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Report No: PAD1386

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT PAPER

ON A

PROPOSED ADDITIONAL CREDIT

IN THE AMOUNT OF SDR 4.0 MILLION
(US$ 5.5 MILLION EQUIVALENT)

AND

PROPOSED ADDITIONAL IDA GRANT

IN THE AMOUNT OF SDR 3.3 MILLION
(US$ 4.5 MILLION)

TO THE

REPUBLIC OF TAJIKISTAN

FOR A

SECOND DUSHANBE WATER SUPPLY PROJECT ADDITIONAL FINANCING

June 23, 2015

Water Global Practice
Central Asia Country Unit
EUROPE AND CENTRAL ASIA

CURRENCY EQUIVALENTS

(Exchange Rate Effective MAY 31, 2015)

| | | |
|---|---|---|
| Currency Unit | = | Tajikistan Somoni |
| TJS 6.268 | = | USD 1 |
| USD 1.39 | = | SDR 1 |

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| AF | Additional Financing |
| DA | Designated account |
| DVK | State Unitary Enterprise Dushanbe Vodokanal |
| DWSP | First Dushanbe Water Supply Project |
| DWSP2 | Second Dushanbe Water Supply Project |
| ECA | Europe and Central Asia |
| GNI | Gross National Income |
| GOT | Government of the Republic of Tajikistan |
| IFRS | International Financial Reporting Standards |
| Lcd | Liter per capita per day |
| MOD | Municipality of Dushanbe |
| MOF | Ministry of Finance |
| MTR | Mid-term Review |
| NAP | Napornaya Water Treatment Plant |
| NIS | Network Information System |
| NRW | Non-revenue water |
| PDO | Project Development Objective |
| POM | Project Operations Manual |
| PS | Pumping station |
| RF | Results Framework |
| SAM | Samatechnaya Water Treatment Plant |
| SCADA | Supervisory Control and Data Acquisition |
| SCISPM | State Committee for Investments and State Property Management |
| WTP | Water treatment plant |

| | |
|---|---|
| Vice President: | Laura Tuck |
| Country Director: | Saroj Kumar Jha |
| Country Manager: | Patricia Veevers-Carter |
| Senior Global Practice Director: | Junaid Kamal Ahmad |
| Practice Manager/Manager: | Dina Umali-Deininger |
| Task Team Leader: | Pier Francesco Mantovani |

**TAJIKISTAN**
**ADDITIONAL FINANCING SECOND DUSHANBE WATER SUPPLY PROJECT**

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## ADDITIONAL FINANCING DATA SHEET

*Tajikistan*

*Second Dushanbe Water Supply Project - Additional Financing ( P154729 )*

*EUROPE AND CENTRAL ASIA*

*GWADR*

| Basic Information – Parent | | | |
|---|---|---|---|
| Parent Project ID: | P118196 | Original EA Category: | B - Partial Assessment |
| Current Closing Date: | 31-Dec-2015 | | |

| Basic Information – Additional Financing (AF) | | | |
|---|---|---|---|
| Project ID: | P154729 | Additional Financing Type (from AUS): | Scale Up |
| Regional Vice President: | Laura Tuck | Proposed EA Category: | B |
| Country Director: | Saroj Kumar Jha | Expected Effectiveness Date: | October 1, 2015 |
| Senior Global Practice Director: | Junaid Kamal Ahmad | Expected Closing Date: | September 30, 2018 |
| Practice Manager/Manager: | Dina Umali-Deininger | Report No: | PAD1386 |
| Team Leader(s): | Pier Francesco Mantovani | | |

**Borrower**

| Organization Name | Contact | Title | Telephone | Email |
|---|---|---|---|---|
| Republic of Tajikistan, Ministry of Finance | Mr. Abdusalom Qurboniyon, | Minister | +992372211417 | min_fin@tojikistan.com |
| Responsible Agency: SUE "Dushanbe Vodokanal" | Mr. Fayzullokhon Isupov | Director | 221-09-92 | dwspcu@gmail.com |

**Project Financing Data - Parent ( Second Dushanbe Water Supply Project-P118196 ) (in USD Million)**

Key Dates

| Project | Ln/Cr/TF | Status | Approval Date | Signing Date | Effectiveness Date | Original Closing Date | Revised Closing Date |
|---|---|---|---|---|---|---|---|
| P118196 | IDA-H6920 | Effective | 07-Jun-2011 | 13-Jul-2011 | 12-Oct-2011 | 31-Dec-2015 | 31-Dec-2015 |

Disbursements

| Project | Ln/Cr/TF | Status | Currency | Original | Revised | Cancelled | Disbursed | Undisbursed | % Disburse |
|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | d |
| P118196 | IDA-H6920 | Effective | XDR | 10.10 | 10.10 | 0.00 | 5.90 | 4.20 | 58.39 |

| Project Financing Data - Additional Financing Tajikistan Second Dushanbe Water Supply Project - Additional Financing ( P154729 )(in USD Million) | | | |
|---|---|---|---|
| [ ] Loan [ ] Grant [ X ] IDA Grant | | | |
| [X] Credit [ ] Guarantee [ ] Other | | | |
| Total Project Cost: | 11.00 | Total Bank Financing: | 10.00 |
| Financing Gap: | 0.00 | | |

| Financing Source – Additional Financing (AF) | Amount |
|---|---|
| BORROWER/RECIPIENT | 1.00 |
| International Development Association (IDA) Credit | 5.50 |
| IDA Grant | 4.50 |
| Total | 11.00 |

| 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 | |

## Team Composition

**Bank Staff**

| Name | Role | Title | Specialization | Unit |
|---|---|---|---|---|
| Pier Francesco Mantovani | Team Leader (ADM Responsible) | Lead Water and Sanitation Specialist | Lead Water and Sanitation Specialist | GWADR |
| Niso Bazidova | Financial Management Spec. | Financial Management Analyst | Financial Management Analyst | GGODR |
| Knud Bitsch-Lauritsen | Team Member | Financial Consultant | Financial Consultant | GSURR |
| Farangis Dakhte | Team Member | Program Assistant | Program Assistant | ECCTJ |
| Dilshod Karimova | Procurement Spec. | Procurement Specialist | Procurement Specialist | GGODR |
| Angela Nyawira Khaminwa | Safeguards Spec. | Sr. Social Development Spec. | Sr. Social Development Spec. | GSURR |
| Ivaylo Hristov Kolev | Team Member | Sr. Water & Sanitation Spec. | Utility finance | GWADR |
| Camilo Lombana Cordoba | Team Member | Water and Sanitation Specialist | Water and Sanitation Specialist | GWADR |

| | | | | |
|---|---|---|---|---|
| Cesar Niculescu | Safeguards Spec. | Environmental Specialist | Environmental Specialist | GENDR |
| Natalia Robalino | Counsel | Senior Counsel | Senior Counsel | LEGIA |
| Jasna Mestnik | Team Member | Finance Officer | Finance Officer | WFALA |
| Alexander Rukavishnikov | Team Member | Senior Procurement Specialist | Senior Procurement Specialist | GGODR |
| Faridun Sanginov | Team Member | Operations Analyst | Operations Analyst | GSURR |
| Leyla Talipova | Team Member | Engineering Consultant | Engineering | |
| Guy Tchabo-Tchakounte | Team Member | Program Assistant | Program Assistant | GWADR |
| Hiromi Yamaguchi | Team Member | Operations Consultant | Water Resources | |

**Extended Team**

| Name | Title | Location |
|---|---|---|
| | | |

**Locations**

| Country | First Administrative Division | Location | Planned | Actual | Comments |
|---|---|---|---|---|---|
| Tajikistan | Dushanbe | Dushanbe | X | | |

## Institutional Data

**Parent ( Second Dushanbe Water Supply Project-P118196 )**

**Practice Area (Lead)**

Water

**Contributing Practice Areas**

**Cross Cutting Topics**

[ ] Climate Change

[ ] Fragile, Conflict & Violence

[ ] Gender

[ ] Jobs

[ ] 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 | Water supply | 68 | | |

| | | | | |
|---|---|---|---|---|
| Public Administration, Law, and Justice | Public administration-Water, sanitation and flood protection | 32 | | |
| | | | | |
| Total | | 100 | | |

**Themes**

Theme (Maximum 5 and total % must equal 100)

| Major theme | Theme | % |
|---|---|---|
| Urban development | City-wide Infrastructure and Service Delivery | 100 |
| Total | | 100 |

**Additional Financing Tajikistan Second Dushanbe Water Supply Project - Additional Financing ( P154729 )**

**Practice Area (Lead)**

Water

**Contributing Practice Areas**

Social, Urban, Rural and Resilience Global Practice

**Cross Cutting Topics**

[ ] Climate Change

[ ] Fragile, Conflict & Violence

[ ] Gender

[ ] Jobs

[ ] 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 | Water supply | 87 | 0 | 0 |
| Public Administration, Law, and Justice | Public administration-Water, sanitation and flood protection | 13 | 0 | 0 |
| Total | | 100 | | |

**Themes**

Theme (Maximum 5 and total % must equal 100)

| Major theme | Theme | % |
|---|---|---|
| Urban development | City-wide Infrastructure and Service Delivery | 87 |
| Public sector governance | Other public sector governance | 13 |
| 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 provide an IDA credit in the amount of USD 5.5 million and an IDA grant in the amount of USD 4.5 million to the Republic of Tajikistan, as Additional Financing (AF) for the Second Dushanbe Water Supply Project (DWSP2) (P118196, IDA-H6920).

