.
- Reviewing and implementing communications strategies, public awareness campaigns, public awareness sessions, staff trainings, and customer satisfaction surveys.
- Strengthening consumer orientation training, methods to handle complaints, accountability, and corporate governance.

8. All these will be combined with financial performance improvement measures aiming to ensure that these utilities are operated as a financially sustainable enterprises. Measures will include but not be limited to: improving accounting policies and procedures, record-keeping and reporting systems, planning and forecasting practices, budgeting procedures, and financial-oversight responsibilities.

9. **Subcomponent A3:** This component is an important window to continue and strengthen discussions at the national level. It will finance activities to improve the WSS sector performance and provision of WSS services by updating the national strategy for the management and development of the sector; assess and support the revision of technical standards applied in the sector in line with good international practices, and assist in the revision of price setting policies to reflect the principles of cost recovery and existing best practices.

10. **Subcomponent A4:** Feasibility Studies for Future Investments. This subcomponent will cover consultant studies for GoU investments plan in the WSS sectors for the year 2015-2019; it will not limit its scope to Bukhara and Samarkand.

Implementation Schedule for Component A

Component A: Institutional Strengthening and Capacity Building																	
No.	Activity	Year 1				Year 2				Year 3				Year 4			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	
1	Implemnentation of Communication and Public Awareness Strategy for BVK and SVK																
2	Training of BVK, SVK staff on utility management, operation and maintenance of WSS assets etc.																
3	Support to BVK and SVK to improve their financial performance, reporting, internal control, transparancy and accountability																
4	Utility Benchmarking																
6	Support for the improvement of WSS tariff regulation																
5	Assistance for the preparation of a National strategy for the development and management of the WSS sector																
7	Assesemnt and advice for the update of design standards for water supply and wastewater																
8	Feasibility Studies for Future Investments in the WSS sector																
9	Others (Monitoring and evaluation, reporting, coordination and technical support etc.)																

Component B: Physical Investments (Total Estimated Cost: US\$99.2million)

11. This component includes rehabilitation / reconstruction, construction and extension of the sewers, PSs, and WWTPs in Bukhara (Subcomponent B1) and Samarkand (Subcomponent B2). Description of the subcomponents are given below.

12. **Replacement of existing sewers and construction of new sewers.** These will include construction of sewers to connect to existing primary collectors; and replacement or rehabilitation of existing networks. These were selected based on the recommendation of the feasibility study and preliminary engineering design completed by the implementation consultant (IC) under the original project. In Bukhara and Samarkand, 50.7 km and 6.6 km of sewer lines, respectively, have been identified for replacement, and 8.7 km and 54.3 km of new sewers, respectively, will be constructed in areas where urgent improvements are required and there is an urgent need to collect and transfer the sewage from that area into the WWTPs. In addition to the environmental and health-related benefits expected to be received from fixing existing sewers, these investments will increase sewer coverage and generate additional revenue for the vodokanal.

13. **Rehabilitation of existing WWPSs and new WWPSs.** In Bukhara, out of the 16 existing WWPSs, 12 were rehabilitated. In Samarkand, all six existing WWPs were rehabilitated. The proposed AF will fund the replacement of inefficient pumps and the rehabilitation of the civil structures of the main PS and the pressure pipe from the main PS to the Bukhara WWTP. The project will also include the reconstruction of the Beklar PS in Kagan City and the installation of a pressure pipe from the planned PS at Vatanparvar Street (Kagan) to the PS located in the Beklar settlement. In Samarkand, the AF will fund the construction of a PS in the Motrid settlement and the 'Ulugbek' (Kircha *mahalla*) PS in addition to replacing a pressure sewer from Dagbitskaya-Motrid up to the railway bridge (d = 250 mm) and a pressure line SP-3 PS (d = 800 mm).

14. **Main WWTPs in Bukhara and Samarkand.** The main deficiencies can be summarized as follows:

- Partially worn-out civil works, bad concrete quality, reinforcement visible, rusted metallic installations, uneven leveling of effluent weirs

- Worn-out electromechanical equipment
- Unfavorable process boundary conditions
- Lack of sludge dewatering at the WWTP
- Lack of any automation

15. In the original project, the works being implemented at the main WWTPs of Bukhara and Samarkand are (a) rehabilitation and (b) energy efficiency improvement. In both, the project focuses only on the most urgent needs—rehabilitation of some equipment, civil works, and enhancement of energy efficiency.

16. The proposed AF will finance the completion of rehabilitation and upgrading of the wastewater and sludge treatment.

17. There is only one municipal WWTP in Bukhara. The construction of this facility started in 1966 and the last substantial investment was about 25 years ago. Its treatment technology is based on a conventional activated sludge concept, featuring screen, grit chamber, primary sedimentation, aeration tanks, and final sedimentation. The effluent is treated by two ponds, chlorinated, and then discharged. Sludge treatment is done using drying beds. Average flow rate arriving at the WWTP equaled 43,300 m³/d, that is, 290 l/cap/d in 2007; average influent pollution load equaled 5,500 kg BOD₅/d, that is, 37 g BOD₅/cap/d. The original project is financing implementation of phase I which includes rehabilitation of concrete structure and replaces the electromechanical equipment for the following existing buildings:

- Construction of new screen building
- Rehabilitation of grit and sand removal
- Primary sedimentation tanks (PSTs) (2 tanks); sludge PS No.1
- Secondary sedimentation tank (2 tanks)
- Control room for secondary sedimentation tanks (2)
- Blower house and PS
- Aeration tank
- Rehabilitation of guard room; external works

18. **Main WWTP in Samarkand.** The Main plant is located in the north eastern part of Samarkand. The treatment technology is conventional activated sludge. The nominal capacity is 139,000 m³/d. The plant has inefficient hydraulic water distribution to the process units. In addition, the electrical/mechanical equipment has exceeded its operational life, making the plant inefficient. Furthermore, civil structures have deteriorated in numerous places.

19. The original project is financing the implementation of phase I, which includes rehabilitation of the concrete structure and the replacement of electromechanical equipment for the following existing buildings:

- Rehabilitation of inlet screens building: grit removal tanks, PSTs, and drying beds
- Rehabilitation of existing WWTP laboratory, including guard room
- Construction of a new chlorination building
- New chlorine storage, drainage pump station, and distribution chamber

- Complete installation of electromechanical equipment inside the following new buildings: electrical room for screen and the PST, electrical room for chlorination building and chlorination store, electrical room for apartment and laboratory, and control room between PSTs
- External 400 V cables and 6 KV temporary cables and external piping works (gravity and pressure pipelines)

20. The AF will finance the completion of the rehabilitation and upgrading of the wastewater and sludge treatment plants and reuse facilities (only for Bukhara city) as detailed in table 2.1.

21. Farhood WWTP, built in 1983, serves a population of 5,200 and several industrial enterprises. The plant is nonoperational and a new plant should be constructed. The AF will finance the construction of new WWTP facilities.

22. **Operational equipment.** The vodokanals will prepare, perform an inventory, and analyze the existing equipment. A list of required equipment and purchases will be prepared.

23. **Engineering consultant.** This component will support construction supervision consultancy and provide start-up assistance during the first six months of the new installations' operations and any other services required by the project during implementation.

Component C: Project Management (Total Estimated Cost: US\$1.5 million)

This component will finance the PCU in Uzkommunkhizmat in Tashkent and two PIUs in the BVK and SVK. Support will include training, staffing, and M&E, as well as the annual project financial and technical audits of the utilities. It will support technical, environmental, and social monitoring (for example, periodic beneficiary assessments to determine consumer satisfaction, connection rates, and the effectiveness of public awareness campaigns).

Project cost summary				
Project Cost by Component and/or Activity	Local US \$ million	Foreign US \$ million	Total US \$ million	
Bukhara				
Component A 1 - Institutional Strengthening and Capacity Building	0.32	0.14	0.47	
Component B1 - Physical Investment	34.14	18.38	52.52	
Sum B (Including Physical and Price Contingencies)	34.46	18.52	52.99	
Samarkand				
Component A 2 - Institutional Strengthening and Capacity Building	0.37	0.16	0.53	
Component B2 - Physical Investment	30.34	16.34	46.68	
Sum S (Including Physical and Price Contingencies)	30.71	16.50	47.20	
Total Cost: Bukhara and Samarkand	65.17	35.02	100.20	
PCU				
Component A3 - Institutional Strengthening and Capacity Building -National level	1.05	0.45	1.50	
Component A4 - Feasibility Studies for Future Investment	1.26	0.54	1.80	
Component C - Operating Cost	1.05	0.45	1.50	
Total PCU	3.36	1.44	4.80	
Total Project Cost	68.53	36.46	105.00	

Component A1/ Bukhara Institutional Strengthening and Capacity Buidling

	Total Cost (US\$ million)	
1. Implementation of Communication and Public Awareness Strategy for BVK and SVK (public awareness campaigns, media material, website, etc)	-	85,600
2. Travel , accomodation & per diem of consultant (one round trip)	-	4,280
3. Public awareness survey, user satisfaction survey		12,840
4. Annual training in utility management, O&M, asset managemnet & Communications		53,500
5. supprt to BVK and SVK to improve financial performanc e, internal control transparaency and accountabilit (installation of accounting systems and MIS)		267,500
6. Management training		17,976
7. Utility Benchmarking		6,420
8. Workshop and Seminars		10,700
9. Other Training		10,700
Grand total		469,516

Component B 1/ Bukhara Physical Investment

		Totals
(a) Rehabilitation / Upgrading of wastewater treatment plant	Complete rehabilitation and upgrad Detales in Table 2.1	12.08
(b) Rehabilitation of existing wastewater pumping stations (WWPSs)	2 pcs.	1.37
(c) Expansion of sewer system	8.7 km	5.59
(d) Rehabilitation and replacemnet of exsiting sewer systems	50.7km	30.51
(e) Operational equipment	Equipment for sewer cleaning & maintenance	1.48
(f) Engineering Consultant	Pre-contract services (assistance during award of contracts), construction supervision, start-up assistance and detailed design for PS and sewers	1.50
Total		52.52

Component A 2/ Samarkand Institutional Strengthening and Capacity Building

		Total Cost (US\$ million)
		Total
1. Implementation of Communication and Public Awareness Strategy for BVK and SVK (public awareness campaigns, media material, website, etc)		85,600
2. Travel, accommodation & per diem of consultant (one round trip)		4,280
3. Public awareness survey, user satisfaction survey		12,840
4. Annual training in utility management, O&M, asset management & Communications		53,500
5. Support to BVK and SVK to improve financial performance, internal control transparency and accountability (installation of accounting systems and MIS)		321,000
6. Management training		17,976
7. Utility Benchmarking		8,560
8. Workshop and Seminars		10,700
9. Other Training		10,700
Grand total		525,156

Component B 2/ Samarkand Physical Investment

		Totals with Contingencies
(a) Rehabilitation / Upgrading of wastewater treatment plant	Complete rehabilitation and upgrade Details in Table 2.1	15.16
(b) Farhood WWTP rehabilitation	Construction of new WWTP	5.51
(c) Rehabilitation of existing and construction of new wastewater pumping stations (WWPSs)	2+	2.28
(d) Expansion of sewer system	54.3 km	17.21
(e) Rehabilitation and replacement of existing sewers	6.6km	4.10
(f) Operational equipment	Equipment for sewer cleaning & maintenance	0.86
(g) Engineering Consultant	Pre-contract services (assistance during award of contracts), construction supervision, start-up assistance and detailed design for PS and sewers	1.50
Total		46.62

Table 2. 1: Physical Investment Component Activities Included in the Original Project and in the Proposed AF

physical Investment	Bukhara City		Samarkand City	
	Original project	AF	Original project	AF
Rehabilitation and replacement of existing sewers	32 km	50.7 km	27.75 km	6.6 km
Expansion of sewer systems	2.5 km	8.7 km	4.8 km	54.3 km
Rehabilitation of existing PSs (WWPS)	10 PSs	2 PS	5 PSs	–
Construction of new WWPS	2 PS	–	1 PS	2 PSs
Rehabilitation of existing WWTP One in Bukhara influent and effluent samplers Flow measurement New fine screen New aeration system New return sludge pumps Rehabilitation of laboratory Samarkand influent and effluent samplers, flow measurement, new fine screen, new aeration system Farhood WWTP: General rehabilitation	Construction of new screen building; rehabilitation of grit and sand removal; PSTs (2 tanks); sludge PS No. 1; secondary sedimentation tank (2 tanks); control room for secondary sedimentation tanks (2); blower house and PS; aeration tank; and rehabilitation of guard room; external works	Rehabilitation of PSTs (2 tanks); PS and blower house; chlorination building; sludge PS No. 2; secondary sedimentation tank (2 tanks); control room for secondary sedimentation tanks (2); blower house and PS; aeration tank (3 tanks); and rehabilitation of sludge drying beds (12); external works New distribution chambers (2) for primary and secondary sedimentation tanks New Cl ₂ contact tank New sludge thickeners and control room between thickeners. For reuse facilities will include PS and connection to irrigation system (pressure pipe),	Rehabilitation of inlet screens building: grit removal tanks; PSTs, drying beds; rehabilitation of laboratory and guard room; construction of a new chlorination building; new chlorine storage, drainage pump station, and distribution chamber Complete installation of electromechanical equipment inside the following new buildings: electrical room for screen and PST; electrical room for chlorination building and chlorination store; electrical room for apartment and laboratory; control room between PSTs; external 400 V cables and 6 KV temporary cables; and external piping works (gravity and pressure pipelines)	Rehabilitation of sludge PS; contact tanks; air blower room; grit removal chamber; PSTs; aeration tanks; secondary sedimentation tanks; control room between PST sludge thickeners; ew distribution chamber before aeration tank; drying beds and construction of new ones; boiler room; workshops; guard room and shower facilities rooms Construction of the Farhood WWTP
Operational equipment	Sewers cleaning and maintenance, cesspool emptier, excavator, workshop, and administration equipment		Sewers cleaning and maintenance, cesspool emptier, excavator, workshop, and administration equipment	
Engineering consultant	Final project definition, detailed design, bidding documents, assistance during award of contracts, construction supervision, start-up assistance	Consultancy services for preparation of detailed design and construction supervision, and other consultancy services needed by project components	Final project definition, detailed design, bidding documents, assistance during award of contracts, construction supervision, start-up assistance	Consultancy services for preparation of detailed design and construction supervision, and other consultancy services needed by project components