2. The AF is needed to address a funding shortage under the original project and to scale-up selected investments. In doing so, the AF will enable significant improvement in service quality and sustainability, allowing Dushanbe to finally benefit from water service that meets potable quality requirements, and to continue improving the performance of its municipal utility. The AF will in particular allow the completion of investments which would otherwise be cancelled or curtailed due to the funding shortage, including (i) the completion of the metering program in the southern part of the city and (ii) the installation of network re-chlorination systems. Scale-up investments will include (i) an additional tranche of filter reconstruction at the Samatechnaya Water Treatment Plant (SAM WTP); (ii) the automation of the coagulation process at SAM WTP; (iii) the replacement and sectorization of network sections; (iv) the development of a tariff and connection fee study; and (v) technical assistance to improve utility management capacities and to develop a non-revenue water (NRW) reduction strategy. Three originally planned activities will be cancelled, including: (i) the rehabilitation of 1500 apartment building service connections; (ii) the rehabilitation of the Napornaya (NAP) pumping station and tanks; and (iii) the installation of a SCADA[1] system.

3. The AF also comprises (i) a minor reformulation of the Project Development Objective (PDO), (ii) modifications to the Results Framework (RF), and (iii) a closing date extension.

# II. BACKGROUND AND RATIONALE FOR ADDITIONAL FINANCING

## *A. Country Context*

4. Tajikistan is one of the youngest and fastest growing countries in the Europe and Central Asia (ECA) region, with a population of over 8 million people, of which about 70 percent live in rural areas. Following independence in 1991 and the end of a devastating civil war in 1997, the country undertook reforms which led to sound economic growth averaging 7% over the last 15 years. Remarkable poverty reduction was achieved from 81 percent in 1999 to 36 percent in 2012. With a Gross National Income (GNI) per capita of USD 980 in 2013, Tajikistan remains the most vulnerable country in ECA. The ongoing recession in Russia will affect significantly the prospects for growth and poverty reduction in Tajikistan in the near and medium-term. Economic growth is projected to slow to 3.2 percent in 2015 and recover gradually in the medium-term, although not to the recent historical averages[2]

[1] Supervisory, control and data acquisition system
[2] Tajikistan Economic Update April 2015, The World Bank

### *B. Sector and Institutional Context*

5. Tajikistan's water supply and sanitation (WSS) sector is the least developed in the ECA region. Official 2012 data measures access to water supply service at 93 percent in urban areas and 49 percent in rural areas, whereas sanitation service is only accessed by respectively 20 percent and 5 percent of the urban and rural populations. Most infrastructure assets date back to the Soviet era and are highly degraded as a result of aging, poor maintenance and under-investment, leading to widespread service inadequacies. Sanitation systems are typically less developed and more neglected than water infrastructure, resulting in locally dire sanitary conditions. Sector organization and governance are weak, with most central sector functions concentrated in a low capacity Communal Services Agency (KMK), except for tariff regulation entrusted to the Anti-Monopoly Commission (AMC). Tajikistan will not meet the 2015 Millennium Development Goal for water, largely because of insufficient policy focus to date on the rural service gap. Poor availability and quality of WSS services is a major factor of non-monetary poverty, and the socio-economic burden, calculated in terms of health impacts, coping costs and opportunity losses, is estimated at 3.9% of GDP in 2012. The Swiss Cooperation, EBRD and JICA are, along with IDA, the main donors supporting the sector. Outside of Dushanbe, IDA also supports water and urban infrastructure needs of secondary cities through the *Municipal Infrastructure Development Project* and the *Communal Services Fund Project.*

6. The capital Dushanbe (approximately 800,000 inhabitants) benefits from extensive WSS infrastructure built in Soviet times, which to this day affords quasi-universal access to piped water service. Service quality, reliability and sustainability are however among the worst of any ECA capital. This is largely due to the degradation of aging assets from lack of maintenance and renewal. Networks are on average 50 years old. As a consequence of the lack of filtration at the main Samatechnaya (SAM) water treatment plant (WTP), non-potable water is distributed to 40 percent of the population, and high-turbidity water occasionally reaches customer taps after strong rains. Water inefficiencies are among the highest on record[3] due to unmetered consumptions and network leaks, and affect service pressure and continuity especially in the summer and in the upper floors of apartment buildings. Water supply service in Dushanbe is under the sole responsibility of the municipality, with no oversight by KMK. Despite some improvements in recent years, the performance of municipal utility Dushanbe Vodokanal (DVK) remains low, impaired by capacity and governance weaknesses, obsolete practices and limited accountability. Until recently, customer service relied on door-to-door controller visits to issue handwritten bills for cash payment, achieving very low collection levels. A recently completed water supply master plan assesses investment needs at USD 0.5 billion in the next two decades.

7. IDA has supported DVK since 2002 through a first Dushanbe Water Supply Project[4] (DWSP, P057883, USD 25 million) initially implemented through a private-public partnership (PPP) and complemented by Islamic Development Bank (IDB) co-financing. At inception, DVK's system was on the verge of collapse and limited funding had to be focused on emergency measures to ensure the distribution of disinfected (i.e. bacteriologically safe) water, and restore service availability through rehabilitation of selected intakes, network sections and booster pumps. The project contributed to a drop in waterborne diseases (typhoid cases decreased from 379 in 2002, to 177 in 2004, 22 in

[3] Unit water demands exceed 1,000 liter/per capita/day (lcd)
[4] The Dushanbe Water Supply Project was approved in June 2002 and closed in June 2011.

2009 and 0 in 2010), to increased service availability and to partial reduction of high turbidity water events. The planned IDB financing to rehabilitate the SAM filters was however cancelled, leaving part of the city with unfiltered, thus not potable, water supply. The PPP failed and utility efficiency and financial performance objectives were missed. DWSP and its AF closed in 2011 with an overall Moderately Unsatisfactory rating. At closing, DVK's income was well below the levels required to service the on-lent debt contracted with the Government of Tajikistan (GOT)[5].

## C. *Original IDA Grant*

8. The Second Dushanbe Water Supply Project (DWSP2) was prepared in 2010 as a follow-up operation needed to address DVK's unresolved water quality issues while improving its financial performance and initiating demand management. Necessary priority investments were estimated at USD 40 million, which exceeded available IDA resources at the time. After inconclusive attempts to mobilize co-financing partners, DWSP2 was approved in June 2011 to be funded by a USD 16 million IDA grant and by USD 3 million co-financed by the Municipality of Dushanbe (MoD). The project has been effective since October 2011. Implementation responsibilities are delegated by DVK to an international Project Management Consultant (PMC) also providing advisory technical assistance to utility management and operations. Within DVK, a Project Administration Unit (PAU) ensures project coordination and communications needs.

9. The original PDO is to *"assist the Recipient in improving water utility performance and water supply services in selected areas of Dushanbe*". This is being achieved through four components:
   a. *Component 1: Metering and Demand Management (USD 7.62 million),* including: (i) a metering program in the southern half of the city for 46 percent of DVK's residential customers: (ii) the installation of bulk meters; (iii) the installation of a SCADA[6] system; and (iv) the implementation of a communication and customer outreach strategy, including annual customer satisfaction surveys.
   b. *Component 2. Water Quality Improvement (USD 6.27 million),* including: (i) the reconstruction of 50 percent of the filtration capacity at SAM; (ii) the installation of re-chlorination systems in the network; (iii) the cleaning of reservoirs and mains; (iv) the rehabilitation of the Napornaya Pump Station (NAP PS); and (v) the supply of equipment, including for the dredging of sedimentation ponds.
   c. *Component 3. Institutional Strengthening & Capacity Building (USD 3.34 million),* including: (i) institutional and financial assessments; (ii) installation of modern billing and collection and accounting systems; (ii) development of water supply master plan and hydraulic model; and (v) training programs for staff and managers.
   d. *Component 4. Implementation Support (USD 1.78 million),* including: (i) engineering design and works supervision, (ii) PAU operating costs; and (iii) annual financial audits.

10. Following initial delays, the project has been effectively accelerated while achieving sound technical quality. The PDO outlook and implementation performance of DWSP2 are rated Moderately Satisfactory since April 2014. Currently, all funds are committed, and disbursements exceed 58 percent and are set to further substantially accelerate. There

[5] Under DWSP, GOT on-lent the IDA credits and grants as loans to DVK, with a growing interest markup reaching 5% on both the credit and grant shares.
[6] Supervision, control and data acquisition system allowing remote monitoring of facilities and networks.

are no fiduciary or safeguards issues. To date, all planned 76,500 meters have been procured and 51,000 of them are installed, the reconstruction of the first tranche of SAM filters is underway, and a modern customer billing and collection system is being rolled out. The main implementation issues are as follows:

a. A budget shortfall on the DWSP2 of USD 3.5 million has emerged resulting from cost increases and unfavorable SDR/USD exchange rate trends, which required the cancellation or reduction of selected investments, including for the rehabilitation of the NAP PS and installation of the SCADA system. Despite such preemptive measures, the continued deterioration of SDR/USD exchange rate is causing the value of outstanding contract commitments to exceed the remaining undisbursed funds by roughly USD 900,000. DVK and the Municipality are unable to bridge this gap, and unless additional funding is secured, some on-going contracts will be terminated before completion, including meter installation, cleaning of network and tanks, re-chlorination systems and laboratory equipment.
b. Due to the rebidding and works delays[7], the completion of the contract for the first tranche of SAM filters reconstruction will require a 9 month extension past the December 31, 2015 closing date.
c. The hydraulic modelling surveys and master plan studies have revealed previously unknown network constraints. These changed conditions limit the impact of the reconstruction of the first tranche of SAM filters and confirm the need for an additional tranche of filter reconstruction.[8]
d. DVK is facing delays in adopting the new organization designed under the project. Performance will be affected if the long vacant positions of Deputy Director of Finance and Deputy Director of Customer Service are not filled.
e. The introduction of meters and of billing based on metered water consumptions has not yet been accompanied by a relevant revision of tariff structure applicable to actual metered consumptions (as opposed to theoretical norm consumptions). Until such tariff structure revision is implemented, DVK faces a risk of decreased revenue.