Project Implementation Plan

Expected Effectiveness date: October 1, 2015																				not including DLP	
No.	Contract Description	P, R, A ²	Contract Type ³	Prior/Post	Year 1				Year 2				Year 3				Year 4			Construction Period (Months)	
					Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3		
Bukhara Sewerage System																					
1	Completion of the main WWTP rehabilitation and upgrading	P	ICB	Prior			3	3	3	3	3	3	3	3						24	
		R																			
		A																			
2	Sewers collection (total of about 59.9 km of sewers including replacement and construction of new)	P	ICB (2-3 packages)	Prior				3	3	3	3	3	3	3	3	3	3	3		30	
		R																			
		A																			
3	Reconstruction of sewage pumping station including replacement of mechanical and electrical equipment	P	S&I	Prior				3	3	3	3	3	3							18	
		R																			
		A																			
Samarkand Sewerage System																					
4	Completion of the main WWTP rehabilitation and upgrading	P	S&I Works	Prior			3	3	3	3	3	3	3	3						21	
		R																			
		A																			
5	Construction of Farhod WWTP	P	ICB	Prior						3	3	3	3	3	3	3	3	3		24	
		R																			
		A																			
6	Sewers collection (total of about 61 km of sewers including replacement and construction of new ones)	P	ICB (2-3 Packages)	Prior					3	3	3	3	3	3	3	3	3	3		27	
		R																			
		A																			
7	Construction of two new sewage pumping stations and pressure sewers	P	ICB	Prior					3	3	3	3	3	3						18	
		R																			
		A																			
Institutional and capacity building component																					
	Institutional Strengthening and Capacity Building	P																		45	
		R																			
		A																			
Project Management Component																					
	PCU operating cost PIU operating cost Audit	P																		45	
		R																			
		A																			
All cost estimates to be reviewed and corrected. All will be ICB bidding																					
DLP Defects Liability period																					
Construction Period																					
Pre-contract award (design, tender documents and bidding stages)																					
Institutional and capacity building and project management component (continuous activities)																					
Audit																					
Contract Type																					
ICB = International Competitive Bidding																					
NCB = National Competitive Bidding;																					
S&I = Supply and Install																					
Project Id : P152802																					
Version: Negotiations																					
Date: May 19, 2015																					

Annex 3: Implementation Arrangements

UZBEKISTAN: AF for Bukhara and Samarkand Sewerage Project

Project Institution and Implementation Arrangements

24. The project will be implemented with a structure that will provide continuity from the ongoing BSSP. The PCU established under the state agency for public utilities (Uzkommunkhizmat) have a project coordination role. The PCU reports to the Uzkommunkhizmat and the Interministerial Coordination Council (IMCC), which shall have representatives from the local governments and key agencies of the central government (Cabinet of Ministers, MoF, MFERIT, State Committee of Architecture and Construction, MoE, and Uzkommunkhizmat). The IMCC is headed by the deputy prime minister and provides policy guidance regarding project-related issues and activities. The IMCC shall meet at least quarterly to review the progress of project implementation. The IMCC will be the forum to discuss policy issues in the sector related to project implementation. The executing agencies of this project are the Bukhara Regional and Samarkand Regional Water and Wastewater Utilities, vodokanals, BVK and SVK. The BVK and SVK with the support of their respective PIUs will be responsible for implementation of sub-componenets A1, A2 and B1, B2, respectively, of the Project; and communication with the Bank.

25. The two PIU established under the authority of the regional government offices of Bukhara and Samarkand and vododkanals will be responsible for day-to-day project coordination and M&E. The BVK and SVK vodokanals operate as government-owned enterprises (Regional Production Enterprises). The two vodokanals with the support of the PIU will be responsible for carrying out the procurement of goods, works, and services in accordance with the Bank's Procurement Guidelines, including contract signature, management, and disbursement. Regional governments will provide the necessary support to the vodokanals and the PIUs to perform their responsibilities and obligations.

26. The PCU will implement sub-componenet A3 and A4 and componenent C and will coordinate with the PIUs in their functions of coordinating, monitoring, and evaluating the project activities and their implementation. This PM organization is designed to avoid delays in the decision-making process during project implementation.

27. The PCU and PIUs have been fully staffed and operational since 2002 under the closed Bukhara and Samarkand Water Supply Project, the ongoing BSSP, Syrdarya Water Supply Project, and Alat and Karakul Water Supply Projects and have acquired adequate experience in IDA and Bank-financed project implementation.

28. The PCU is staffed with a project coordinator, financial manager, accountant, and procurement specialist. The PIUs in Bukhara and Samarkand are staffed with heads of the PIU, chief accountants, procurement specialists, civil engineers, and support staff. The PIUs will receive technical support from an international consulting team with expertise in project implementation and construction supervision.

Procurement

29. Procurement for the proposed project will be carried out in accordance with the Bank's Guidelines: Procurement of Goods, Works and non-Consulting Services under IBRD Loans and

IDA Credits & Grants by World Bank Borrowers, dated January 2011 and revised in July 2014 (Procurement Guidelines); Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by World Bank Borrowers, dated January 2011 and revised in July 2014 (Consultant Guidelines); and provisions stipulated in the Financing Agreement. If there is a conflict between government decrees, rules, and regulations and the Bank Procurement and Consultant Guidelines, then the Bank Guidelines shall prevail. For each contract to be financed by the Bank, the different procurement methods or consultant selection methods, the need for prequalification, estimated costs, prior review requirements, and the time frame are agreed between the recipient and the Bank project team in the Procurement Plan. The Procurement Plan will be updated at least annually or as required to reflect actual project implementation needs and improvements in institutional capacity.

30. The items to be procured would include the following:

- (a) **Procurement of works.** There are seven International Competitive Biddings (ICBs) envisaged for works involving (i) upgrading and reconstruction of the WWTPs in the two cities; (ii) sewers collection network reconstruction in Bukhara; and (iii) reconstruction of sewage PSs and replacement of mechanical and electrical equipment. The Bank's Standard Bidding Document (SBD) for large works will be used.
- (b) **Procurement of goods.** These goods will be procured by following the ICB procedures. The Bank's latest SBDs will be used for procurement of goods. The Procurement Plan agreed with the Bank would determine the procedures for smaller procurement, if any.
- (c) **Consulting services.** Major consulting services will include (i) engineering consultancy (design, supervision, and TA); (ii) other consultancy services (under the institutional and capacity building component); (iii) PIU consultants; and (iv) financial audit. Quality and Cost Based Selection (QCBS), Least-cost Selection (LCS), and other procedures indicated in the Procurement Plan shall be applied.

Procurement Arrangement and Staffing

31. The ongoing project experienced tremendous delays and some governance issues in procurement. There was misprocurement because of delays in contract implementation after signing the contract due to contract registration by the MFERIT. Procurement responsibility in the original project was with the PCU under the Uzkommunkhizmat based in Tashkent while the PIUs were assisting the PCU at Tashkent in bidding document preparation and bid evaluation.

32. Based on the implementation review that started in early 2013, the procurement arrangements for the AF will be changed and the PIUs at Bukhara and Samarkand will have full responsibility for procurement. The PCU in Tashkent will only be responsible for monitoring the procurement plan, collecting the data, preparing consolidated reports on project implementation, and rendering the support required to the PIUs in Tashkent. The PIUs in Bukhara and Samarkand will be responsible for the day-to-day implementation of the project. The PIUs are fully staffed and are implementing the current BSSP and will continue under the AF. The engineering consulting firm will provide support to the PIUs to prepare the bidding documents and render procurement advice during the evaluation. Therefore, a procurement specialist with experience in the water sector and Bank-financed projects will be required as part of the consultancy firm team. Selection of a project IC will be initiated immediately.

33. The procurement specialists and the relevant staff of the PIUs also have experience implementing Bank projects. The related vodokanal staff, evaluation committee members, and the PCU staff shall be trained on the Bank's Procurement Guidelines.

34. Following a memorandum of understanding (MoU) signed on January 8, 2014, between the Bank and the government, the project will initiate advance procurement.

35. The project will provide adequate additional budget to cover procurement consultant and procurement specialist training; staff and consultants' training costs; and equipment needed for the PM.

Record Keeping

36. The procurement specialists of the PIUs in Bukhara and Samarkand will be responsible for maintaining the procurement files and records for their cities. Separate files should be maintained for each contract (including both hard copy and electronic copy). All the procurement documents (including bids and technical and financial proposals of consulting services) should be kept till the end of the project and then transferred to the government archives. The originals of various valuable documents (such as bid security, performance guarantee, and advance guarantee) are being kept in a safe by the PIU's accountant.

Risk Analysis and Mitigation Measures

37. The country procurement assessment conducted in 2003 (by the Bank and ADB) identified the following weaknesses in the public procurement system in Uzbekistan: (a) absence of a unified legislative framework; (b) inefficient and nontransparent procurement practices; (c) absence of a single institution with oversight or regulatory authority for public procurement; (d) complicated internal review and approval of bid evaluation reports, which leads to low accountability and delays; (e) no comprehensive anti-corruption measures; and (f) weak capacity for reviewing bidders' complaints—low skills/capacity of the staff handling public procurement at every administrative level. Private sector suppliers, contractors, and consultants remain unsatisfied with the rules governing public procurement and have little confidence in the system's fairness. Though the government has started extensive reforms of its public procurement system, the recent assessments under the CIFA and PEFA studies indicate that there is not much change in the public procurement environment yet. Thus, the procurement environment is considered a high risk.

38. The capacity of the PCU and PIUs has been assessed and found satisfactory. The procurement capacity assessment identified the following additional risks related to government decrees, rules, and regulations that weaken accountability of the vodokanals, PCU, PIUs, and project implementation: (a) price verification which has internal conflict in major provisions; (b) requirement to get clearance from an eleven-member Interministerial Bidding Committee (IMBC) at each stage of procurement leads to tremendous delays—from bid opening to the start of contract implementation takes a minimum of 6 to 12 months, signing minutes take at least 2 months; (c) considerable procurement delays caused by contract expertise of the MFERIT that involves contracts with international contractors and consultants and imported goods contracts; and (d) difficulties to obtain a bank guarantee for bid security and performance security by the local bidders and no availability of alternative instruments for such purposes in the country banking system, in particular, joint ventures. The risks identified and mitigation measures are summarized in the table below.

Description of Risk	Rating of Risk	Mitigation Measures	Residual Risk
The government decrees, rules, and regulations have internal conflict in major provisions such as price verification.	S	The Bank Procurement and Consultant Guidelines shall be followed.	M
The requirement to get clearance from an eleven-member IMBC at each stage of procurement leads to tremendous delays and dilutes accountability of the PCU, PIUs, and the vodokanals in procurement and project implementation.	H	There is no effective mitigation measure.	H
The difficulty in obtaining a bank guarantee for bid security and performance security by the local bidders and nonavailability of alternative instruments for such purposes in the country banking system, in particular, joint ventures	H	The project team is in a discussion with the commercial banks and is unable to find a solution at this stage.	H
There are a number of bid evaluation committees and stages and the interdepartmental tender committee consists of 11 members and the signing minutes take at least 2 months.	H	The project team is discussing this in the country portfolio performance review meeting and will follow up accordingly.	H
Import contract registration requirements are arduous and may seriously impact procurement and contract implementation.	H	The project team will monitor contract award notification and publication of contract award details according to Bank Procurement and Consultant Guidelines. The team will further monitor receipt of signed prior review contracts and take timely action to ensure Bank Guidelines are followed.	S
Staff of the implementing agency have limited experience with Bank procedures and guidelines.	S	The PCU staff have attended the Bank's regional procurement training in April 2014 and the Bank would suggest similar training for the PSs and technical staff too. Having a qualified international procurement consultant as part of the project IC and support rendered in the procurement shall reduce this risk further.	M
Government officials may intervene in the procurement decisions under the project.	H	The existing project operations manual (POM) clearly decides the responsibilities of the project stakeholders in the procurement process. Strict adherence to the Bank's Procurement Guidelines would minimize this risk further. The Bank will follow up closely to ensure that the Bank's procurement procedures are followed strictly. Any complaints shall be handled consistently and followed up till fully addressed.	M

Description of Risk	Rating of Risk	Mitigation Measures	Residual Risk
Average	H		S

Note: H - High; S - Substantial; M - Moderate; and L - Low.

39. The current POM prepared for parent project reflects the detailed internal approval stages and the approval process and has to be revised to reflect changed functions. Price verification and reasonableness of the recommended contract value will be carried out as part of the bid evaluation. The contracts will be awarded and signed as soon as the Bank's no-objection is issued and a copy of the signed contract and performance security (whenever required) is submitted to the Bank within six weeks of the Bank's no-objection to the Bids Evaluation Report (BER). The POM will be revised to include complaint registration and handling mechanism so that all complaints are treated fairly and openly.