11. The midterm review (MTR) conducted in July 2014 recommended a low-level restructuring of the project that would allow for: (i) adjustments to the Results Framework to reduce target levels on 3 PDO indicators that were negatively impacted by the above-mentioned changed conditions: (ii) streamlining the calculation of two financial PDO indicators; and (iii) a potential closing date extension to allow completion of the SAM filter reconstruction contract. The restructuring was not processed as GOT's request for such restructuring was deferred and only received as part and parcel of the January 27, 2015 AF request.

12. Although key contracts are still on-going, gains are already measured in terms of water quality, improved customer satisfaction and financial sustainability. Improvements in water production and distribution operations supported by the Project in 2012 and 2013 have translated into better water quality and service. Customer satisfaction rates, as measured through annual surveys, have been improving, in particular for service reliability (76 percent of customer satisfied in 2014 vs. 57 percent in 2010). Surveys also

[7] A first round of bidding was inconclusive due to excessive price or insufficient quality of bids received. Upon rebidding an Iranian contractor was selected. Works are delayed by contractor performance and guarantees issues.

[8] Findings included the fact that several neighborhoods are supplied through an unmapped outlet, originally intended to supply cooling water to a thermal plant, which bypasses the SAM filter station. The outlet must be reconfigured for those neighborhoods to receive filtered disinfected water. The master plan also determined that because of SAM WTP gravity distribution, reestablishing 100% of SAM filtration capacity is the most economical long-term water production option for the city (as opposed to the option also considered of substituting 50% of SAM production with water pumped from available groundwater sources south of the city).

reported increased satisfaction with water quality across most DVK service areas, reaching 84 percent on average in 2014 up from 70 percent in 2010. More stringent focus on billing and collection performance, coupled with three tariff increases since 2011, have resulted in major DVK financial performance improvements, practically attaining cost-recovery in 2013[9] for the first time in recent history. The on-going metering program is generally well accepted by customers and proving highly successful in terms of demand management and eliminating service shortages in the upper floors of metered apartment buildings. A new billing and collection system is being rolled-out, after benefitting from customer database updates which allowed for the drastic reduction in the numbers of undeclared users. DVK's capacities have also been strengthened with the development of: (i) new organization and human resource policies; (ii) financial assessment and projections; (iii) updated accounting system; (iv) a master plan for 2035; (v) a hydraulic model and geographical information system of the distribution system; (vi) a demand management/leak reduction pilot in the Binokor district as basis for a preliminary non-revenue water reduction strategy; (vii) an energy efficiency audit; (viii) a public website; and (ix) a charter of customer rights.

13. Some of these improvements are captured in the Results Framework (RF) and translate into progress against PDO indicators. Three out of eight PDO indicator targets (residual chlorine in the network, bacteriological water quality in the network, accounts receivable) have been already fully or substantially achieved. Three indicators (customer satisfaction with water quality, customer satisfaction with service reliability, cash operating ratio, number of customers billed) have significantly improved. One indicator (water turbidity in the network) cannot be met, due to the above mentioned changed network conditions. Progress against the PDO indicators is summarized in the table below.

| PDO Indicator | Unit | Baseline 2010 | Current value | Target value | Observations |
|---|---|---|---|---|---|
| Turbidity in the network. | % of compliance samples | 40% | 36.7% | 99% | Due to changed network conditions the original target of 99% was deemed unattainable. MTR had recommended reducing target to 80%, but AF eliminates the need for such reduction. |
| Residual chlorine in the network. | % of compliant samples | 98% | 100% | 99% | Original target of 99% is currently attained. Due to changed network conditions, MTR had recommended reducing target to 86%, but AF eliminates the need for such reduction. |
| Bacteriological water quality in the network | % of compliant samples | 96% | 99% | 99% | Original target of 99% is currently attained. Due to changed network conditions, MTR had recommended reducing target to 86%, but the AF eliminates the need for such reduction. |
| Customers, satisfied with water quality. | % | 70% | 84% | 90% | Target is substantially approached. Further gains likely with completion of first tranche of filter reconstruction. |

[9] Financial losses were reduced to TJS 1.3 million in 2013 (down from TJS 5.2 million in 2012 and TJS 14.9 million in 2011). Such gains were however in part offset by new non-operating charges introduced by auditors under changed accounting rules for the 2013 financial statements.

| | | | | | |
|---|---|---|---|---|---|
| Customers satisfied with service reliability. | % | 57% | 76% | 90% | Significant progress made. Funding shortage may prevent further progress and target attainment. |
| Cash Operating Ratio | Ratio | 1.07 | 1 | <0.9 | Target substantially approached, (based on 2013 audit), more gains needed. |
| Persons registered and billed | % of total population | 42% | 85% | 95% | On track to be substantially attained |
| Accounts receivable as % of revenue. | % | 25% | 12.8% | 15% | Target exceeded |

***Rationale for the Additional Financing***

14. In January 2015 GOT requested an AF in the amount of UD 21 million aimed at (i) covering the financing gap and allowing the completion of activities under the original project, and at (ii) scaling-up selected activities, critical to consolidating and expanding project benefits. The letter also included a restructuring request encompassing adjustments to the DWSP2 Results Framework (RF) and an extension of the original closing date consistent with the recommendations of the July 2014 midterm review. The option of a USD 18 million IDA AF credit was initially appraised to that effect. However, following prioritization of available IDA resources, the amount of IDA AF was agreed at USD 10 million, including a USD 5.5 million credit (55 percent) and a USD 4.5 million grant (45 percent). Such IDA financing will be complemented by USD 1.0 million (or 9.1%) to be co-financed by the Municipality of Dushanbe (MOD). As Borrower, GOT is to on-lend the IDA credit to DVK. The on-lending terms negotiated by the parties include an interest rate that would gradually increase to a total of 5 percent per annum.

15. The AF is aligned with the original PDO. The DWSP2 RF will be adjusted to reflect the new contributions of AF activities as well as MTR recommendations. The proposed changes to the RF are summarized in Annex 1. The AF is also in line with the Country Partnership Strategy (CPS) for the period FY15-18, especially its second pillar which is aimed at reducing extreme poverty and at promoting shared prosperity by improving the delivery of social services that expand opportunities for excluded and vulnerable groups. The proposed AF is also consistent with GOT's efforts to scale-up access to basic communal services and enhancing service delivery.

16. The AF responds to a dual rationale. The AF is in part urgently needed to achieve the PDO, by allowing the completion of planned project investments curtailed by the funding shortage. The AF is further justified to scale-up project investments towards consolidating project benefits and extending them to the entire DVK service area. The AF will thus enhance the original grant and further significantly improve water supply quality in Dushanbe. In particular, the AF will allow restoration of strictly potable water supply across the entire city and elimination of high turbidity water events. The AF will extend and expand capacity building and technical assistance activities to strengthen DVK's institutional framework, performance and sustainability.

17. The activities financed by the AF will be consistent with the components of the original project, as summarized below and as detailed in Annex 2 and Annex 3.

Under *Component 1. Metering and Demand Management (USD 2.18 million),* the AF will finance:

i. The installation of approximately 10,000 residential meters, to complete the planned installation 76,500 meters in the southern part of the city, previously curtailed by funding shortage.
ii. The sectorization and replacement of prioritized portions of the distribution network to reduce water losses, including non-revenue water (NRW) reduction strategy
iii. Energy efficiency upgrades;
iv. Customer communication and outreach activities, including annual customer satisfaction surveys, and introduction of mobile-phone based customer feedback and claim system.

Under *Component 2. Water Quality Improvement (USD 6.8 million),* the AF will finance:

v. The reconstruction of an additional 50 percent tranche of filters at SAM water treatment plant, including modification of inlet and outlet structures.
vi. The installation of an automated coagulation dosage system at SAM WTP.
vii. The installation of in-network re-chlorination systems, previously cancelled due to funding shortage.

Under *Component 3. Institutional Strengthening & Capacity Building (USD 0.37 million),* the AF will finance:

viii. The development of tariff and connection fee study
ix. Technical Assistance for corporate development, financial management, customer service and revenue enhancements
x. Technical Assistance for operational improvements,

Under *Component 4. Implementation Support (USD 1.49 million),* the AF will finance:

xi. Project management, design and supervision services;
xii. Project Administration Unit operating costs;
xiii. Annual audits.

An unallocated contingency budget of USD 0.16 million is included to cover potential cost increases and continued currency exchange losses.

18. The AF retains the proven implementation arrangements of the on-going project. The municipal utility Dushanbe Vodokanal (DVK) is the beneficiary and implementing entity. Project Management responsibilities are delegated to an internationally recruited Project Management Consultant (PMC), also responsible for project management and for advisory technical assistance to DVK operations. As owner of DVK and project co-financier, the Municipality of Dushanbe (MOD) remains a core stakeholder. The PAU ensures DVK's liaison with PMC, project coordination and communications with IDA.

19. The activities financed by the AF should not have any new potential environmental or social impacts, and there are no changes in triggered safeguards policies. Procurement and implementation of AF activities could start with limited lead time as all investments have already been specified or even designed under DWSP2. The AF implementation period is estimated at three years, from October 1, 2015 to September 30, 2018. The AF will benefit from a midterm review in June 2017.

20. No other donor can co-finance the AF at this point. The Municipality may however subsequently explore the possibility of mobilizing other sources of funding for expansion of AF activities, in particular in areas of residential metering, NRW-reduction, energy efficiency and capacity building.