40. The PIUs in Bukhara and Samarkand have developed a Procurement Plan for the entire period of project implementation in both cities. This Procurement Plan will be continuously updated as the project progresses and will be reviewed and approved by the Bank accordingly. The Procurement Plan was published on the Bank's external website on May 29, and the Uzkommunkhizmat, BVK, and SVK websites on June 1, 2015. The POM will provide details regarding the appropriate mechanisms for procurement according to Bank Guidelines. The General Procurement Notice (GPN) and advertisement of procurement opportunities will be published on the abovementioned websites and in the Uzbek media. The ICBs and major consultancy services will also be published on the Bank's external website and in United Nations Development Business (UNDB). The project procurement plan with tentative dates is given below. The recipient has the option of not disclosing the cost estimates while disclosing or publishing the Procurement Plan.

41. Routine procurement reviews will be provided by the procurement specialist based in the region or country office. In addition, supervision missions are expected to take place every year during which ex post reviews will be conducted for the contracts that are not subject to Bank prior review on a sample basis (for example, 15 percent of the number of contracts). One ex post review report will be prepared for each fiscal year, including findings of physical inspections for not less than 10 percent of the contracts awarded during the review period.

42. The following documents shall be disclosed on the websites of the Uzkommunkhizmat and vodokanals: (a) Procurement Plan and updates; (b) invitation for bids for goods and works for all ICB and National Competitive Bidding (NCB) contracts; (c) request for expression of interest for selection or hiring of consulting services; (d) contract awards of goods and works procured by following the ICB/NCB procedures; (e) list of contracts and purchase orders placed following shopping procedure on quarterly basis; (f) short list of consultants; (g) contract award of all consultancy services; (h) list of contracts following Direct Contracting (DC), Selection Based on Consultants' Qualifications (CQS), or Single-Source Selection (SSS) on a quarterly basis; (i) monthly physical and financial progress of all contracts; and (j) action taken report on the complaints received on a quarterly basis. The works bidding documents shall include a clause to put up a notice board at the construction site disclosing the contract details (description, contractor name and contract amount, starting date, completion date, physical progress, and financial progress).

43. The following details shall be sent to the Bank for publishing on the Bank's external website and in the UNDB: (a) invitation for bids for procurement of goods and works using ICB procedures; (b) request for expression of interest for consulting services with estimated cost more than US\$300,000; (c) contract award details of all procurement of goods and works using ICB procedure; (d) contract award details of all consultancy services with estimated cost more than US\$300,000; and (e) list of contracts and purchase orders placed following the SSS, CQS, or DC procedures on a quarterly basis.

Procurement Plan - Works and Goods

Description	Procurement Method	Bank Review (Prior/Post)	Date of Draft Bidding Document to Bank	Date of Contract Completion
Bukhara: Completion of the WWTP Rehabilitation and upgrading, and construction of reuse facilities	ICB	Prior	June 10, 2015	September 28, 2018
Bukhara: Replacement of about 50.7 and construction of new about 8.7 kilometer of sewers collection (total of 59.4 km) (three packages)	ICB	Prior	December 2015	April 29, 2019
Bukhara: Reconstruction of sewage PSs and replacement of mechanical and electrical equipment	ICB	Prior	December 2015	April 30, 2017
Samarkand: Completion of the rehabilitation and upgrading of the main WWTP	ICB	Prior	June 10, 2015	September 30, 2017
Samarkand: Reconstruction of Farhood WWTP	ICB	Prior	May 2016	December 30, 2017
Samarkand: Replacement of about 6.6 and construction of new about 54.3 kilometer of sewers collection (total of 60.9 km) (three packages)	ICB	Prior	December 2015	March 29, 2019
Samarkand: Reconstruction of sewage PSs and replacement of mechanical and electrical equipment	ICB	Prior	September 2015	January 30, 2018
Bukhara and Samarkand: Equipment for strengthening the material and technical base of vodokanals	Shopping	Prior	March 10, 2016	September 30, 2016

- *The sewer length will be confirmed following completion of detailed design*

Procurement Plan - Consultancy

Description	Procurement Method	Bank Review (Prior/Post)	Draft RFP (Incl. TOR, Short List) to the Bank	Date of Contract Completion
Engineering consultancy	QCBS	Prior	June 2015	June 2019
Other consultancy services	QCBS	Prior	August 2015	June 2019
PCU consultants/staff*	IND/DC**	Prior	n.a.	June 2019
Financial audit	LCS	Prior	December 2015	June 2019

Note: * Numerous individual consultants, PCU staff; ** For current PCU staff only.

Thresholds For Procurement Methods and the Bank's Prior Review

Expenditure Category	Contract Value Threshold (US\$)	Procurement Method	Contracts Subjects to Prior Review (US\$)
Goods (including technical services)	≥1,000,000	ICB	All ICB contracts
	≤1,000,000	NCB	First 2 contracts amounting >500,000
	<100,000	Shopping	First 2 contracts
	n.a.	DC/SSS*	≥20,000
Works	≥5,000,000	ICB	All ICB contracts
	≤5,000,000	NCB	First 2 contracts amounting ≥1,000,000
	>200,000	Shopping	First 2 contracts
	n.a.	DC/SSS*	≥20,000
Consultant Services (including training)	≥300,000	QCBS/QBS/LCS/FBS ^{a/b}	≥300,000 for firms
	<300,000	CQS	First 2 contracts
	n.a.	SSS*	≥20,000
	n.a.	Individual Consultant	None

Note:

a. Short list may consist entirely of national consultants for assignments of less than US\$300,000 equivalent per contract.

b. As appropriate, these methods may be adopted for assignments costing less than US\$300,000.

QBS - Quality Based Selection.

FBS - Fixed Budget Selection.

* To be reflected and agreed in the Procurement Plan in advance.

Anti-corruption Measures

The Bank's Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants, dated October 15, 2006 and revised in January 2011, and the transparency and disclosure provisions of the Bank's Procurement and Consultants Guidelines (published in January 2011 and revised in July 2014) will apply.

Financial Management

44. **FM arrangements.** The overall FM functions under the project, including the flow of funds, staffing, accounting, reporting, and auditing, will continue to be handled by the PCU and PIUs. The overall FM risk for the project remains Substantial.

45. **Budgeting and planning.** The annual budget of the AF will comprise the constituent part of the budget of the parent project and will be based on the final Procurement Plan as discussed and agreed with the PCU's coordinator and approved by the Bank. All changes to the Procurement Plan will be reviewed by the PCU's coordinator and approved by the Bank.

46. **Accounting and maintaining of accounting records.** The accounting and financial reporting mechanisms will be identical to the original BSSP, that is, the AF accounting will be maintained based on the National Accounting Standards of Uzbekistan. For reporting purposes, cash-basis International Public Sector Accounting Standards and the Bank's FM guidelines for borrowers will be used under the project. The internal control accounting system that is being modified under the original project will be used for recording the AF accounting transactions.

47. **Internal controls.** The significantly enhanced BSSP Financial Management Manual (FMM) part of the POM, will be used under the proposed AF. The FMM has been substantially modified and now properly documents revised internal control and accounting policies and procedures, including division of responsibilities among project staff (including PIUs); safeguard of assets; bank reconciliation; XDR/U.S. dollar reconciliation; contract management procedures; description of financial documents flow and circulation, including authorization of expenditures and approval of the payments; and verification of expenditures eligibility by the financial manager which incorporates project applicable sample formats, including proforma IFRs and financial statements, bank, cash, and XDR/U.S. dollar reconciliation statements.

48. The MIS system is being developed on the PHP platform and will be linked with the accounting system in real time. It will also include a contract management module and will allow remote access to the system for the PCU and PIUs. Such arrangements will significantly improve internal controls and also allow uninterrupted access to the system for all parties involved in processing contracts (that is, the PIUs) procurement specialists, financial analysts, and engineers) and financial staff of the PCU and PIUs.

49. **Staffing.** There are no staffing changes anticipated under the proposed project.

50. **Financial reporting.** The IFRs under the ongoing BSSP prepared by the PCU are usually submitted to the Bank on time.

51. Timely submission of the IFRs is expected as internal control modification is being finalized and the IFRs will be produced in every calendar quarter throughout the lifetime of the project. The format of the IFRs has been agreed during the assessment and should include (a) project sources and uses of funds; (b) uses of funds by project activities; (c) designated account statements; (d) disbursement summary; and (e) a statement of expenditure withdrawal schedule. The IFRs will be produced by the accounting software. These financial reports will be submitted to the Bank within 45 days of the end of each calendar quarter.

52. **External audit.** Similar audit arrangements will be adopted for the AF. The project audit will be conducted by independent private auditors and on TOR acceptable to the Bank and procured by the PCU. Significant improvements with regard to the timely submission of the audit reports are expected as there is an ongoing valid audit contract for fiscal 2015 and 2016, and the audit selection process for the following periods will be initiated long in advance. The annual project audit and the entity (vodokanal) financial statements and audit reports together with the management letter will be provided to the Bank within six months of the end of each fiscal year and also at the closing of the project.

53. In the most recent audit reports for fiscal 2013, the auditor expressed an unmodified (clean) opinion on the project financial statements as maintained by the PCU. However, the same auditor has issued a disclaimer of opinion for both vodokanals' financial statements. The disclaimer was issued due to the following reasons: (a) inability of the auditors to collect enough audit evidence to assure proper valuation of the fixed assets that comprise around 87 percent of all companies' assets as reported in the statements of financial position as of December 31, 2013; (b) inability of the auditors to obtain sufficient audit evidence on the completeness and accuracy of the revenue and receivables of individual customers due to the limitations of the billing system; and (c) lack of sufficient appropriate evidence with respect to the share capital reported in the financial statements.

54. The auditor's management letters have also signaled internal control issues at the PCU level as well as within the BVK and SVK entities, including the absence of source documents supporting the formation of the share capital, non-performance of the impairment testing of fixed assets, improper recognition of accounts payables and receivables, incorrect capitalization of the borrowing costs, and drawbacks of the internal control systems at the vodokanals. Ongoing FM capacity-building activities financed under the original project aimed at elimination of the FM drawbacks at the vodokanals will be further expanded significantly under AF.

55. The auditor's management letters have also signaled internal control issues at the PCU level as well as within the BVK and SVK entities, including the absence of source documents supporting the formation of the share capital, non-performance of the impairment testing of fixed assets, improper recognition of accounts payables and receivables, incorrect capitalization of the borrowing costs, and drawbacks of the internal control systems at the vodokanals. Ongoing FM capacity-building activities financed under the parent project aimed at elimination of the FM drawbacks at the vodokanals will be further expanded significantly under AF. In particular capacity building activities, will include implementation of effective MIS, internal audit functions and extensive training of the Vodokanals staff to address the internal control drawbacks at Vodokanals.

56. **Flow of funds and disbursement arrangements.** The AF will disburse as it was done with the parent credit. Credit funds will flow to the project through disbursements to a separate designated account (DA) maintained by the PCU within State Agency for Public Utilities (Uzkommunkhizmat). In order to facilitate the flow of funds to the BVK and SVK, the GoU will enter into subsidiary credit agreements with both BVK and SVK. The requirements for the subsidiary agreements will be outlines in the financing agreement for this AF, including requirements on operating costs coverage ratios. The AF to the original BSSP will follow transaction-based disbursement procedures (advances to the DA, documentation of the advances based on statements of expenditures and supporting documents, direct payments, and special commitments). Withdrawals from the credit account will be requested according to requirements in the Disbursement Letter. The ceiling of the designated accounts will be US\$4,000,000. Withdrawal applications will be signed by two persons: (a) an authorized representative of the borrower (MoF) and (b) another designated official, such as the PIU Bukhara director, or other persons delegated in writing by the MoF.

57. Disbursements will be made on the basis of full documentation: (a) works contracts over US\$500,000 each; (b) goods and services contracts for consulting firms over US\$100,000 each; and (c) individual consultants' contracts over US\$50,000 each. Disbursements under these amounts and training and operating costs will be made according to certified Statements of Expenditure. Documents to support the Statements of Expenditure will be held by the PCU for at least one year after the IDA receives the audit report for the fiscal year in which the last withdrawal from the credit account was made. This information will be available for review during Bank staff supervision missions and for annual audits that assess the propriety of Statement of Expenditure disbursements and the quality of the records.

Social

58. Increased access to wastewater services and improved quality of sewerage services under the AF will contribute to enhanced social welfare for the beneficiary population in the project

areas. Increased access to services and better disposal of sewage will contribute to a cleaner environment and bring health benefits and increased comfort. Indirectly, as both Bukhara and Samarkand are important tourist centers, improved sewerage services could have a positive impact on tourism through associated tourist facilities such as restaurants and cafés. The expanded and improved services will benefit both more and less well-off households in the project areas and will contribute to shared prosperity.

59. **Citizen engagement.** Information provided by the wastewater utilities is often discretionary and the social assessment carried out for the original project indicated that residents were dissatisfied both with the vodokanals' attempts to respond to service problems and provision of information about any improvement plans. The development of the three-year Customer Services and Public Awareness Strategy is in progress. The AF places renewed emphasis on the planned customer services and public communications activities. The outreach activities will be tailored to the needs of specific stakeholder groups such as schoolchildren or people responsible for paying utility bills. The three-year Communication and Public Awareness Strategy for the wastewater utilities is under development. The implementation of this strategy will be monitored as part of the results framework. To measure the improved performance of customer relations aspects, the project will carry out yearly beneficiary surveys.

60. Assistance for improving customer services will be provided for the utilities through a series of training events and expert support to develop communication materials. Activities that are part of the three-year Customer Services and Public Awareness Strategy include training for vodokanal staff on customer services (initial and follow-up trainings); strengthening of mechanism for managing inquiries, complaints, and sharing of information; public awareness outreach sessions; dissemination of information materials; and yearly customer satisfaction surveys. A consultant firm was hired to develop the three-year strategy and provide initial training and materials. The vodokanals are responsible for implementing the strategy as part of their gradual capacity development in customer services. Timely support for implementation of the strategy, notably the customer surveys, and improving customer inquiry mechanisms will be procured under the AF to assist the BVK and SVK. To monitor progress in customer services, a projects indicator on 'percentage of customers satisfied with the services received' is included in the project result framework. This will be disaggregated by gender to provide an early indication of and address any potential impacts disproportionately affecting women or men.

61. **Gender aspects.** The project will benefit both women and men in the project areas. However, given the women's responsibility for the hygiene of children and other family members as well as their greater propensity to work in the house,⁴ the project will bring particular benefits to women. In public buildings, improved wastewater services will similarly improve comfort and could have a particularly beneficial impact on, for example, female students. In schools, inadequate facilities have been linked to absenteeism among girls, especially adolescents.⁵ Social studies undertaken for other Bank-financed projects in Uzbekistan have pointed to gender dimensions within communication strategies. These indicated that men had significantly more access to

⁴ Time-use studies in Uzbekistan show that women spend almost three times more time than men engaged in unpaid work. Women use almost 63 percent of this time for housekeeping. Men spend only 11.5 percent of their time on such activities. State Committee of the Republic of Uzbekistan on Statistics. 2002. *Women and Men of Uzbekistan in 2002*. Tashkent. Comparable information was not included in the more recent *Women and Men of Uzbekistan* publications of 2007, 2010, or 2012.

⁵ ADB survey in the Fergana Valley, cited in the 2014 Uzbekistan Country Gender Assessment.

information while women were less satisfied with the information received and more frequently saw radio as an important avenue for receiving information.⁶ The AF will take such dimensions into account in the communication activities conducted for the public.

62. Attention to gender in the AF will be addressed through (a) tailoring of communications material to the needs of different stakeholders (content as well as distribution mode); (b) equal participation in the public outreach sessions and dedicated sessions for women as users and key actors, as necessary (the project aims to have at least 50 percent female attendance in outreach activities overall); (c) invitation of influential female leaders in the community to participate; and (d) selection of the timing and location of public outreach sessions to accommodate people with family responsibilities. At the same time, given the costs associated with connecting to the sewerage network and tariff increases, main decision-makers within households will constitute another key group in terms of information provision.

63. **Social safeguards.** The initial project triggered OP 4.12. The existing RPF, disclosed in the country and at the InfoShop in June 2009 was updated and draft was disclosed in-country on April 14, 2015. The updated RPF will guide the preparation of site-specific RAPs, should they be required for the new construction under the AF. New constructions and expansion of the sewerage network is likely to occur on publicly owned land but might entail privately used land. Livelihoods of small business (kiosk) owners or residents who have planted crops or trees along the pipeline right-of-way may be affected. The team will screen for social impacts (for example, informal occupants, vendors, and small structures such as fences) by ensuring that the TOR for the detailed design includes verifying every right-of-way for the sewerage expansion and network improvements at the two project sites. Dedicated PIU members will also carry out screening upon receiving the detailed design to identify and minimize impacts (for example, redesigning sewerage lines to avoid impacts). The PIUs in Bukhara and Samarkand have acquired sufficient capacity for managing social safeguards under the current project. One site-specific RAP has so far been required in Bukhara and the one affected person was compensated to the satisfaction of the Bank. Dedicated safeguard specialists within the PIUs in the BVK and SVK (one in each PIU) are responsible for the implementation of the RAPs. In addition, selected members of the PIUs participated in a dedicated two-day training organized by the Bank in Bukhara in November 2013.

64. The existing grievance redress mechanism (GRM) under the project will continue to be available to project-affected people. This foresees the *Mahalla* Committee as the primary point of contact for people to submit queries or complaints. If the issue cannot be resolved within one week, the query or complaint is passed on to the Hokkimiyat. In practice, the GRM is little used given the limited land-acquisition-related impacts the project has had to date. With the strengthening of the vodokanals' customer services capacity, the aim is for customers' inquiries and complaints to be channeled, resolved, and monitored through the vodokanal.

65. **Environmental Aspects:** The AF project will support the GOU's efforts to improve sanitation services in Bukhara and Samarkand through infrastructure investments including the rehabilitation, pumping stations and wastewater treatment plants sewage pipelines and limited expansion of existing sewerage networks as well as construction of one new wastewater pumping station in Samarkand. The project will positively affect the environment and quality of life in these two cities due to the improved and expanded collection system and delivery of sewage to

⁶ First customer satisfaction survey in the Bank-financed Syrdarya Water Supply Project and Social Impact Assessment undertaken for the proposed District Heating and Energy Efficiency Project in Uzbekistan.

wastewater treatment plants. Environmental/public health benefits will result from reduced water pollution from uncontrolled discharge of household/industrial sewage water and enhance public health by properly disposing of water treatment sludge and preventing run-off into the soil and surface waters.

66. Environmental Assessment OP/BP 4.01: The project has been classified as environmental category “B,” according to Bank policies, because it will rehabilitate existing sewerage infrastructure was triggered, to deal with potential adverse impacts related to Component B Physical Investments, both vodokanals updated the parent project Environmental Management Plans (EMPs) to analyze potential issues related to the work and ensure they are mitigated in the project design. The draft reports were discussed at public meetings on April 15, 2015 in Bukhara and on April 16, 2015 in Samarkand. The drafts were posted on the BVK and SVK websites in Russian and disclosed at the Bank’s Infoshop in Washington, DC on April 28, 2015. Final reports will be disclosed in inforshop before Board date.

67. Environmental Management Plan: Both EMPs of Bukhara and Samarkand include mitigation measures and monitoring requirements for contractors, PCU and PIUs, vodokanals, municipalities and local institutions to follow during implementation and operations.

68. Responsibilities for daily monitoring during works will be part of construction supervision. It is the contractor’s responsibility to introduce mitigation measures related to possible temporary environmental effects during excavation, as stipulated in the technical specifications of their contracts. Overall EMP implementation will be managed by the PCUs and consultants responsible for preparing the environmental monitoring reports. These should include information about water and soil quality taken from samples in the project area. Both vodokanals have on-site laboratories equipped to routinely monitor (daily) the main environmental parameters as indicated in the project monitoring plan.

69. Projects on International Waterways (OP/BP 7.50). The project will finance: (i) the rehabilitation of existing wastewater treatment plants (WWTPs), pumping stations and sewers; (ii) the construction of three new pumping stations and additional sewer lines within the existing scheme of sanitation services in the cities of Bukhara and Samarkand; and (iii) feasibility studies for future water and wastewater projects. Due to the potential implications on the Zerasfshan and Amu Darya rivers, both of which are international waterways flowing from Tajikistan through Uzbekistan’s territory and into the former delta of the Aral Sea, OP 7.50 was triggered for this operation. However, because of the focus on rehabilitation of existing infrastructure or feasibility studies nature of the activities to be financed, the team sought an exception to the riparian notification requirements in accordance with paragraphs 7(a) and 7(b) of OP 7.50. As part of the request for the exception, the team confirmed that the proposed project activities will not: (i) adversely change the quality or quantity of water flows to the other riparians; and (ii) be adversely affected by the other riparians’ possible water use. As required by OP 7.50 the team advised the client to include an examination of any potential riparian issues in the terms of reference for the feasibility studies of future investments in the water and wastewater sectors. The exception was approved by the RVP on February 11, 2015. Given the additional information that was obtained during the appraisal mission in March 2015, an addendum to the original request for the exception memorandum was prepared confirming that the project would finance the construction of two new pumping stations and additional sewer lines. Final clearance from the RVP of the requested exception taking into account the additional information was received on May 14, 2015.

Annex 4: Implementation Support Plan

UZBEKISTAN: AF for Bukhara and Samarkand Sewerage Project

1. The strategy for implementation support has been developed based on the lessons learned and the AF risk profile. It aims at providing sufficient technical support to the vodokanals and to the PIUs. The plan will ensure fiduciary compliance with Bank guidelines and looks to adequately carry out all risk mitigation measures defined during the assessment of current performance. Specifically, the strategic approach for implementation support includes having taken into account the following:

- (a) The PCU and PIUs have experience in implementing Bank projects.
- (b) Vodokanals have technical skills but are limited in their experience, which could cause implementation delays.
- (c) Government procedures requirements such as contract registration and price verification could result in significant delays.
- (d) Most of the project's interventions are proven and widely used internationally.
- (e) All vodokanals, Uzkommunkhizmat, the MoE, and the MoF understand and agree on the necessity of cost recovery to ensure financial sustainability of the vodokanals.
- (f) A high-level political decision needs to be taken to increase tariffs to allow for cost recovery and social impacts need to be considered.

2. Based on the factors mentioned above, the Implementation Support Plan will focus on:

- (a) Continuing regular training of PCU and PIU staff and vodokanals on Bank Guidelines related to procurement, FM, M&E, and safeguards, which started during project preparation.
- (b) Maximizing use of the institutional strengthening and training component to build capacity at the central and local levels to make utilities more efficient and embark on a path to greater sustainability.
- (c) Intensifying relevant supervision during the first 12 months of project implementation to provide adequate Bank support to ensure smooth start of project implementation;
- (d) Continuing the high-level dialogue and having intensive consultations with relevant stakeholders at the national and local levels to affect changes toward greater cost recovery in the sector.
- (e) Considering options to streamline procedural requirements such as contract registration and price verification, among others, as they frequently contribute to significant delays and may even be cause for non-compliance with Bank guidelines
- (f) Enhancing the accounting system and developing the supporting MIS; introducing a modern corporate governance framework, including improving management structure and HRM; and improving internal controls at both entities and introducing implementing effective internal audit activity.

Implementation Support Plan

	Focus	Skills Needed/Functional Specialist	Partner Role
First 12 months	Support for timely implementation. A training program was developed during the AF project preparation that includes training on the Bank's Guidelines on Procurement, FM, M&E, and Environmental and Safeguards; a contractors outreach workshop; and training on contract management and administration. In addition, the Bank supported the utilities in preparation of bidding documents for the WWTPs packages. In the first six months, the immediate priority is to support the participating utilities with finalization of the bidding process and contract award of the sewers and PSs contracts.	PM, safeguard, procurement, financial specialists, M&E specialist	Specialized consultants in contracts management will be mobilized to vodokanals/PCU to provide technical training. The Vodokanals in Bukhara and Samarkand with support from PIUs will lead the project implementation, including procurement.
	Training for the PCU and PIUs. As part of supervision missions, the Bank will focus, through training workshops, on improving the capacity of participating utilities and the PIUs to ensure quality of project implementation and M&E; compliance with the Bank's procurement and FM guidelines and safeguard policies.		In addition, the Bank team will organize regular trainings for the PIUs.
	Coordination. The Bank will work with the MFERIT, MoE, MoF, and participating utilities to ensure that effective coordination is established between the PIUs and PCU at Uzkommunkhizmat. This is important to help strengthen supervision and good governance practices.	PM	All concerned parties to coordinate as much and when needed to ensure successful completion of the project.
	Monitoring and Evaluation. The Bank will work with the PIUs and agree on a revised Quarterly Progress Report (QPR) format and M&E systems. Quarterly reports will include an information update on technical and financial progress as well as an update on the monitoring indicators, in addition to environmental due diligence to ensure that the EMP is adhered to during construction phases.	PM	The PIUs are primarily responsible for preparing quality, transparent, informative QPR. Review and comments from the Bank team are essential for reporting capacity improvement.
	The Bank will work with BVK, SVK and PIUs to assist them with improving their transparency and information sharing, including development of websites.	PM, social safeguards and communication specialists	BVK and SVK to strengthen their interaction with customers
12–36 months	The focus in this phase will be on (a) timely and quality implementation of works within budget (which includes contract management and technical and safeguards supervision) and (b) institutional strengthening and implementation of sector reforms. Preparation of bidding documents and contracts for subsequent years of implementation. The Bank will continue its focus on implementation quality, improving the capacity of participating utilities, and compliance with implementation schedules and safeguards policies.	PM	The PIUs to strengthen their supervision capacity
	Project supervision. The Bank will focus on implementation quality, compliance with the EMPs, and quality of works.	PM and environmental specialist	
	Others as needed	PM	

Annex 5: Financial and Economic Analysis
UZBEKISTAN: AF for Bukhara and Samarkand Sewerage Project

I. FINANCIAL ANALYSIS

Financial situation of the utilities

1. The objective of the financial analysis is to explore the effects of the proposed investments on the financial situation of the companies and ensure that the utilities can demonstrate an ADSCR of 1.2x or better during the repayment period. The analysis is conducted at the utility level, which means that it is taking into account not only the debt-financed investments but also all the business-as-usual decisions.
2. The existing financial situation of the companies is challenging. Both the SSC and BWSSC are incurring constant financial losses due to insufficient revenues to cover the total costs. At the same time, there are financial contributions from the state to keep both companies 'afloat'. The BWSSC is receiving significant government subsidies to be able to pay its obligations; the SSC is not paying its financial obligations in full (the GoU is co-financing up to the full obligation). The government is covering exchange rate losses for both companies and there are some setoffs of utilities' receivables and payables from state companies.
3. The income statements of both utilities are quite distorted as each year they show a change in total interest payments due (calculated as the total interest over all outstanding, long-term obligations at the current exchange rate). This recalculation on all interest payments is called exchange rate difference and is included in the income statement as an annual financial expenditure. The BWSSC was for the first time in 2014 allowed to present this exchange rate difference only for the current portion of the LTD, which led to a sharp decrease of financing expenditures from UZS 11 billion in 2013 to only US\$ 0.6 billion in 2014. As a result, the company finished 2014 with a profit of UZS 77 million (US\$31,000).
4. Annual depreciation charges present another serious challenge for the companies' financial position. It is not clear why the depreciation rates of the WSS assets have no link to the actual useful life of these assets. The average depreciation charge for the past three years for the SSC, calculated as a percentage of the total assets value, is around 8 percent, and for the BWSSC, it is even higher at 14 percent. These are clearly significant depreciation charges, resulting in a rapid decrease of the asset base of the companies. Although these aggressive depreciation policies do not affect the companies' cash flow they add to the constant income losses. Financial ratios were calculated for the SSC and BWSSC.
5. **Liquidity analysis.** Liquidity indicators in the analyzed period as a whole testify to sufficient liquidity of assets of both entities. During the considered period from 2011 to 2013, the coefficients on liquidity present strong results for the SSC. The acid test ratio and current ratio were way above 1, which is a benchmark for the company's ability to meet its short-term obligations (9.45 and 10.95, respectively, in 2013). The BWSSC ratios were much lower but still indicate sufficient liquidity (2.19 and 2.36, respectively, in 2014). The working ratios ([Total expenditure-Depreciation-Debt expenses]/Total income) are stable and the BWSSC is having better results (0.41 in 2014); SSC (0.61 in 2014) (the smaller the ratio, the better). For the OCCR,

the results are showing that the companies can cover their operating costs with the revenues. The OCCR for the SSC was 1.02 for 2013 and for the BWSSC was 1.46 for 2014.