***Expected Benefits and Risks***

21. As described above, the benefits of the AF include major improvements in the quality and reliability of water service in Dushanbe. In particular:
    a. With the full reconstruction of SAM filters, DVK will be able to distribute strictly potable water across its system and the SAM service area will no longer be vulnerable to high turbidity water events.
    b. The completion of the metering program in the southern half of the city, and the initiation of network sectorization and renewal program as part of a non-revenue water reduction strategy, are expected to curb water demands, resulting in locally increased availability of service across the city, including in summer and in the upper floors of apartment buildings.
    c. DVK's efficiency, revenue, cost-recovery and sustainability will also benefit from the completion of the partial metering program, launch of a NRW reduction strategy and energy efficiency upgrades, and introduction of block tariffs.

22. The above benefits will be shared by all DVK customers, but may be most felt by the poorer population groups which often reside in worst served areas or apartment blocks (about 33 percent of Dushanbe's population is considered poor). In addition, it is expected that there will be benefits that accrue particularly to women in the following three areas. Firstly, lack of water and poor water quality impact women disproportionately as they often bear the primary responsibility for water collection and management and often have the primary responsibility for taking care of family members who are unwell. As of 2014, surveys indicate that in about 75% of households affected by poor service, the wife, daughter, or daughter-in-law are responsible for fetching alternate water supplies or for storing water in the home.[10] Service quality and reliability improvements that are anticipated as a result of the investments made under the project (Component 1 and 2) will particularly benefit women by freeing the time devoted to coping with scarce water service and reducing incidences of disease to other tasks. Secondly, anecdotal evidence shows that many women had the responsibility of dealing with customer representatives from DVK who engaged with consumers in an inconsistent and unprofessional manner. Improvements to the billing and customer service under the project has professionalized the interface between the DVK and its customers, by, among other things, limiting the need for face-to-face billing, and by exploring web-based and phone-based interfaces. The AF will explore the extent to which the new customer service modalities are resulting in satisfactory outcomes for women and for men. These are likely to result in more efficient and professional interactions. Lastly, the introduction of block tariffs to be designed under the project is in part aimed at ensuring that future tariff increases can preserve the affordability of basic service for low income households which will include female-headed households.

23. The overall AF implementation risk is rated Substantial, as assessed in the Systematic Operations Risk Rating Tool (SORT) table below. In addition to country level political or macroeconomic risks, substantial risks pertaining to the sector and to the project include:
    a. Sector strategies and policies. DVK is an autonomous utility under full and exclusive control of MOD, with tariffs regulated by AMC. Complex municipal governance can cause significant delays in approvals or decision-making. Since 2011, three tariff increases have been approved by AMC, but approval of new tariffs tailored for metered consumptions (whether flat tariff or block tariff) may be deferred by AMC until the end of the project when 100 percent metering coverage is completed, which implies a short term revenue risk for DVK. In order to avoid a significant drop in

[10] Country-level figures note that approximately 80% women are water carriers and approximately11% of children with a mean of 26 minutes to a water source. (Multiple Indicator Cluster Survey).

revenue, DVK should revise its tariff structure for metered consumers, in replacement of current tariffs based on theoretical norm consumptions. The project will support DVK's proposals and negotiations in this regard.

b. Weak institutional capacity for implementation. DWSP2 implementation pace has decisively improved since mid-2013, and the issues experienced at the start of the project are not expected to reoccur with the AF launch. Despite organizational improvements supported by DWSP2, DVK remains a low capacity agency, and AF implementation must continue to be supported by an international PMC. The PMC will also continue to provide targeted advisory technical assistance to utility management and operations. The impact of such technical assistance in terms of modernization and improved performance may be delayed by limited vision and capacity, lack of incentives (low salaries), and rigid municipal governance. The Project will sustain the strengthening of DVK's capacity and governance.
c. Fiduciary risks. Based on DWSP lessons learned, DWSP2 design and supervision have paid significant attention to mitigating fiduciary risks. There are no unresolved fiduciary, environmental, social or safeguards issues (Procurement and FM arrangements are deemed Satisfactory). Although there have been no fiduciary issues in DWSP2 to date, the risk is still perceived as substantial. Close fiduciary supervision will be sustained.
d. Potential disaster and climate risks have been screened and found to be low.

| **Risk Category** | **Rating (H, S, M, L)** |
|---|---|
| 1. Political and Governance | Substantial |
| 2. Macroeconomic | Substantial |
| 3. Sector Strategies and Policies | Substantial |
| 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 | Moderate |
| 9. Other | |
| OVERALL | Substantial |

## III. PROPOSED CHANGES

**Summary of Proposed Changes**

The changes associated with the AF comprise modifications to the original (a) scope of activities; (b) PDO formulation; (c) Results framework; and (c) closing date.

As listed above, and detailed in Annex 2, the AF will allow the completion of most activities originally planned under DWSP2 which would otherwise be deferred or curtailed due to the funding shortage, including (i) ) the completion of the metering program in the southern part of the city, and (ii) the

installation of network rechlorination systems. The AF will also comprise new activities beyond the original scope, including (i) an additional tranche of filter reconstruction at SAM WTP; (ii) the automation of the coagulation process at SAM WTP; (iii) the replacement of network sections; (iv) the development of a tariff and connection fee study; and (v) technical assistance to improve utility management capacities and to develop a non-revenue water (NRW) reduction strategy. Some originally planned DWSP2 activities will nevertheless be cancelled, including: (i) the rehabilitation of 1500 apartment building service connections; (ii) the rehabilitation of the NAP pumping station and tanks; and (iii) the installation of a SCADA system. The cancellations were decided by DVK to prioritize AF utilization for the completion of the second tranche of SAM filter reconstruction, understood as more strategic to achieve the PDO.

The proposed change in PDO is editorial in nature, aimed at streamlining formulation and at resolving an inconsistency in original project documentation.

| | |
|---|---|
| Change in Implementing Agency | Yes [ ] No [ X ] |
| Change in Project's Development Objectives | Yes [ X ] No [ ] |
| Change in Results Framework | Yes [ X ] No [ ] |
| Change in Safeguard Policies Triggered | Yes [ ] No [ X ] |
| Change of EA category | Yes [ ] No [ X ] |
| Other Changes to Safeguards | Yes [ ] No [ X ] |
| Change in Legal Covenants | Yes [ ] No [ X ] |
| Change in Loan Closing Date(s) | Yes [ X ] No [ ] |
| Cancellations Proposed | Yes [ ] No [ X ] |
| Change in Disbursement Arrangements | Yes [ ] No [ X ] |
| Reallocation between Disbursement Categories | Yes [ ] No [ X ] |
| Change in Disbursement Estimates | Yes [ X ] No [ ] |
| Change to Components and Cost | Yes [ X ] No [ ] |
| Change in Institutional Arrangements | Yes [ ] No [ X ] |
| Change in Financial Management | Yes [ ] No [ X ] |
| Change in Procurement | Yes [ ] No [ X ] |
| Change in Implementation Schedule | Yes [ X ] No [ ] |
| Other Change(s) | Yes [ ] No [ X ] |

## Development Objective/Results

**Project's Development Objectives**

Original PDO

The project development objective is to assist the Recipient in improving water utility performance and water supply services in selected areas of Dushanbe

**Change in Project's Development Objectives**

Explanation:

This is an unsubstantial change, aimed at streamlining PDO formulation and eliminating a minor editorial inconsistency between the PDO in the original DWSP2 grant agreement ("to assist the Recipient in improving water utility performance and water supply services in selected areas of Dushanbe") and the

PDO across all other DWSP2 documents ("to improve water utility performance and water supply services in selected areas of Dushanbe". The latter is retained as the new PDO for the project.

Proposed New PDO - Additional Financing (AF)

The project development objective is to improve water utility performance and water supply services in selected areas of Dushanbe.

**Change in Results Framework**

Explanation:

As assessed during the MTR and discussed above, some of the original PDO indicator targets for water quality would not be reached by DWSP2 due to changed conditions. The AF is designed to allow achievement of such original water quality targets. Accordingly, the original water quality PDO targets are maintained for the AF.

New intermediate outcome indicators are integrated into the Results Framework to reflect specific Additional Financing impacts such as non-revenue water reduction and energy efficiency gains. A core sector indicator - "Direct Project beneficiaries (of which female %)" would also be included. These RF adjustments do not require any modification to the original Project Development Objective.

## Compliance

**Covenants - Additional Financing ( Tajikistan Second Dushanbe Water Supply Project - Additional Financing - P154729 )**

| Source of Funds | Finance Agreement Reference | Description of Covenants | Date Due | Recurrent | Frequency | Action |
|---|---|---|---|---|---|---|
| IDA | PA: Schedule, Section II, B, 6. | Except as the Association shall otherwise agree, the Project Implementing Entity shall maintain for each of its fiscal years during implementation of the Project a ratio of total operating expenses to total operating revenues not higher than 0.9. | | ☒ | Yearly | New |
| IDA | PA: Schedule, Section II, B, 5. | Except as the Association shall otherwise agree, the PIE shall not incur any debt, unless a reasonable forecast of the revenues and | | ☒ | Yearly | New |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | expenditures of the PIE shows that its estimated net revenues for each fiscal year during the term of the debt to be incurred shall be at least 1.2 times its estimated debt service requirements in such year on all of its debt including the debt to be incurred. | | | | |
| IDA | FA: Schedule 2, Section I, A. 7. | The Recipient shall ensure that the Municipality of Dushanbe has approved the establishment of a new organizational structure for the Project Implementing Entity, acceptable to the Association. | 31-Dec-2015 | ☐ | | New |
| IDA | FA: Schedule 2, Section I, A. 8. | The Recipient shall ensure that the Project Implementing Entity has successfully completed the installation of a customer management system, acceptable to the Association. | 31-Dec-2015 | ☐ | | New |
| IDA | FA: Schedule 2, Section I, A. 9. | The Recipient shall ensure that the Project Implementing Entity has successfully completed the | 31-Dec-2015 | ☐ | | New |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | recruitment process for the Deputy Director of Finance and Deputy Director of Customer Service, with professional qualifications and experience acceptable to the Association. | | | | |
| IDA | PA: Schedule, Section II, B, 4. | The Project Implementing Entity shall maintain, throughout the implementation of the Project, the Project Implementing Entity's internal audit unit, with a composition, resources and terms of reference satisfactory to the Association. | | ☒ | Yearly | New |

**Conditions**

| Source Of Fund | Name | Type |
|---|---|---|
| IDA | Subsidiary Agreement | Effectiveness |

**Description of Condition**

The Subsidiary Financing Agreement has been executed on behalf of the Recipient, the Project Implementing Entity, and the Municipality of Dushanbe.