6. **The solvency analysis (financial stability) and profitability analysis (assessment of a capability of the entity to bring a return on capital employed)** indicate solvency and profitability challenges. Both companies are highly leveraged and with the constant net losses, the situation is not likely to improve. Coefficients on profitability are showing mostly negative and decreasing results. The accumulated financial losses incurred by the companies due to insufficient revenues to cover the total costs led to significant challenges. The equity of the BWSSC is already negative and the equity of the SSC is slightly 'above-water', with projections set to become negative in three years as well. As a result, the companies are becoming quite leveraged and exposed to significant exchange rate risks. Government support and mitigation measures are necessary to provide relief to lenders about the debt service and consumers so that they will not face significant tariff increases because of the risk being passed on to them.

Wastewater Tariffs

7. The MoF is in charge of price regulation. The state control over natural monopoly entities is exercised by the state anti-monopoly authority—State Committee of the Republic of Uzbekistan on De-monopolization, Support of Competition and Entrepreneurship. Based on data provided by the companies, the full cost recovery gap is decreasing but further efforts are needed to ensure that the financing costs and the true depreciation costs are included in price calculation.

8. Over the past 4 years, the tariffs for households in Samarkand increased by 182 percent and in Bukhara by 142 percent for water supply and 221 percent for wastewater. These are nominal increases but in real terms, the tariff increases were also significant (based on official information the inflation for the past 4 years was around 30 percent), resulting in real annual increases of 9 percent in Samarkand and 14 percent in Bukhara for wastewater. There are signs that the pace of tariff increases is slowing down and the financial projections of tariff increases in the financial models were done in a conservative way just to ensure the coverage of operating costs and the ADSCR of at least 1.2.

9. There is a trade-off between the required tariff increases and government support for loan interest and repayment obligations. During the past four years, the BWSSC received substantial government subsidies to cover increased operating costs and financial obligations. The company is currently servicing four loans which imposes a significant financial burden. At the same time, the SSC did not record any government subsidies in their financial statements although there were some write-offs or setoffs of utility receivables and payables from state companies. Both companies are not paying their interest and repayment obligations in full (the government is co-financing up to the full required amount).

10. Addressing tariff imbalances and reducing the dependence on government transfers will require time. The developments of the past few years show that the government has undertaken significant tariff increases to improve the financial viability of the utilities. New interest payments, both on the existing debts and the AF, and principal repayments of existing debt will require real tariff increases in the first five years of the implementation of the AF project to allow stable cash flow for utilities. Further real increases will be needed when the repayment of the principal begins. In view of the distribution of benefits of these wastewater projects (see the Economic Analysis section in this annex), there is an argument to make (as a large share of the benefits accrue to

society) that the government will take up part of the debt service payments. The current analyses and the required tariff increases are based on the assumption that no government subsidies will be provided (unlike currently is the case) to utilities for any debt service payments.

Financial Results

11. As explained above, the most important objective of the financial analysis is to explore the effect of the proposed investments on the financial situation of the companies and ensure that the utilities can demonstrate an ADSCR of 1.2x or better during the repayment period.

12. Due to the issues identified during the financial analysis, both the GoU and the companies should consider changing the accounting policies to fairly represent their financial situation, revise the depreciation charges to match the actual WSS assets lifetime, and set up a clear path to full cost recovery to break the chain of constant financial losses. The financial situation of the SSC is somewhat more challenging than that of the BWSSC. While the team has limited data to justify the proposal, it should be mentioned that the government should consider consolidation of the Samarkand Water Supply Company and the SSC. Due to revenue limitations, the SSC is deferring asset maintenance (see the technical information on network failures), which might be a short-term solution but if not resolved will lead to significant problems with the sustainability of the services. Unlike Bukhara, the SCC has no economies of scope or the option to cross-subsidize among the different water and wastewater services.

13. **Samarkand Wastewater Company.** The financial model shows that in the next five years (2016–2020), tariffs should significantly increase to cover mainly increased financing costs. The government should think of supporting the company by either providing some subsidies or co-finance the AF more significantly to mitigate the pressure for tariff increase. As explained above, a clear path for either moving to full cost recovery tariffs and/or a combination of tariff increases and government subsidies (to assist with the debt service payments) should be discussed and agreed. Both changes to the accounting policy and depreciation rates will have a significant effect on the FIRR and NPV and should be considered by the GoU and SSC. This will help manage tariff increases over time.

Table 5.2: Results for the SSC

Year	2016	2017	2018	2019	2020
ADSCR	2.53	1.94	1.56	1.39	1.52
OCCR	1.52	1.34	1.29	1.28	1.46
Real tariff increase	5%	5%	10%	10%	15%
Project tariff	263	295	345	404	493

14. **Bukhara Water Supply and Wastewater Company.** The financial model shows that in the next five years (2016–2020), the tariffs should increase to cover mainly increased financing costs. The situation of Bukhara is different though because the company is providing water and bulk water supply services. Having a larger customer base, the company can achieve more efficiency savings while being able to cross-subsidize the wastewater service. Such an option for the SSC does not exist. This does not mean that the GoU should not continue to support the company financially by either providing some subsidies or co-finance the AF more significantly to mitigate the pressure for tariff increase. The new accounting policy and possible changes in the depreciation rates currently used by the company have a significant effect on the FIRR and NPV. Projections of the financial models till 2030 are presented at the end of this annex.

Table 5.3: Results for the BWSSC

Year	2016	2017	2018	2019	2020
ADSCR	1.91	1.85	1.67	1.48	1.53
OCCR	1.59	1.51	1.45	1.41	1.44
Real tariff increase	5%	5%	5%	5%	5%
Project tariff	823	922	1033	1157	1295

15. **Table 25.4** below shows the main results of the financial analysis. Both utilities generate positive financial internal rates of return (FIRR) when the AF is implemented, but these rates of return are very low. The net present value (NPV) is negative, indicating that the investments will not generate sufficient benefits for the utilities. This is what can be expected when financing wastewater investments; many of the benefits related to such investments not only benefit the utility but also the wider society because of the implied environmental and health benefits and project spillovers.

16. The sensitivity analysis showed that there is a clear benefit from changes to depreciation rates (to curb the current accelerated depreciation charges); optimization of operating costs; and constant efforts toward achieving a full cost recovery tariff.

Table 5.4: Results of the Utility Financial Analysis

Subproject	Cost-benefit Analysis with Financial Prices	
	NPV@10% (US\$, millions)	FIRR %
SSC	-29.6	1.0
BWSSC	-15.2	4.9

II. ECONOMIC ANALYSIS

Rationale for Public Sector Investment

17. In Uzbekistan, water and wastewater services are traditionally supplied through public sector companies under municipal management and ownership. The benefits of water supply and wastewater services accrue not only to individuals but also to the society through improvements in public health and environmental benefits (through the protection of water and soil resources, natural ecosystems, and biodiversity). Although the benefits of improved water supply and wastewater management will accrue to the society as a whole, the benefits of such investments are usually not sufficient to induce private sector investments. This is especially true for Uzbekistan, where the sector has suffered from decades of underinvestment and poor maintenance in combination with low tariffs. Hence, public financing is needed to ensure that such investments can be made.

Rationale for Bank Involvement

18. The Bank has been involved in the water and wastewater municipalities of Bukhara and Samarkand since 1999. To improve their operating efficiency, investments are needed in the two cities. These investments will be large due to the decades of underinvestment in the sector. The Bank with its global experience will be able to focus on funding the most cost-effective investments that will assist the utilities in improving their efficiency in wastewater service

delivery. This is an area that is an important element in the Bank's CPS, as a tool to improve the efficiency of infrastructure while providing essential social services to the population. The Bank's value add is most notably in (a) the use of approaches that are not yet introduced in the wastewater utility sector in Uzbekistan and (b) the lack of local expertise in helping utilities with the transition to a more financially viable sector while ensuring that the service remains affordable to the poor.

Cost-benefit Analysis

19. **Objective of the project.** The project will finance the rehabilitation and reconstruction of wastewater infrastructure in Bukhara and Samarkand. The project will also support improvements in sustainable service delivery through a program of institutional strengthening and capacity building with a focus on improving the efficiency of the utilities in utility management, especially with regard to the management of its assets (emergency and routine maintenance).

20. By improving the quality and efficiency of selected wastewater services in the two targeted cities, the project will contribute directly to reducing the burden that the wastewater sector currently puts on government and consumer budgets. The project will result in a decline of the real costs of the utilities and hence improve the efficiency with which the services are provided. The benefits of the project will include (a) reduction in maintenance costs associated with the poor state of the water and wastewater assets; (b) reduction in staff costs due to reduction in maintenance and automatization of processes; (c) reduction in the coping costs for consumers currently not connected to the sewer network; (d) increase in access to wastewater services for commercial consumers in areas that will gain access to the sewer network; and (e) reduction in the pollution loads associated with the lack of reliable wastewater treatment. The project is likely to provide more additional benefits than the ones mentioned above, but these are more difficult to quantify. These may include public health benefits due to the reduction of untreated or poorly treated wastewater being disposed of in the environment and a reduction of groundwater pollution (because of the dependence on poorly constructed cesspools). Yet the reduction of these benefits may be captured in the reduction of pollution loads. The reduction of water pollution and public health risks are likely to have a positive impact on tourism, an important economic mainstay in the two cities.

21. Capacity-building activities are important. They help to improve the governance of the utilities as they will also help improve the efficiency and quality of services because they essentially create and/or strengthen the enabling environment in which utilities operate.

22. **Scope and Methodology of the Analysis.** In the cost-benefit analysis, costs and benefits were assessed at financial prices. In a second stage, the financial cash flows have been translated into economic cash flows by using standard conversion factors to translate financial prices into economic prices. In addition, the economic analysis also values the reduction in pollution loads to the environment that these two subprojects will achieve.

23. The original project of US\$55 million is almost fully committed, with only one contract of US\$3.2 million (less than 6 percent of the total project value) not yet awarded. This contract will rehabilitate 17 km of network in Bukhara. As all the other contracts have been awarded and works are either completed or ongoing (under contracts), these costs can be considered sunk costs and hence will not be included in the analysis. The project will include all investment costs associated with the AF and the contract not yet awarded under the original project.

24. The complete set of activities to be undertaken in the capacity-building program have not yet been defined, and hence it was not possible now to calculate the associated benefits related to this capacity-building program.

25. In case the project is not implemented (the ‘without’ project scenario), the quality of service provision will continue to decline and so will the efficiency with which the service can be provided. Decades of underinvestment and poor maintenance have resulted in an asset base that is in dire need of replacement and upgrading. Without this replacement and upgrading, the services that are provided to customers will continue to deteriorate as a result of system and equipment failures. Emergency maintenance is spiraling out of control in both municipalities. In 2013 (the latest year for which audited financial statements were available), Samarkand, for example, had maintenance expenditure that added up to 24 percent of fixed assets (normally these costs are about 0.5 to 3 percent dependent on the asset classification). In Bukhara, most of the wastewater is discharged without treatment due to the poor state of the wastewater plant. The sewer systems in both cities were constructed in the 1960s and 1970s and have come to the end of their lifetime—the frequent collapses in the network are testament to the urgent need for reconstruction and rehabilitation.

26. The ‘without project’ scenario in both cities foresees an increase in emergency and regular maintenance and repair to ensure that the current network and wastewater plants are kept in operation. It also foresees that the pollution loads that will be disposed of in the environment without proper treatment will increase. In both Bukhara and Samarkand, only a small portion of the wastewater collected is currently treated against standards.

27. Under the project (the ‘with’ project scenario), the participating utilities will benefit from a reduction in maintenance costs associated with the poor state of the water and wastewater assets.

28. In Bukhara, the utility also foresees a reduction in staff costs due to reduction in emergency and preventive maintenance and the automatization of processes that will require less staff to work in the PSs and WWTP. The project will also expand wastewater services to part of the population that now depends on cesspools to evacuate their wastewater. These new consumers will see a sharp reduction in their costs as the regular emptying of cesspools is more expensive than connecting to the sewer network and will pay the monthly charges to the vodokanals. In addition, the project will improve the quantity and quality of the WWTPs that will result from the removal of pollutants.

29. The incremental net benefit is the difference between the incremental benefits and the incremental costs of two scenarios: ‘with’ and ‘without’ the project. The ‘with’ project scenario considers the proposed project and its associated targets. The ‘without’ project scenario considers that utility consumers will face continuous deteriorating services.

30. The activities were appraised measuring their flow of costs and benefits for the lifetime of the project, estimated as 25 years. Costs and benefits were expressed in constant prices as of early 2015.⁷ The discount rate corresponds to the opportunity cost of capital, estimated to be 10 percent, as used in other projects in Uzbekistan. Financial costs were transformed into economic costs using conversion factors for the exchange rate, the cost of labor, and electricity which eliminate market distortions created by taxes, tariffs, and subsidies, among others. The economic analysis also includes the environmental benefits of reducing wastewater pollution in the two cities. The

⁷ The exchange rate used was US\$1 which was equivalent to UZS 2,500.

economic cost for each input is estimated as the financial cost multiplied by the standard conversion factors.

31. **Benefits.** The benefits under the AF will include (a) reduction in maintenance costs (and related staff costs) associated with the poor state of the water and wastewater assets; (b) reduction in NRW losses; (c) revenues from consumers in those towns; and (d) benefits linked to electricity generation and recycling of waste.

32. **Maintenance cost savings.** Due to the poor state of the conditions of the sewer networks in the two cities, maintenance has grown rapidly. It is assumed that under the ‘without project’ scenario—with no further investments—the maintenance costs will increase as large parts of the network (that are not yet rehabilitated) will face collapse. In the case of the ‘with project’ situation, the maintenance costs will decrease significantly.

33. **Cost savings to consumers.** Currently, households not connected to the sewer network depend on cesspools that need to be emptied several times per year (depending on the size of the cesspool). The sludge from the cesspool will be brought to the WWTP where the utility charges the operators that empty the cesspool a fee for every cubic meter of sludge being disposed at the WWTP. Without the project, people will remain unconnected and depend on cesspools for evacuating their wastewater. With the project, the people who will connect to the sewer network will have to pay a connection charge while also paying the monthly consumption charges. It is assumed that real tariffs will increase during the project period, following government policy in recent years where water and wastewater tariffs were increased at a rate significantly above the inflation rate. The assumption is that these small annual real tariffs will increase for a period of about 10 years after which real tariff increases are only foreseen if the cash flow of the utilities is in need of a tariff increase. It should be noted that if wastewater tariffs are increased, so will the rates that will be paid to the utility for disposing cesspool sludge.

34. **Increase in revenues from nonresidential users.** An extension of the network to groups of residential users will result in an increase in nonresidential users. It is assumed that these nonresidential users will only include commercial users (and not any budget organizations). The same composition of users in the current networks has been used in the new networks. Nonresidential users will be charged significantly higher rates than residential users due to the existing cross-subsidies that are built in the current tariff structure, which is expected to remain unchanged over the period under review.

35. **Reduction in pollution loads because of improved wastewater treatment.** A method developed in Spain about calculating the environmental benefits from wastewater treatment was used.⁸ In this methodology, shadow prices are calculated for pollutants removed from the wastewater treatment process. This shadow price reflects the environmental benefit (or avoided pollution costs) associated with poor or no treatment. It is assumed that the directional distance factor that was calculated for Valencia, Spain can be used in Uzbekistan as the amount of

⁸ Francesc Hernandez-Soto, Maria Molinos-Senante, and Ramon Sala-Garrido. 2010. “Economic Valuation of Environmental Benefits from Wastewater Treatment Processes: An Empirical Approach for Spain.” *Science of Total Environment* 408: 953–957; and

M. Molinos-Senante, F. Hernandez-Soto, and R. Sala-Garrido. 2011. “Cost-Benefit Analysis of Water-Reuse Projects for Environmental Purposes: A Case Study for Spanish WWTPs.” *Journal of Environmental Management* 92: 3091–3097.

undesirable wastewater outputs (suspended solids, BOD, Chemical Oxygen Demand COD, Nitrogen and phosphorus N and P) in the Spanish sample falls within a range that includes the values seen in the two utilities whereas the price for wastewater has been adjusted to those currently used in Bukhara and Samarkand. Based on the feasibility studies, the removed pollution loads were calculated and valued against the shadow prices used for the different pollutants removed. In the case of Bukhara, it is planned that part of the treated wastewater will be reused during the cotton growing season.

36. The project may have more benefits than can be quantified now. These benefits include public health benefits related to the proper collection and treatment of wastewater (yet, we assume that these benefits are captured in the cost of avoided pollution). Moreover, a more sanitary environment may have a positive effect on tourism; in both cities, tourism is an important source of income. In addition, the frequent need to repair sewer collections results in additional cost to the public due to street closings and may affect business activities in these areas and increase travel times.

37. **Costs.** The utilities will save on O&M costs due to the savings made in maintenance costs. In projects that are linked to upgrading of services, costs will include some incremental operation and maintenance costs, mostly related to an increase in energy consumption for the additional PSs and the rehabilitated and upgraded WWTPs.

38. **Investment costs.** The investment costs for each subproject were estimated based on feasibility-level designs. The costs not included in the analysis are TA costs that are not directly related to the implementation of the works. These activities are focused on capacity building and PM. Financial investment costs include (a) the costs of the investment program linked to the two participating cities, including physical contingencies and supervision and (b) replacement costs of electromechanical equipment.

39. **O&M costs.** The incremental O&M costs include incremental costs of electricity and maintenance of the new investments (civil works and equipment). The maintenance cost of the new investment will be required to ensure the proper functioning of the new investments, and is separate from the reduction in emergency maintenance due to the overall deterioration of the existing networks. It is assumed that the new works and equipment will be maintained by following good practice principles (0.75 percent of the value of the civil works and 3 percent for electromechanical equipment). In the case of Bukhara, it is assumed that the utility will be able to reduce its labor costs because of automatization in the PSs and WWTP and a reduction in emergency maintenance. Labor cost savings were calculated as the reduction in the number of employees and the average financial cost per employee. In addition, incremental electricity costs are included in the total operation and maintenance costs.

40. **Results.** Table 5. 1 shows that the cost-benefit analysis of the two subprojects analyzed generate positive rates of returns.

Table 5. 1: Results of the Cost-benefit Analysis without Any Real Tariff Increases

Economic Cost-benefit Analysis with Economic Prices	
NPV (UZS, billions)	EIRR
42.3	12.5%
56.8	13.9%

41. **Sensitivity and risk analysis.** The results obtained so far assume that the values of all variables are certain. The sensitivity and risk analyses measure the impact on the results when some of the assumed values for critical variables change. The sensitivity analysis measures the outcome if one of the variables changes while all others remain fixed. The risk analysis measures the outcome when all selected variables change at the same time, each one based on a probability distribution.

Sensitivity Analysis

42. The variables tested for the sensitivity analysis were (a) investment cost overrun; (b) change in the shadow exchange rate; (c) number of sewer blockages; (d) real tariff adjustment factor; and (e) shadow price of pollution loads. Results of the analysis show that:

- An investment cost overrun is the most critical factor in reducing the economic NPV. In Samarkand, an investment cost overrun of 40 percent will run the project unfeasible; in Bukhara, an investment cost overrun of 28 percent will result in a negative NPV.
- The shadow exchange rate is currently estimated at 1.30 and the difference between the official and unofficial exchange rate is dropping in recent years. Only when the shadow exchange rate increases rapidly and significantly will the project become unfeasible.
- The current analysis assumes low real tariff increases of about 3.5 percent per year compared to recent real tariff increases of 9-14 percent in the past four years. Yet, even when the real tariff increases drop slightly below 1 percent per year in Samarkand and become 0 percent in Bukhara, the project will still be generating a positive net cash flow.
- Even when the sewer blockages remain at current levels in the ‘with project’ situation, the projects in both cities result in positive NPV.
- The shadow price for wastewater pollution loads, based on the Spanish studies earlier cited, can be significantly reduced to 25 percent of the current values in Samarkand and 48 percent in Bukhara before the projects return negative NPV.

Risk Analysis

43. To enhance the accuracy of the financial and economic analysis, the uncertainties of the real world are approximated using Monte Carlo simulation with the Crystal Ball software. This software measures the extent of various risks and their impact on the results of the project by modeling a likely probability distribution that best describes the behavior of each of the selected variables. Based on a simulation of 10,000 trials, the model recalculates the results of the economic analyses by simultaneously changing each of the selected risk variables according to their probability distributions.

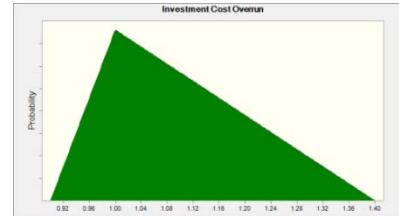
44. The assumed probability distributions of the five most important variables and their respective parameters are given below. More details can be provided on request.

General Assumptions

Assumption: Investment

Triangular distribution with parameters:

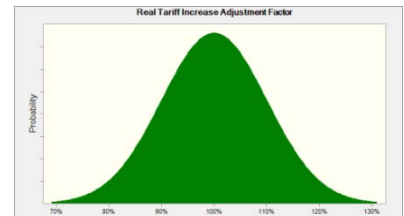
Minimum	0.90
Likeliest	1.00
Maximum	1.40



Assumption: Real Tariff Increase Adjustment Factor

Normal distribution with parameters:

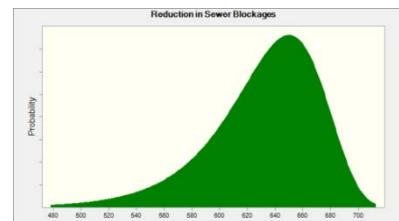
Mean	100%
Standard Deviation	10%



Assumption: Reduction in Sewer Blockages

Minimum Extreme distribution with parameters:

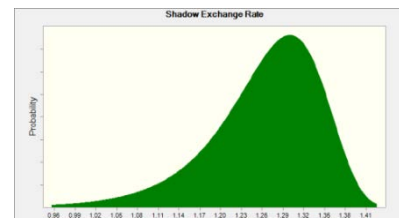
Likeliest	650
Scale	33



Assumption: Shadow Exchange Rate

Minimum Extreme distribution with parameters:

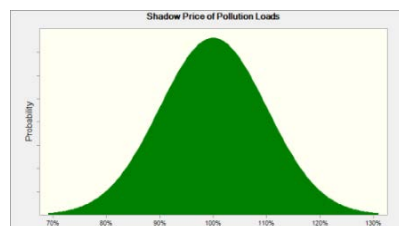
Likeliest	1.30
Scale	0.07



Assumption: Shadow Price of Pollution Loads

Normal distribution with parameters:

Mean	100%
Standard Deviation	10%



45. As shown in Table 5.2, the result of the risk analysis confirms the robustness of the project. The probability of having positive economic rates of return is close to 100 percent. The risk evaluation shows that the likelihood of a negative economic outcome once market distortions are eliminated and all benefits to society are captured is more than 90 percent in either of the two cities.

Table 5.2: Risk Variables and their Impact on Economic NPV

Subproject	Probability of a Positive NPV (%)	Mean Expected NPV (UZS, billions)
Bukhara	93	31
Samarkand	98	47

46. The analysis shows that different stakeholders will capture different benefits from the project. For the utilities, the benefits come in the form of maintenance savings associated with the rapid deterioration of the sewer network and the WWTPs and staff savings (mostly in Bukhara). For consumers, the benefits are linked to a reduction in coping costs as people will get connected to the sewer network currently using cesspools. With increasing populations connected to the network in different parts of the city, commercial users will also be able to access the sewer networks. The reduction in pollution loads from improved wastewater treatment will benefit all of society in Bukhara and Samarkand and areas where the wastewater of the two cities is currently disposed.

Table 5.3: Composition of Incremental Benefits (UZS, billions)

	Bukhara	Samarkand
Utility	101.6	45.9
Reduction in Maintenance Costs	92.3	42.8
Staff savings	9.3	3.1
Consumers	11.5	52.9
Reduction in coping costs	9.6	57.0
Increase in access to sewer services for commercial users	1.9	5.9
Society	81.3	90.7
Reduction in wastewater pollution loads	81.3	90.7
Total Incremental Benefits	194.4	199.4
Total Incremental Costs	152.1	142.6
Total Net Benefits	42.3	56.8

47. Table 5.3 shows that in the current setup, the utilities' costs (assuming that they pay for all debt service payments) outweigh the benefits that the project generates for them. The net cash flow for utilities under such a scenario (where all costs are paid for by the utility) is UZS -50.5 billion for Bukhara and UZS -96.7 billion for Samarkand. It would be possible to achieve a more equitable distribution of costs and benefits, not burden the utilities, and attribute part of the total costs to customers (through higher tariffs) and to society (or the GoU) through subsidizing a part of the

loan's debt service payments. In such a scenario, the costs will be appropriately distributed to those that benefit.