**Risk**

| Risk Category | Rating (H, S, M, L) |
|---|---|
| 1. Political and Governance | Substantial |
| 2. Macroeconomic | Substantial |
| 3. Sector Strategies and Policies | Substantial |
| 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 | Moderate |
| 9. Other | |
| OVERALL | Substantial |

## Finance

**Loan Closing Date - Additional Financing ( Tajikistan Second Dushanbe Water Supply Project - Additional Financing - P154729 )**

| Source of Funds | Proposed Additional Financing Loan Closing Date |
|---|---|
| Borrower | 30-Sep-2018 |
| International Development Association (IDA) | 30-Sep-2018 |
| IDA Grant | 30-Sep-2018 |

**Loan Closing Date(s) - Parent ( Second Dushanbe Water Supply Project - P118196 )**

Explanation:

The project closing date will be extended for two years and 9 months from December 31, 2015 to September 30, 2018 to enable completion of the proposed activities under the AF.

| Ln/Cr/TF | Status | Original Closing Date | Current Closing Date | Proposed Closing Date | Previous Closing Date(s) |
|---|---|---|---|---|---|
| IDA-H6920 | Effective | 31-Dec-2015 | 31-Dec-2015 | 30-Sep-2018 | |
| | | | | | |

**Change in Disbursement Estimates (including all sources of Financing)**

Explanation:

Project disbursement estimates will be revised to reflect the proposed extension of the closing date resulting from implementation delays associated with contract DWSP2-09, and increased scope of activities to be encompassed under the Additional Financing.

**Expected Disbursements (in USD Million)(including all Sources of Financing)**

| Fiscal Year | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|
| Annual | 0.00 | 0.30 | 0.50 | 6.50 | 6.80 | 5.90 | 4.00 | 4.00 | 2.00 | 0.00 |
| Cumulative | 0.00 | 0.30 | 0.80 | 7.30 | 14.10 | 20.00 | 24.00 | 28.00 | 30.00 | 0.00 |

**Allocations - Additional Financing ( Tajikistan Second Dushanbe Water Supply Project - Additional Financing - P154729 )**

| Source of Fund | Currency | Category of Expenditure | Allocation | Disbursement %(Type Total) |
|---|---|---|---|---|
| | | | Proposed | Proposed |
| IDA | XDR | (1) Goods, works, consultants' services and non-consulting services for Parts A.1.(a), (d), (e), (f), B.1.(a), (b), (c) | 3,260,000.00 | 90 |
| IDA | XDR | (2) Goods, consultants' services, non-consulting services and IOCs, including audits and Training, for Parts C and D | 740,000.00 | 100 |

| | | | | |
|---|---|---|---|---|
| | | **Total:** | 4,000,000.00 | |
| IDAT | XDR | (1) Goods, works, consultants' services and non-consulting services for Parts A.1.(a), (d), (e), (f) B.1.(a), (b), (c) | 2,700,000.00 | 90 |
| IDAT | XDR | (2) Goods, consultants' services, non-consulting services and IOCs, including audits and Training, for Parts C and D | 600,000.00 | 100 |
| | | **Total:** | 3,300,000.00 | |
| | | | | |

## Components

**Change to Components and Cost**

Explanation:

As described above, the AF will finance the completion of activities planned or launched under DWSP2 while funding selected new additional activities. An unallocated budget of USD 0.76 million is included to address potential new contingencies. Increasing the budget by USD11 million brings up the total funding to USD 30 million.

| Current Component Name | Proposed Component Name | Current Cost (US$M) | Proposed Cost (US$M) | Action |
|---|---|---|---|---|
| Metering and Demand Management | Metering and Demand Management | 7.62 | 9.80 | Revised |
| Water Quality Improvement | Water Quality Improvement | 6.27 | 13.07 | Revised |
| Institutional Strengthening and Capacity Building | Institutional Strengthening and Capacity Building | 3.34 | 3.71 | Revised |
| Implementation Support | Implementation Support | 1.78 | 3.27 | Revised |
| | Unallocated contingency | 0.00 | 0.16 | New |
| | **Total:** | 19.01 | 30.01 | |
| | | | | |

## Other Change(s)

| Implementing Agency Name | Type | Action |
|---|---|---|
| Dushanbe Vodokanal | Implementing Agency | No Change |
| | | |

**Change in Implementation Schedule**

Explanation:

The AF duration is 3 years and 3 months. Board approval is expected on June 30, 2015 and signature on or before October 1, 2015. The project closing date would thus be extended through September 30, 2018.

## Appraisal Summary

**Economic and Financial Analysis**

Explanation:

The AF investments are expected to generate substantial economic benefits to Dushanbe and its residents. Provision of continuous potable water service will generate direct financial benefits to the consumers in terms of saved energy costs for the boiling and treatment of unclean water for drinking as well saved cost of installing filters for washing machines and water heaters. It will moreover generate direct and indirect benefits in terms of reduced care costs and loss of income from water borne diseases.

The AF is moreover expected to have a positive financial impact on DVK. The project will include a full metering program of the city together with revised tariff structure. This will add currently non-charged customers to the billing & collection system as well as it will resolve the issue of providing large discounts to metered consumers who are consuming significant less water than the normed water supply of 360 lcd. Moreover the improved water supply is expected to allow for a general increase in tariff levels due to financial cost savings at the consumer levels. The Anti-Monopoly Commission is however negative on allowing for larger changes to the tariff system before all residential consumers are metered and can benefit from it. The expansion of the current metering program will change consumption patterns and decrease volume of water consumptions. Together with targeted rehabilitation activities to decrease technical losses this is expected to save financial costs to DVK in particular the variable costs of electricity and chemicals.

Analysis was undertaken to assess the economic and financial viability of the project as well as the affordability of the AF to DVK. For Dushanbe the investments are expected to generate incremental net economic benefits with a total economic net present value (ENPV) of TJS 81 million at a discount rate of 10% and an economic internal rate of return (EIRR) of 26%. For DVK the investments are expected to generate incremental net financial benefits with a total Net Present Value (NPV) of TJS 23 million at a discount rate of 10% and a financial internal rate of return (FIRR) of 15%.The investment is projected to be fully affordable for DVK. See Annex 4 for full detail of the analysis.

**Technical Analysis**

Explanation:

The activities to be financed under the AF are well justified priorities to improve the safety and reliability of water supply while reducing water demand and operating costs and enhancing revenues, as a means to increase DVK's performance and sustainability. The proposed investments are consistent with urgent investment priorities identified in the 2010 DWSP2 feasibility study, and with the recommendations of the 2035 Master Plan.

In particular, the proposed reconstruction of a second tranche of filters at SAM WTP is not only aimed at urgently restoring potable water service across the DVK service area, but at allowing the installation of meters in the northern part of Dushanbe, and reestablishing SAM WTP as the most economical source of water for DVK, capable of advantageously replacing other more expensive sources such as NAP WTP and the Kafernigan and Southwest wellfields. The production of such sources will be reduced as SAM WTP filters come on line and water demands drop in response to metering and block tariff disincentives.

In order to prioritize the advancement of the metering program, DVK has opted to cancel two investments originally planned under DWSP2, namely the rehabilitation of the NAP pump station and tanks, as well as the installation of a network SCADA system. Such cancellations have been assessed as not critically affecting PDO attainment.

The AF does not allow to expand the metering program to the northern part of Dushanbe. However, by rehabilitating the full SAM WTP filtration capacity, the AF will eliminate high-turbidity "brown-water" events in north Dushanbe, and thus prevent any damage of meters that may be installed in the future.

The international PMC will provide project management and technical capacity for sound AF implementation. The PMC contract will be amended to reflect the extension to avoid discontinuity in project management, design and supervision quality. With the exception of the energy efficiency upgrades and the NRW strategy and the network replacement and sectorization works, AF investments will benefit from designs or specifications developed under DWSP2 and will, therefore, not require preparation of lengthy bid packages. The PMC contract will also include increased support to utility management and operations, towards helping DVK make the most of new strategic assets and organization, and improve service quality, performance and sustainability accordingly.

DVK will continue following the Operational Performance Improvement Action Plan, as periodically updated, to ensure that investments are accompanied by relevant operational changes aimed at improving performance.

Financial Management

The financial management arrangements established for the ongoing DWSP2 are satisfactory and can be replicated for the proposed Additional financing DWSP2. Under the ongoing DWSP2 (which will close in December 31, 2015), the PCU is responsible for the financial management function. The chief accountant of DVK is responsible for the project financial management system, with the assistance of a financial management consultant, provided by the Project Management Consultant (PMC) in establishing effective project accounting system and in maintaining the system during project implementation. DVK is involved in the payments process through approval of invoices and works completion statements as well as issuance of payment requests as prepared by the PMC in coordination with PAU. DVK utilizes both Excel program and the computerized accounting software (1C version 8.2) for its operational activities. DVK has adopted a cash basis accounting for the project accounting and it uses the computerized accounting software (1C version 7.7) to track project activities. At DVK the accounting system is used for cash, bank and payroll transactions, the system also allows to generate all reports.

DVK has taken some actions to strengthen its internal audit unit. DVK has managed to recruit two staff members into the internal audit unit- a Head of the Unit and a Specialist. According to the previous recommendations the training was organized for the unit's employees and the unit's annual plan for CY2014 was prepared. However, DVK has to continue its efforts to further strengthen this unit. DVK submitted the CY 2013 project audit report on time. The auditor, Ernst & Young LLP Kazakhstan, has issued unmodified (clean) opinion on the project financial statements (PFS) and the audited financial statements are assessed as acceptable to the Bank. However, the Entity audit was received with delays in October, 2014. The auditors rendered an adverse opinion on the financial statements for the reason that there were significant departures from International Financial Reporting Standards (IFRS) and the company's accounting policies in the valuation and presentation of property plant and equipment in the December 31, 2013 financial statements and those of the preceding year. On this basis, the auditors concluded that the financial statements did not present fairly the company's financial position as at the reporting date and its financial performance and cash flows for the reporting period in accordance with IFRS.

To further improve the financial management capacity of DVK for tracking AF activities, a strengthening of the existing FM chapter of the Project Operations Manual (POM) will be proposed.

It is recommended that DVK use a separate Designated Account for the AF as the one currently used for DWSP2, in a commercial bank acceptable to the WB for the portion of grant/credit funds allocated to it. The ceiling for the Designated Account and other disbursement details will be provided in the Disbursement Letter. The overall residual FM risk of the project is Substantial.

The DVK will submit quarterly interim un-audited financial reports (IFRs) that will be generated by the respective accounting software based on formats agreed with the World Bank. The reports, to include Statement of Sources and Uses of Funds, Uses of Funds by Project activities (Components & Expenditure Categories) and Statement of DA, will be submit-ted to the World Bank within 45 days of the end of each quarter, with the first reports under the proposed Project being submitted after the end of the first full

quarter following initial disbursement. The updated formats of these IFRs will be agreed with DVK during the Negotiations.

The DVK will submit the annual audited project and entity financial statements within six months of the end of each fiscal year of the Client. Each such audit will include the project financial statements, SOEs and DA Statement. The cost of the audits will be financed from the project funds. Following the Bank's formal receipt of the audited financial statements from the DVK, the Bank will make them available to the public in accordance with the Bank's Access to Information (AI) Policy through its website. In addition, DVK will publish the audit reports in a manner satisfactory to the Bank.

Procurement

The procurement implementation arrangements would remain the same as under the original Project. Procurement activities will be carried out by the existing PMC in coordination with PAU, as there is still little procurement capacity at DVK. The PMC and the PAU include procurement staff. Overall procurement capacity for implementation of procurement under the Additional Financing is assessed as Satisfactory.

The procurement risk for the original project was assessed as 'High". With implementation of the mitigation measures planned under the project, residual risks dropped to "Substantial". In particular, internal decision making processes at DVK and clearance processes with the State Committee for Investments and State Property Management (SCISPM) are being monitored against the agreed timeframes; PCU and PMC procurement staff have gained experience during implementation of the ongoing Bank-financed project and participation in different procurement trainings; procurement announcements and contract award notifications are published in local newspapers; procurement plans are placed in the SCISPM website. The following risks persist for the proposed AF: (i) potential procurement delays due to limited capacity and slow internal decision-making process; (ii) contract administration procedures not adequate to ensure efficient and timely contract performance; and (iii) overall high public procurement risk environment. To minimize these risks, the PMC and PAU shall continue monitoring of the agreed timeline to finalize tenders from bid document preparation to contract award; monitor procurement progress against the detailed procurement plan; train DVK staff on appropriate contract management; conduct regular physical inspections and compliance checks and quality control of the deliverables by the PAU/DVK; enforce public disclosure and transparency provisions of the Bank's Guidelines.

The PMC has prepared and discussed with the Bank team the initial procurement plan (PP) for project implementation. Four contracts under the original project such as Installation of meters, Cleaning of Reservoir, Laboratory Equipment and Institutional Assessment are still on-going and are supposed to be continued under the AF. The proposed Single –Source Selection of the PMC would be subject to the Bank procurement rules. The plan will be agreed upon between the Borrower and the Bank team at negotiations, and will be published on the DVK website and Bank's external website. Procurement for the proposed project will be carried out in accordance with the World Bank's "Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers" Dated January 2011 and Revised July 2014; Consulting services would be procured following the Bank's Guidelines "Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by World Bank Borrowers" Dated January 2011 and Revised July 2014; and the provisions stipulated in the Financing Agreement. The World Bank Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credit and Grants dated October 15, 2006 and revised on January 2011, would also apply.

**Social Analysis**

Explanation:

Social Safeguards. The original project triggered OP 4.12 (Involuntary Resettlement) and a Resettlement Policy Framework (RPF) was prepared and disclosed in-country and in the World Bank's InfoShop. One Resettlement Action Plan (RAP) is under preparation, in-line with the RPF. No changes in the RPF are

proposed under the Additional Financing. The capacity of the client to prepare RAPs is steadily improving, with hands-on support from the World Bank. In order to reinforce the capacity gains, the Additional Financing has set-aside funds for training on the mitigation of social and environmental impacts.

Citizen Engagement. The original project included the design and implementation of an annual Customer Satisfaction and Social Analysis Survey. The survey set a baseline with additional data collected on an annual basis with the aim of feeding into the prioritization of utility operations towards improving customer satisfaction, as well as adjusting project implementation tasks, such as the design and timing of communication efforts and works. Two surveys have been undertaken so far in 2013 and 2014 which indicate in general an increase in customer satisfaction on a range of issues including the quality of water. Two indicators to track customer satisfaction are in the original project and will remain in the results framework. Annual surveys will continue through the end of the AF.

Under the original project, DVK has also increased opportunities for customer feedback by setting up a website through which claims can be made. In addition to direct claims at DVK's offices or by phone, DVK's Customer Service Department can receive claims at www.obidushanbe.tj. Furthermore, complaints are also effectively received, and get immediate attention, if submitted electronically via the website of the Municipality of Dushanbe (www.dushanbe.tj) or via the Municipality's established communal services platform feedback mechanism (www.mometavonem.tj). While the project has reported on a quarterly basis on improvements in the response rate to customer complaints and grievances, and efforts are underway to introduce new feedback platforms (via cellphone text-messaging), there is little information on the extent to which current responses are in fact satisfactory to customers with due attention to income levels and gender. As part of continued support to DVK communications and customer outreach, the project will finance an assessment of the customer service experience with a view to obtaining a nuanced understanding of the process, outcomes, and recommendations for improvement of the complaints experience. The citizen engagement elements of the project will improve social accountability in the water and sanitation sector, specifically in DVK. These elements may be further strengthened by efforts of partners such as Oxfam which may expand to DVK its current social accountability work in the sector.

Social Inclusion. The tariff study will be undertaken in part to provide recommendations on socially inclusive tariffs and as such it will be undertaken with particular focus on the distributional impacts of tariff reform. Also of relevance, but to be undertaken under a separate trust-funded activity, is a poverty diagnostic on the water and sanitation sector in Tajikistan. The poverty diagnostic will inform the thinking on tariff reform through its examination of: (i) the linkages between poverty and the ability to meet drinking water and sanitation needs; (ii) the extent to which access to quality water and sanitation services vary across distinct groups (gender, rural/urban, wealth, education levels, etc.); (iii) the current household expenditure burdens and productivity losses linked to water and sanitation (by wealth groups, gender and location); and (iv) household willingness to pay for improved service delivery. On gender, the improvements on water quality will contribute to the reduction of the household tasks of women, in particular those related to water collection and management. In addition, as noted above, the efforts to improve the customer service and feedback experience will be assessed to determine the extent to which outcomes are satisfactory for consumers, including women. Lastly, the data collected in the Customer Survey also includes data on gender experiences with DVK and water management.

Benefits, targeting and affordability: As quantified in economic analysis, the project will alleviate the socio-economic impacts of poor service such as: (i) coping costs, or costs incurred to compensate for poor service (household filters, water boiling, water storage systems, purchase of tanker water ..); (ii) Productivity losses, or time spent in dealing with irregular or poor quality water supply; and (iii) Public health costs, or healthcare expenditures and time lost due waterborne diseases. The AF will also help design a block tariff structure integrating a first block with a lifeline tariff to ensure the affordability of basic service. It is also assessed that the additional debt service incurred by DVK with the AF will not have unsustainable tariff impacts on the poorest households.

**Environmental Analysis**

Explanation:

Environmental Safeguards. The AF project is expected to bring significant environmental and health benefits, such as improvements in public health through better quality and availability of treated water, and improvements in the sustainability of raw water sources through reductions in losses and wastage. As the original project, the actual project is qualified as Category B, and triggers the same safeguards: OP 4.01 (Environmental assessment), and OP 7.50 (Projects on International Waterways). The required mitigation measures for the project activities are standard and widely used in construction practices. They are already well prescribed in the Environmental Management and Monitoring Plan (EMMP), which was prepared for the initial project. As the new project will support the same types of activities as under the initial project it is proposed the exiting EMMP to be applied also for the new project. The EMMP stipulates that all contracts for construction works will include requirements for implementation of the specific measures as per EMMP provisions and good construction practices.

Since the portion of the water supply which comes from surface water (Varzob river and canal, supplying Dushanbe's Samatechnaya and Napornaya water treatment plants) is part of the Amu Darya river watershed which extends into Uzbekistan and Turkmenistan, OP 7.50 is triggered. However, as in the parent project, the AF consists only of rehabilitation and improving efficiency of water use, and aims to contribute substantially to reducing Dushanbe's extremely high water consumption rates. Consequently, an exemption to the requirement to notify other riparians was processed in line with paragraph 7(a) of OP 7.50. The exemption to the notification was approved by ECA Regional Vice President on May 14, 2015.