Financial Projections for Bukhara Water Supply and Sanitation Company

INCOME STATEMENT (in 000' UZS)	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
	Audited	Audited	Audited	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Sales Revenues	9,025,550	13,134,787	18,664,132	18,415,413	20,625,263	23,100,294	25,872,329	29,232,548	32,740,454	35,032,286	37,484,546	41,982,691	47,020,614	52,663,088	56,349,504	60,293,969	67,529,246	75,632,755	80,927,048
Other operating income/net	91,204	100,146	92,644	460,385	515,632	577,507	646,808	730,814	818,511	875,807	937,114	1,049,567	1,175,515	1,316,577	1,408,738	1,507,349	1,688,231	1,890,819	2,023,176
Total revenues	9,116,754	13,234,933	18,756,776	18,875,798	21,140,894	23,677,801	26,519,138	29,963,362	33,558,965	35,908,093	38,421,659	43,032,258	48,196,129	53,979,665	57,758,242	61,801,318	69,217,477	77,523,574	82,950,224
Cost of materials	-3,556,079	-3,620,709	-4,246,765	-4,616,068	-5,011,541	-5,480,638	-5,951,028	-6,462,152	-7,460,731	-8,285,985	-9,205,367	-10,229,829	-11,031,056	-11,895,180	-12,827,149	-13,832,301	-14,916,393	-16,085,638	-17,346,738
Salaries and social security	-1,998,194	-2,495,909	-3,310,233	-3,806,768	-4,354,943	-4,990,764	-5,734,388	-6,588,812	-7,570,545	-8,698,556	-9,994,641	-11,483,842	-13,194,935	-15,160,980	-17,419,966	-20,015,541	-22,997,857	-26,424,537	-30,361,793
Other operating costs	-1,347,684	-2,386,291	-3,082,754	-2,287,681	-2,555,406	-3,728,037	-4,926,498	-6,360,486	-6,257,217	-6,130,809	-6,030,404	-5,931,424	-5,881,818	-5,891,441	-5,945,809	-5,912,347	-5,879,146	-5,894,335	-5,991,715
Administrative costs	-552,170	-1,177,465	-1,398,755	-576,736	-645,944	-723,457	-810,272	-920,282	-1,030,716	-1,102,866	-1,180,066	-1,321,674	-1,480,275	-1,657,908	-1,773,962	-1,898,139	-2,125,916	-2,381,026	-2,547,698
Other expenses	-792,238	-643,833	-816,439	-688,901	-737,124	-788,723	-843,934	-903,009	-966,220	-1,033,855	-1,106,225	-1,183,661	-1,266,517	-1,355,173	-1,450,035	-1,551,538	-1,660,145	-1,776,356	-1,900,700
Total operating costs	-8,246,365	-10,324,207	-12,864,946	-11,976,154	-13,304,958	-15,711,619	-18,266,120	-21,234,740	-23,285,428	-25,252,070	-27,516,703	-30,150,430	-32,854,600	-35,960,683	-39,416,921	-43,209,866	-47,579,457	-52,561,892	-58,148,645
EBITDA	870,389	2,910,726	5,891,830	6,899,645	7,835,936	7,966,182	8,253,018	8,728,622	10,273,537	10,656,022	10,904,956	12,881,829	15,341,529	18,018,982	18,341,320	18,591,452	21,638,020	24,961,682	24,801,580
Depreciation and amortisation	-4,706,888	-5,057,369	-5,245,282	-2,737,034	-5,212,034	-7,862,034	-11,137,034	-11,337,034	-11,487,034	-11,687,034	-11,887,034	-12,187,034	-12,612,034	-13,137,034	-13,487,034	-13,837,034	-14,287,034	-14,912,034	-15,512,034
EBIT	-3,836,499	-2,146,643	646,548	4,162,611	2,623,903	104,148	-2,884,016	-2,608,412	-1,213,496	-1,031,011	-982,077	694,795	2,729,495	4,881,949	4,854,287	4,754,419	7,350,986	10,049,648	9,289,546
Net financing costs	-7,535,522	-11,015,458	-568,734	-1,919,170	-2,242,830	-2,816,489	-3,483,899	-3,835,055	-3,791,833	-3,748,611	-3,705,389	-3,662,167	-3,618,945	-3,575,723	-3,501,251	-3,395,529	-3,286,054	-3,172,825	-3,059,596
Subsidies	4,866,168	5,550,379	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Profit/loss before tax	-6,505,853	-7,611,722	77,814	2,243,441	381,073	-2,712,341	-6,367,915	-6,443,467	-5,005,330	-4,779,622	-4,687,467	-2,967,372	-889,450	1,306,226	1,353,035	1,358,890	4,064,933	6,876,823	6,229,950
Income tax expense	0	0	0	-201,910	-34,297	0	0	0	0	0	0	0	0	-117,560	-121,773	-122,300	-365,844	-618,914	-560,695
Net profit/ loss for the year	-6,505,853	-7,611,722	77,814	2,041,531	346,776	-2,712,341	-6,367,915	-6,443,467	-5,005,330	-4,779,622	-4,687,467	-2,967,372	-889,450	1,188,665	1,231,262	1,236,590	3,699,089	6,257,909	5,669,254

CASH FLOW STATEMENT (in 000' UZS)	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
	Audited	Audited	Audited	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
EBIT	-3,836,499	-2,146,643	646,548	4,162,611	2,623,903	104,148	-2,884,016	-2,608,412	-1,213,496	-1,031,011	-982,077	694,795	2,729,495	4,881,949	4,854,287	4,754,419	7,350,986	10,049,648	9,289,546
Depreciation	4,706,888	5,057,369	5,245,282	2,737,034	5,212,034	7,862,034	11,137,034	11,337,034	11,487,034	11,687,034	11,887,034	12,187,034	12,612,034	13,137,034	13,487,034	13,837,034	14,287,034	14,912,034	15,512,034
Gross Operating Cash Flow	870,389	2,910,726	5,891,830	6,899,645	7,835,936	7,966,182	8,253,018	8,728,622	10,273,537	10,656,022	10,904,956	12,881,829	15,341,529	18,018,982	18,341,320	18,591,452	21,638,020	24,961,682	24,801,580
Working Capital Change	-1,326,304	-824,512	-2,397,713	114,861	-859,639	587,348	485,883	1,822,058	-34,253	199,796	261,676	-100,988	-249,765	-129,913	257,238	93,430	-461,200	-538,608	-213,982
Tax Paid	0	0	0	-201,910	-34,297	0	0	0	0	0	0	0	0	-117,560	-121,773	-122,300	-365,844	-618,914	-560,695
Subsidies	4,866,168	5,550,379	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Operating Cash Flow	4,410,253	7,636,593	3,494,117	6,812,596	6,942,000	8,553,530	8,738,900	10,550,680	10,239,284	10,855,819	11,166,632	12,780,840	15,091,764	17,771,509	18,476,785	18,562,582	20,810,976	23,804,160	24,026,902
Interest Received	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pre-Investment Cash Flow	4,410,253	7,636,593	3,494,117	6,812,596	6,942,000	8,553,530	8,738,900	10,550,680	10,239,284	10,855,819	11,166,632	12,780,840	15,091,764	17,771,509	18,476,785	18,562,582	20,810,976	23,804,160	24,026,902
Capital Expenditure	-7,749,896	-8,232,080	-26,294,622	-11,000,000	-49,500,000	-53,000,000	-65,500,000	-4,000,000	-3,000,000	-4,000,000	-4,000,000	-6,000,000	-8,500,000	-10,500,000	-7,000,000	-7,000,000	-9,000,000	-12,500,000	-12,000,000
Pre-financing Cash Flow	-3,339,643	-995,487	-22,800,505	-4,187,404	-42,558,000	-44,446,470	-56,761,100	6,550,680	7,239,284	6,855,819	7,166,632	6,780,840	6,591,764	7,271,509	11,476,785	11,562,582	11,810,976	11,304,160	12,026,902
New Equity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Proceeds from borrowings	5,397,395	2,058,441	22,245,296	10,000,000	47,515,000	50,020,000	62,525,000	0	0	0	0	0	0	0	0	0	0	0	0
Interest on WB water loans	-470,500	-470,500	-185,500	-670,500	-648,750	-627,000	-605,250	-583,500	-561,750	-540,000	-518,250	-496,500	-474,750	-453,000	-431,250	-409,500	-387,750	-366,000	-344,250
Interest on ICO loans	-158,357	-258,357	-100,357	-258,357	-244,392	-230,427	-216,462	-202,496	-188,531	-174,566	-160,600	-146,635	-132,670	-118,705	-104,739	-90,774	-76,809	-62,844	-48,878
Interest on WB wastewater loan	-275,833	-350,155	-493	-990,313	-1,115,313	-1,177,813	-1,177,813	-1,174,059	-1,166,552	-1,159,046	-1,151,539	-1,144,032	-1,136,525	-1,129,018	-1,121,512	-1,114,005	-1,102,745	-1,087,731	-1,072,718
Interest on the WB additional financing	0	0	0	0	-234,375	-781,250	-1,484,375	-1,875,000	-1,875,000	-1,875,000	-1,875,000	-1,875,000	-1,875,000	-1,875,000	-1,875,000	-1,875,000	-1,875,000	-1,875,000	-1,875,000
Principal repayment	0	0	0	-2,567,221	-2,567,221	-2,567,221	-2,567,221	-3,167,762	-3,167,762	-3,167,762	-3,167,762	-3,167,762	-3,167,762	-3,167,762	-3,167,762	-3,167,762	-3,167,762	-3,167,762	-3,167,762
Dividends paid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Share capital raised	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Post financing Cash Flow	1,153,061	383,942	-841,559	1,326,205	146,950	189,820	-287,220	-452,138	279,688	-60,555	293,480	-49,090	-194,944	528,023	-192,229	-709	-243,382	-636,969	199,001
Net increase/(decrease) in cash and cash equ	1,153,061	383,942	-841,559	1,326,205	146,950	189,820	-287,220	-452,138	279,688	-60,555	293,480	-49,090	-194,944	528,023	-192,229	-709	-243,382	-636,969	199,001
Cash and cash equivalents at beginning of the year	87,444	1,240,505	1,624,447	782,888	2,109,093	2,256,043	2,445,863	2,158,644	1,706,506	1,986,194	1,925,639	2,219,119	2,170,030	1,975,086	2,503,109	2,310,880	2,310,171	2,066,789	1,429,819
Cash and cash equivalents at 31 December	1,240,505	1,624,447	782,888	2,109,093	2,256,043	2,445,863	2,158,644	1,706,506	1,986,194	1,925,639	2,219,119	2,170,030	1,975,086	2,503,109	2,310,880	2,310,171	2,066,789	1,429,819	1,628,821

Financial Projections for Samarkand Sanitation Company

INCOME STATEMENT (in 000' UZS)	2011 Audited	2012 Audited	2013 Audited	2014 Forecast	2015 Forecast	2016 Forecast	2017 Forecast	2018 Forecast	2019 Forecast	2020 Forecast	2021 Forecast	2022 Forecast	2023 Forecast	2024 Forecast	2025 Forecast	2026 Forecast	2027 Forecast	2028 Forecast	2029 Forecast	2030 Forecast
Sales Revenues	3,063,351	3,657,244	4,738,374	6,081,762	6,811,573	7,628,962	8,544,437	10,707,340	12,527,588	15,283,658	17,117,697	19,171,820	21,472,439	24,049,131	25,732,571	27,533,851	29,461,220	31,523,506	35,306,326	37,777,769
Other operating income/net	14,758	104,681	49,647	152,044	170,289	190,724	213,611	267,684	313,190	382,091	427,942	479,296	536,811	601,228	643,314	688,346	736,531	788,088	882,658	944,444
Total revenues	3,078,109	3,761,925	4,788,021	6,233,806	6,981,863	7,819,686	8,758,048	10,975,024	12,840,778	15,665,749	17,545,639	19,651,116	22,009,250	24,650,360	26,375,885	28,222,197	30,197,751	32,311,593	36,188,984	38,722,213
Cost of materials	-701,723	-890,292	-1,316,695	-1,413,122	-1,521,239	-1,642,764	-1,768,786	-2,018,889	-2,229,658	-2,424,256	-2,637,100	-2,870,020	-3,081,746	-3,309,158	-3,553,425	-3,815,800	-4,097,633	-4,400,372	-4,725,575	-5,149,120
Salaries and social security	-797,532	-972,995	-1,149,318	-1,321,716	-1,512,043	-1,732,801	-1,990,988	-2,287,646	-2,628,505	-3,020,152	-3,470,155	-3,987,208	-4,581,302	-5,263,916	-6,048,239	-6,949,427	-7,984,891	-9,174,640	-10,541,661	-12,112,369
Other operating costs	-852,477	-777,605	-1,188,269	-160,810	-453,857	-731,395	-1,643,588	-2,805,914	-3,591,039	-3,391,940	-3,193,004	-3,041,742	-2,911,917	-2,837,916	-2,769,128	-2,716,818	-2,561,003	-2,401,698	-2,238,924	-2,108,323
Administrative costs	-275,052	-352,820	-416,873	-586,717	-657,123	-735,978	-824,295	-1,032,954	-1,208,556	-1,474,438	-1,651,371	-1,849,535	-2,071,479	-2,320,057	-2,482,461	-2,656,233	-2,842,170	-3,041,121	-3,406,056	-3,644,480
Other expenses	-329,094	-250,275	-353,498	-267,794	-286,540	-306,598	-328,059	-351,024	-375,595	-401,887	-430,019	-460,120	-492,329	-526,792	-563,667	-603,124	-645,343	-690,517	-738,853	-790,572
Total operating costs	-2,955,878	-3,243,987	-4,424,653	-3,750,159	-4,430,802	-5,149,536	-6,555,718	-8,496,426	-10,033,352	-10,712,674	-11,381,649	-12,208,626	-13,138,773	-14,257,839	-15,416,920	-16,741,402	-18,131,039	-19,708,348	-21,651,069	-23,804,865
EBITDA	122,231	517,938	363,368	2,483,647	2,551,061	2,670,150	2,202,331	2,478,598	2,807,426	4,953,076	6,163,991	7,442,490	8,870,477	10,392,521	10,958,965	11,480,794	12,066,712	12,603,245	14,537,916	14,917,348
Depreciation and amortisation	-375,144	-516,806	-358,378	-844,417	-1,469,417	-3,463,167	-6,088,167	-8,056,917	-8,056,917	-8,056,917	-8,156,917	-8,306,917	-8,581,917	-8,881,917	-9,231,917	-9,381,917	-9,531,917	-9,681,917	-9,906,917	-10,131,917
EBIT	-252,913	1,132	4,990	1,639,230	1,081,644	-793,017	-3,885,836	-5,578,319	-5,249,491	-3,103,841	-1,992,926	-864,427	288,560	1,510,604	1,727,048	2,098,878	2,534,795	2,921,328	4,630,999	4,785,432
Net financing costs	-379,882	-999,346	-1,496,080	-633,677	-783,554	-1,093,229	-1,651,106	-2,208,984	-2,435,536	-2,409,596	-2,380,455	-2,351,315	-2,322,174	-2,293,034	-2,263,894	-2,201,941	-2,107,176	-2,012,410	-1,914,445	-1,810,080
Subsidies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Profit/loss before tax	-632,795	-998,214	-1,491,090	1,005,552	298,090	-1,886,245	-5,536,942	-7,787,303	-7,685,027	-5,513,437	-4,373,382	-3,215,742	-2,033,614	-782,430	-536,846	-103,063	427,619	908,918	2,716,554	2,975,351
Income tax expense	0	0	0	0	0	-156,738	-101,015	0	0	0	0	0	0	0	-40,396	-168,642	-207,479	-264,425	-345,031	-409,806
Net profit/loss for the year	-632,795	-998,214	-1,491,090	1,005,552	298,090	-2,042,983	-5,637,957	-7,787,303	-7,685,027	-5,513,437	-4,373,382	-3,215,742	-2,033,614	-782,430	-577,242	-271,706	220,140	644,493	2,371,523	2,565,545

CASH FLOW STATEMENT (in 000' UAH)	2011 Audited	2012 Audited	2013 Audited	2014 Forecast	2015 Forecast	2016 Forecast	2017 Forecast	2018 Forecast	2019 Forecast	2020 Forecast	2021 Forecast	2022 Forecast	2023 Forecast	2024 Forecast	2025 Forecast	2026 Forecast	2027 Forecast	2028 Forecast	2029 Forecast	2030 Forecast
EBIT	-252,913	1,132	4,990	1,639,230	1,081,644	-793,017	-3,885,836	-5,578,319	-5,249,491	-3,103,841	-1,992,926	-864,427	288,560	1,510,604	1,727,048	2,098,878	2,534,795	2,921,328	4,630,999	4,785,432
Depreciation	375,144	516,806	358,378	844,417	1,469,417	3,463,167	6,088,167	8,056,917	8,056,917	8,056,917	8,156,917	8,306,917	8,581,917	8,881,917	9,231,917	9,381,917	9,531,917	9,681,917	9,906,917	10,131,917
Gross Operating Cash Flow	122,231	517,938	363,368	2,483,647	2,551,061	2,670,150	2,202,331	2,478,598	2,807,426	4,953,076	6,163,991	7,442,490	8,870,477	10,392,521	10,958,965	11,480,794	12,066,712	12,603,245	14,537,916	14,917,348
Working Capital Change	-1,806,462	-1,874,503	-1,907,900	-930,214	-181,851	-474,674	-379,704	-315,106	429,393	-384,386	-123,762	-113,341	-141,700	-129,163	37,966	160,561	-306,824	-312,735	-547,932	-391,254
Tax Paid	0	0	0	0	0	-156,738	-101,015	0	0	0	0	0	0	0	-40,396	-168,642	-207,479	-264,425	-345,031	-409,806
Subsidies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Operating Cash Flow	-1,684,231	-1,356,565	-1,544,532	1,553,432	2,369,210	2,038,739	1,721,612	2,163,492	3,236,819	4,568,689	6,040,228	7,329,149	8,728,777	10,263,358	10,956,534	11,472,714	11,552,409	12,026,085	13,644,953	14,116,288
Interest Received	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pre-investment Cash Flow	-1,684,231	-1,356,565	-1,544,532	1,553,432	2,369,210	2,038,739	1,721,612	2,163,492	3,236,819	4,568,689	6,040,228	7,329,149	8,728,777	10,263,358	10,956,534	11,472,714	11,552,409	12,026,085	13,644,953	14,116,288
Capital Expenditure	-3,631,355	-8,278,506	-11,911,119	-12,500,000	-12,500,000	-39,875,000	-52,500,000	-39,375,000	0	0	-2,000,000	-3,000,000	-5,500,000	-6,000,000	-7,000,000	-3,000,000	-3,000,000	-3,000,000	-4,500,000	-4,500,000
Pre-financing Cash Flow	-5,315,586	-9,635,071	-13,455,651	-10,946,568	-10,130,790	-37,836,261	-50,778,388	-37,211,508	3,236,819	4,568,689	4,040,228	4,329,149	3,228,777	4,263,358	3,956,534	8,472,714	8,552,409	9,026,085	9,144,953	9,616,288
New Equity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Proceeds from borrowings	5,710,984	10,080,807	13,973,513	12,500,000	12,500,000	39,375,000	52,500,000	39,375,000	0	0	0	0	0	0	0	0	0	0	0	0
Interest on NATEKSIS loan	-196,444	-369,621	-368,275	-340,995	-334,622	-320,078	-303,736	-287,395	-271,054	-254,712	-238,371	-222,029	-205,688	-189,347	-173,005	-156,664	-140,322	-123,981	-107,640	-91,298
Interest on the original WB loan	-71,387	-126,010	-174,669	-292,682	-448,932	-527,057	-527,057	-527,057	-523,858	-514,258	-501,459	-488,660	-475,861	-463,062	-450,263	-437,465	-424,666	-411,867	-395,868	-373,470
Interest on the WB additional financing	0	0	0	0	0	-246,094	-820,313	-1,394,531	-1,640,625	-1,640,625	-1,640,625	-1,640,625	-1,640,625	-1,640,625	-1,640,625	-1,607,813	-1,542,188	-1,476,563	-1,410,938	-1,345,313
Principal repayment	0	0	0	0	-344,161	-441,218	-441,218	-441,218	-953,176	-1,465,135	-1,465,135	-1,465,135	-1,465,135	-1,465,135	-1,465,135	-6,715,135	-6,715,135	-6,715,135	-7,227,093	-7,739,051
Dividends paid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Share capital raised	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Post financing Cash Flow	127,567	-49,895	-25,082	919,755	1,241,495	4,292	-370,712	-486,710	-151,894	693,959	194,639	512,699	-558,532	505,190	227,506	-444,362	-269,901	298,540	3,415	67,157
Net increase(decrease) in cash and cash equi	127,567	-49,895	-25,082	919,755	1,241,495	4,292	-370,712	-486,710	-151,894	693,959	194,639	512,699	-558,532	505,190	227,506	-444,362	-269,901	298,540	3,415	67,157
Cash and cash equivalents at beginning of the year	126,966	254,533	204,638	179,556	1,099,311	2,340,806	2,345,098	1,974,385	1,487,676	1,335,782	2,029,742	2,224,380	2,737,080	2,178,548	2,683,738	2,911,243	2,466,882	2,196,980	2,495,521	2,498,936
Cash and cash equivalents at 31 December	254,533	204,638	179,556	1,099,311	2,340,806	2,345,098	1,974,385	1,487,676	1,335,782	2,029,742	2,224,380	2,737,080	2,178,548	2,683,738	2,911,243	2,466,882	2,196,980	2,495,521	2,498,936	2,566,092

Economic Cost-benefit Analysis Bukhara

(From 2015–2032, additional years are on file)

CASH FLOW STATEMENT (in 000' UZS)		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Bukhara in economic prices		Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Incremental Benefits		0	0	0	840,178	11,112,715	13,551,890	15,089,579	16,787,355	18,549,318	20,503,611	22,673,774	24,391,399	26,309,472	29,191,893	32,413,189	35,169,543	38,718,876	41,820,378
Personnel cost savings		0	0	0	0	201,338	434,488	703,218	1,011,697	1,091,621	1,177,859	1,270,910	1,371,312	1,479,645	1,596,537	1,722,664	1,858,754	2,005,596	2,164,038
Maintenance Savings		0	0	0	903,859	1,965,686	3,039,163	3,607,600	4,269,326	5,038,770	5,932,527	6,969,677	8,172,147	9,565,134	11,177,581	13,042,733	15,198,760	17,689,484	20,565,205
Consumer savings		0	0	0	(87,947)	249,854	618,550	957,024	1,350,162	1,437,071	1,529,517	1,627,850	1,653,896	1,680,358	1,788,327	1,903,171	1,933,622	2,057,731	2,090,654
Additional revenues from non-residential consumers		0	0	0	24,265	54,354	91,315	130,276	141,625	161,158	183,385	208,678	226,858	246,622	280,636	319,341	347,162	395,043	429,459
Avoided pollution cost from treated wastewater		0	0	0	0	8,641,483	9,368,375	9,691,460	10,014,545	10,820,697	11,680,323	12,596,659	12,967,186	13,337,712	14,348,811	15,425,281	15,831,245	16,571,023	16,571,023
Incremental Costs		0	0	0	0	2,125,565	2,295,069	2,477,840	2,674,911	2,887,393	3,116,484	3,363,477	3,629,763	3,916,843	4,226,334	4,559,978	4,919,654	5,295,435	5,700,260
Additional maintenance expenditure		0	0	0	0	1,939,266	2,092,469	2,257,774	2,436,138	2,628,593	2,836,251	3,060,315	3,302,080	3,562,944	3,844,417	4,148,126	4,475,828	4,829,418	5,210,942
Additional energy expenditure		0	0	0	0	186,298	202,600	220,067	238,773	258,800	280,233	303,162	327,683	353,899	381,917	411,852	443,826	466,017	489,318
Gross Operating Cash Flow		0	0	0	840,178	8,987,150	11,256,822	12,611,739	14,112,444	15,661,925	17,387,127	19,310,297	20,761,635	22,392,628	24,965,559	27,853,211	30,249,889	33,423,441	36,120,118
Capital Expenditure		0	30,491,980	73,374,160	48,593,760	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Replacement of Capital Expenditure		0	0	0	0	0	0	0	0	0	0	0	0	0	47,486,063	0	0	0	0
Investment Cash Flow		0	30,491,980	73,374,160	48,593,760	0	0	0	0	0	0	0	0	0	47,486,063	0	0	0	0
Total Net Cash Flow		0	(30,491,980)	(73,374,160)	(47,753,582)	8,987,150	11,256,822	12,611,739	14,112,444	15,661,925	17,387,127	19,310,297	20,761,635	22,392,628	(22,520,504)	27,853,211	30,249,889	33,423,441	36,120,118

Economic Cost-benefit Analysis Samarkand

(From 2015–2032, additional years are on file)

CASH FLOW STATEMENT (in 000' UZS)		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Samarkand in economic prices		Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Incremental Benefits		0	0	0	(125,786)	11,485,002	16,164,823	19,699,604	23,553,668	25,485,506	27,577,793	28,716,000	29,907,825	31,190,445	32,575,242	35,305,274	37,007,485	39,761,790	42,821,108
Personnel cost savings		0	0	0	0	248,317	267,934	289,101	311,940	336,583	363,173	391,864	422,821	456,224	492,266	531,155	573,116	618,392	667,245
Maintenance Savings		0	0	0	506,334	1,097,887	1,726,860	2,017,927	2,351,440	2,733,177	3,169,674	3,668,321	4,237,471	4,886,561	5,626,255	6,468,597	7,427,184	8,517,368	9,756,474
Consumer savings		0	0	0	(690,632)	1,132,759	3,519,040	5,792,346	8,384,707	8,942,121	9,536,221	9,707,873	9,882,615	10,060,502	10,241,591	10,921,622	11,118,211	11,856,030	12,642,387
Additional revenues from non-residential consumers		0	0	0	58,513	136,920	240,294	390,879	445,665	508,129	579,348	660,550	719,511	783,734	853,690	929,890	1,060,224	1,154,860	1,316,725
Avoided pollution cost from treated wastewater		0	0	0	0	8,869,119	10,410,694	11,209,351	12,059,916	12,965,496	13,929,377	14,287,392	14,645,408	15,003,424	15,361,440	16,454,010	16,828,751	17,615,141	18,438,278
Incremental Costs		0	0	0	0	1,843,331	1,991,940	2,151,944	2,324,243	2,509,810	2,709,691	2,925,018	3,157,012	3,406,987	3,676,366	3,966,681	4,279,586	4,612,501	4,971,716
Additional maintenance expenditure		0	0	0	0	1,825,870	1,970,114	2,125,753	2,293,688	2,474,889	2,670,405	2,881,367	3,108,995	3,354,606	3,619,620	3,905,570	4,214,110	4,547,024	4,906,239
Additional energy expenditure		0	0	0	0	17,461	21,826	26,191	30,556	34,921	39,286	43,651	48,016	52,382	56,747	61,112	65,477	65,477	65,477
Gross Operating Cash Flow		0	0	0	(125,786)	9,641,672	14,172,883	17,547,660	21,229,424	22,975,696	24,868,102	25,790,982	26,750,813	27,783,457	28,898,876	31,338,593	32,727,899	35,149,289	37,849,392
Capital Expenditure		0	43,063,500	57,418,000	43,063,500	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Replacement of Capital Expenditure		0	0	0	0	0	0	0	0	0	0	0	0	0	44,709,375	0	0	0	0
Investment Cash Flow		0	43,063,500	57,418,000	43,063,500	0	0	0	0	0	0	0	0	0	44,709,375	0	0	0	0
Total Net Cash Flow		0	(43,063,500)	(57,418,000)	(43,189,286)	9,641,672	14,172,883	17,547,660	21,229,424	22,975,696	24,868,102	25,790,982	26,750,813	27,783,457	(15,810,499)	31,338,593	32,727,899	35,149,289	37,849,392

Annex 6: MAP