The EMMP of DWSP2 has been considered acceptable and will be used without revision for this AF. The practice of incorporating EMMP provisions within contractors' contracts will continue, with monitoring of implementation by DVK's PMU.

Potential disaster and climate risks have been screened and found to be low.

**Risk**

Explanation:

As discussed above and outlined in the SORT, the overall implementation risk is deemed substantial. The main project-specific risks are assessed as follows:

a. Complex municipal governance can cause significant delays in approvals or decision-making. Delay risks are also significant for the authorization of block tariffs by AMC. Since 2011, three tariff increases have been successfully introduced by DVK. In order to avoid a significant drop in revenue, DVK should revise its tariff structure for metered consumers, in replacement of current tariffs based on theoretical norm consumptions. The approval of a new block tariff structure may be deferred by AMC until meters are installed for all DVK customers. The project will support DVK's proposals and negotiations in this regard.

b. Weak institutional capacity for implementation. The delays experienced at the start of DWSP2 are not expected to reoccur with the AF launch. Despite organizational improvements supported by DWSP2, DVK remains a low capacity agency, and AF implementation must continue to be supported by an international PMC. The PMC will also continue to provide targeted advisory technical assistance to utility management and operations. The impact of such technical assistance in terms of modernization and improved performance may be delayed by vision and capacity limitations, lack of incentives (low salaries), and rigid municipal governance. The Project will sustain the strengthening of DVK's capacity and governance.

c. Fiduciary risks. Based on DWSP lessons learned, DWSP2 design and supervision have paid significant attention to mitigating fiduciary risks. There are no unresolved fiduciary, environmental, social or safeguards issues (Procurement and FM arrangements are deemed Satisfactory). Although there have been no fiduciary issues in DWSP2 to date, the risk is still perceived as substantial. Close fiduciary supervision will be sustained.

Cost increases and currency exchange losses. A significant unallocated contingency is included in the budget to face any potential recurrence of cost increases and currency exchange losses experienced under the original project.

## V. 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 World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (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.

## ANNEX1: RESULTS FRAMEWORK

| Revisions to the Results Framework | | Comments/Rationale for Change |
|---|---|---|
| **PDO level indicators** | | |
| *Current (PAD)* | *Proposed change* | |
| Water quality in the network:<br>Parameter 1: turbidity in the network | The target restored to original value of 99% | Due to changed network conditions, and in the absence of AF, the original target of 99% was deemed unattainable at MTR, to be replaced with a corrected target of 80%. With the AF, a second tranche of SAM filters can be reconstructed, allowing to attain the original target of 99%. |
| Customer satisfaction with water supply services :<br>Parameter 1: satisfaction with water quality ( in general)<br>Parameter 2: availability of 24h/d of water supply services; | The target values for both parameters were modified | Values were modified to reflect the expected impact of AF activities. |
| Improvement of financial performance of DVK:<br>Parameter 2:Number of residential customers registered and billed; | Parameter 2: Number of residential customers registered and billed; | Target values were modified to reflect the gradual growth in the percentage of Dushanbe population and a formula: number of registered and billed customers as percentage of Dushanbe population. ; |
| Parameter 3: Accounts receivable as percentage of revenue/ | Target values were modified ; | Values were modified to reflect the gradual improvements up to 15% during the AF project. |
| | | |
| **Intermediate Results Indicators** | | |
| | New: Reduction of technical water losses in the pilot area of Dushanbe. | Reflects new activity: sectorisation/pipe replacement and leak reduction in the targeted (pilot) area of Dushanbe. Expected 50% reduction of losses in yet to be defined area. |
| Installation of SCADA and NIS with technical assistance; | The indicator was re-formulated | The indicator was reformulated to reflect the cancellation of SCADA installation from the project and AF |
| Reconstruction of filters at SAM water treatment plant | The target values were updated | The targets were revised to reflect delay in first filter tranche reconstruction and AF investment in a second filter tranche reconstruction. |
| Per person water production in the system | The target values were updated | The change reflects additional meters to be installed under AF and consequent reduction of water production; |
| Yearly energy consumption (only water supply services) | Targets were revised | Targets revised to reflect continued energy efficiency investment as part of AF |

| | | |
|---|---|---|
| | New: Intermediate result 4: Conducting the tariff and connection fee study. | The indicator was added to reflect the scope on the AF activities; |
| | New: Number of project beneficiaries including women | Core indicator, introduced to the project in 2015 |
| | New: Number of beneficiary utilities | Core indicator, introduced to the project in 2015 |

## Updated indicators/values for DWSP2 and proposed Additional Financing

| Project Development Objective (PDO): *Improve water utility performance and water supply services in selected areas of Dushanbe.* | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **PDO Level Results Indicators*** | **Core** | **Unit of Measure** | **Original baseline** | **Progress to date (2014)** | **Cumulative target values** | | | **Frequency** | **Data Source/ Methodology** | **Responsibility for Data Collection** | **Description (indicator definition, etc.)** |
| | | | | | **YR 1 (2016)** | **YR 2 (2017)** | **YR3 (2018)** | | | | |
| **Indicator 1: Water quality in the network:** | | | | | | | | | | | |
| Parameter 1: Turbidity in the network.<br>TARGETS | | % | 2009: 40% of samples comply with the standard of 2mg/l | 37% % of samples comply with the standard | 80% | 80% | 99% | Accessed annually, based on daily measurements by DVK | DVK laboratory | DVK/ PMC | |
| Parameter 2: Residual chlorine in the network.<br>TARGETS | | % | 2009: 98% of samples show residual Cl | 100% | 99% | 99% | 99%; Rechlorination in place | Accessed annually, measurements daily by DVK | DVK lab | DVK/ PMC | Note: sensitivity of the test is 0,02 mg/l of Cl - this is a traceable border. |
| Parameter 3: Bacteriological water quality in the network:<br>TARGETS | | % | 2009: 96% of samples comply with the standard | 99% | 99% | 99% | 99% | Accessed annually, measurements daily by DVK | DVK lab | DVK/ PMC | MAC* is 3 coli forms/l |
| **Indicator 2: Customer satisfaction with water supply services** | | | | | | | | | | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Parameter 1: Improved water quality (in general) - Percentage of customers, satisfied with water quality.<br>TARGETS | | % | 70% (2011 survey, DWSP1) | 84% | 90% | 90% | 96% | Annually | Survey by DVK | DVK/ | |
| Parameter 2: Availability of water supply services- Percentage of customers with 24h of water supply service per day.<br>TARGETS | | % | 57% have more than 12 h/day of services (data on 24 h services n/a) | 76% (2014 customer survey) | 79% | 82% | 85% | Annually | Survey by DVK | DVK | . |
| **Indicator Three: Improvement of financial performance** | | | | | | | | | | | |
| Parameter 1: Cash operating ratio<br>TARGETS: | | Ratio | 2009: 1,07 | 1 | ≤1.0 | ≤0.95 | ≤0.90 | Annually, based on audit | DVK | DVK | Ratio of total cash opex (excl. interest & other charges on debt) to total cash operating revenues. |
| Parameter 2: Number of people registered and billed as % of the population in Dushanbe<br>TARGETS | | Number | 2009: 42% or 340,459 people | 170,297 residential customers/ 681,304 people or 85% of the DVK service area; | To reach 80% of 2014 population in Dushanbe (788,000) | To reach 85% of 2014 population in Dushanbe | To reach 92% of 2014 population in Dushanbe | Annually | PMC/ DVK | DVK/ PMC | population of DVK service area in 2011 is : 720,000 (FS report) plus 75000 in Rudaki rayon = 795 000; |
| Parameter 3: Accounts receivable as % of revenue.<br>TARGETS | | % | 25% | 12.8% | Original target of 15% is met | Original target of 15% is met | Original target of 15% is met | Annually | PMC/ DVK | DVK/ PMC | DVK should improve its collection ratio or keep them at the same level, while increasing the revenues |

| INTERMEDIATE RESULTS | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Component 1: Demand management component** | | **Unit** | **Baseline** | **Progress to date (2014)** | **2016** | **2017** | **2018** | frequency | Data source/methodology | responsibility | comments |
| Piped household water connections that are benefiting from rehabilitation works undertaken by the project | **Core** Number of meters Installed | | 2887 individual meters; about 700 nonresidential consumers are billed on pipe diameter basis | 51,000 | 75600 meters + 2887 meters = 78 487 | | 78,487 | contract schedule | PMC/ DVK | DVK/ PMC | Installation of meters and rehabilitation of service connections in pilot area |
| Installation and development of NIS with technical assistance | | Systems installed and functioning | NIS is not available | initial NIS was installed and digitalisation is ongoing | Digitalisation of the network is ingoing | Digitalisation of network is ongoing | Digitalisation of network is substantially completed | Project implementation schedule | DVK/ PMC | DVK/ PMC | |
| Reduction of technical water losses in the pilot area of Dushanbe | | % | Baseline in pilot are TBD | 0 | TBD | TBD | TBD | | | | Related to the component: sectorization/pipe replacement/ leak reduction |
| **Component 2: Water quality and reliability improvement** | | | **Original baseline** | **Progress to date (2016)** | 2016 | 2017 | 2018 | | | | |
| Improvement of water turbidity at the outlet of SAM (target) | | % | 2009: 10% of samples comply with the standard | 6**%** of samples comply. Construction of SAM filters (120 000 m3/day) is ongoing; | 30% of samples comply (after completion of 1st filter tranche | 30% | 99% of samples comply, after completion of 2nd filter tranche | Accessed annually, measurements daily by DVK | DVK laboratory | DVK/ | standard maximum allowed concentration is 2mg/l |
| Improvement of water turbidity at the outlet of NAP (target) | | **%** | 2009: 30% of samples comply with standard | 98 % of samples comply with standard | 99% of samples comply with the standard | 99% of samples comply with the standard | 99% of samples comply with standard | Accessed annually, measurements daily by DVK | DVK laboratory | DVK/ PMC | Max daily average in 2009 was 8,6 mg/l, while the MAC is 2 mg/l; . |
| Reconstruction of filters at SAM water treatment plant | | Fact of completion | | | First filter tranche reconstructed | | Second filter tranche reconstructed | | | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Per person water production in the system (target) | | lcd | 2009: 938 lcd | (206 078 645 m3 /839300=672 lcd | | | 550 | Annually | DVK /PMC | PMC | p-n in Rudaki rayon service area is taken as 75000 stable; |
| Yearly energy consumption (water supply only) | | KWh | 112 037 073 KWh (2009 water system only) | | 5% reduction systemwide (equal perimeter) | 10% reduction systemwide (equal perimeter) | 100 833 400 KWh (10% reduction systemwide, equal perimeter) | | | | Equal perimeter corrected for additional equipment |
| Introduction of rechlorination systems in the network | | Fact of Completion | None | | 5 systems installed | | | | | | |
| Supply of modern water testing laboratory equipment to DVK | | Fact of supply and commissioning | Current outdated equipment used by DVK laboratories | New equipment is supplied and is functioning; | Target is met | Target is met | Target is met | Project implementation schedule | PMC/ DVK | PMC | Only supports the existing testing. |
| **Component 3: Institutional strengthening** | | | | | | | | | | | |
| Improvement in billing | | Fact of improvement | Billing software is not available; the billing is based on norms | Billing system is under development and testing; | System is fully operational with necessary technical support in place; | System is fully operational with necessary technical support in place; | System is fully operational with necessary technical support in place; | In accordance with project implementation schedule | PMC/ DVK | PMC | |
| Completion of the water supply master plan | | Fact of completion | Not developed in DVK | Master plan is completed | Target is met | Target is met | Target is met | Project implementation schedule | PMC/ DVK | PMC | |
| Completion of training in monitoring of energy costs and energy audit | | Fact of completion | DVK doesn't have the methodology for conducting the energy audit | The report was prepared. The training was conducted during the audit; | Target is met | Target is met | Target is met | Project implementation schedule | PMC/ DVK | PMC | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Completion tariff and connection fee study | | Fact of completion | | | | Study completed | | | | | |
| Direct Project beneficiaries (of which female %) | Core | Number | n/a | 853 500 (including 426530 women (50%); | | | 906,000 (including 453,000 women) | Annually | | | DVK area includes 778,500 people in Dushanbe and 75,000 in Rudaki |
| Water utilities the Project is supporting | Core | Number | | 1 | 1 | 1 | 1 | Annually | | | |

## ANNEX 2: DETAILED DESCRIPTION OF MODIFIED OR NEW PROJECT ACTIVITIES

The Additional Financing will reinstate and support activities that were previously cancelled or curtailed due to the funding shortage, as well as fund new activities aimed at consolidating project benefits and extending them to all of DVK's service areas. Continued and new activities are described and discussed below, by component.

1. **Component 1. Metering and Demand Management (USD 2.18 million)**
   a) *Installation of 10,000 meters in completion of metering program in south Dushanbe (USD 400,000).* This will allow to complete the installation of 76,500 residential meters procured under the original project, the works for which were curtailed due to funding shortage.
   b) *Implementation of energy efficiency upgrades (USD 450,000).* This activity will install or renew equipment aimed at improving the energy efficiency of selected DVK facilities.
   c) *Network sectorization, mains replacement, leak reduction and NRW Strategy (USD 1.2 million).* As part of a non-revenue water reduction strategy, this activity will upgrade prioritized sections of the distribution system, in order to allow network sectorization and replacement or rehabilitation of mains, towards reducing technical water leaks. Network renewals will focus on small diameter pipes, diameter 300mm or less, which have been assessed as the most degraded and leaky. Investments will be prioritized on reducing losses in the SAM service area as a means to minimize the scope of the second tranche of filters reconstruction at SAM WTP. The NRW strategy will be developed, based on the findings of the Binokoron demand management pilot and on the master plan recommendations. DVK's asset database includes 580,9 km of networks, which consist mostly of steel and cast iron pipes with an average age of 50.9 years. Beyond pipes, valves and fittings are particularly worn out, malfunctioning and leaking. Technical losses are estimated at 75% and the annual break rate of most pipes is higher than 3 leakages/km. This extremely high percentage of water losses added to the high consumption per capita makes the current water production capacity insufficient to supply a quality water service to the city. The NRW strategy will recommend targeted actions in terms of network and accessories replacement to reduce water demand/wastage on a pilot zone, likely to be selected in the SAM service area in order to reduce the water demands and optimize the scope of the additional tranche of SAM filter reconstruction.
   d) *Communications strategy and ICT-based reporting system (USD 50,000).* This will finance the continuation of the communication strategy to sensitize users about their rights and duties, including with regards to water conservation, meter installation, and changes in billing and collection methods, as well as to better inform customers on DVK news, investment program for water quality improvement, and service interruptions due to works. Additionally, through the installation of an cellphone-based two-way messaging platform, the communication between DVK and the customers will be facilitated, which will result in better informing users about DVK's work; facilitating the communication and management of service claims; improving the customer perception of the utility; close the gap between the service preferred by the users and the service

provided by the utility; and increase the DVK's accountability on quality of service provided.

e) *Annual customer satisfaction surveys (USD 80.000)*: the surveys and any other means of interacting with the customers will cover, among others, quality and reliability of water service, quality of customer service, customer experience with meter installation and other changes in DVK service, customer awareness of communications strategy messages

**2. Component 2. Water Quality Improvement (USD 6.8 million)**

a) *Reconstruction of an additional 50% tranche of filters at SAM WTP and associated inlet and outlet structures (USD 6,500,000).* This activity will restore the full SAM filtration capacity, and will reconfigure inlet and outlet works so as to eliminate the current bypassing of filters by a portion of the flow produced at SAM WTP. This will afford a decisive improvement in water quality in the SAM service area, achieving potable standards and eliminating high turbidity water incidents across Dushanbe. Such water quality improvements will also enable the expansion of the metering program to the northern half of the city. In order to maximize the benefit of the investments, a technical study will be carried out to optimize, and possibly minimize the scope of this second filter reconstruction tranche, based on likely NRW-reduction gains in the SAM service area. This analysis will include different scenarios of network and accessories replacement aiming to reduce technical losses in the system.

b) *Automation of coagulation dosage at SAM WTP (USD150.000):* This activity will modernize the existing coagulation-sedimentation process in place at SAM WTP, to complement the pre-treatment process and allow a more flexible and dynamic water treatment ensuring that SAM WTP would be able to treat a wider range of turbidity in the incoming water. Additionally, it will assure that incoming turbidity swings will be detected in real time and coagulant chemicals will be dosed accordingly reducing the wastage and improving the overall quality of coagulation and sedimentation treatment steps before filtration.

c) *Installation of in-network re-chlorination systems (USD150.000)*: This activity, cancelled due to funding shortage under the original project, will allow to improve the safety and quality of water supply in Dushanbe, by allowing to optimize chlorination dosage in the system. Presently chlorine is applied at the outlet of DVK's two treatment plants (SAM, NAP) and two wellfields, which, given the size and conditions of the network, can result in inaccurate control of residual chlorine levels in the network, and in public health risks associated with insufficient or excessive chlorine dosage and contact time. Through the installation of re-chlorination systems at optimal downstream locations, dosage at the plants and wellfields can be lowered and compensated through strategic chlorination in the network, which would bring substantial benefits to the water quality and reduce the operational costs through optimal chlorine use.

**3. Component 3. Institutional Strengthening and Capacity Building (USD 370,000)**

a) *Tariff and connection fee study (USD 80.000)*: This will finance the development of a new tariff policy and strategy for Dushanbe, based on the introduction of block tariffs, aimed at ensuring an affordable volumetric tariff for basic water consumption, and higher volumetric tariffs for increasing volumetric consumption brackets. Currently unmetered customers in Dushanbe are billed an amount based on a norm volumetric

tariff (0.52 TJS/m3), a norm unit consumption (360 liter/person/day), and the number of residents registered for the household. For metered customers, the same norm volumetric tariff is applied to actual metered consumptions, which are typically much lower than the norm consumption, thus resulting in significantly reduced bills (and corresponding revenue loss for DVK). The study will be conducted in coordination with the Anti-Monopoly Commission, to help DVK transition to socially responsible block tariffs consistent with cost-recovery and demand management goals. The study will also to design a pricing system for the establishment of new service connections, such a as for new buildings or new developments, for establishment of a fund aimed at financing the network upgrades and expansions required to serve the new demands being added to the system. In the meanwhile, until 100% metering coverage is achieved and block-tariffs are applied, the application of the norm volumetric tariff to actual metered consumption is having a negative impact on DVK revenue, which may require temporary mitigating remedies, such as the introduction and approval of a new volumetric tariff for metered accounts, or the continued application of the norm unit consumption to metered customers. Unless rapidly addressed, this transition problem may jeopardize the financial sustainability of DVK.

b) *Technical Assistance for corporate development, financial management and customer service and Technical assistance for operational improvements (USD 170.000).* This activity will finance technical assistance to improve key utility management methods and capacities at DVK, to improve financial management and customer service performance. AF support may be prioritized to improve financial planning, management capacity and reporting, improve billing and collection performance, improve tariff setting capacities, and pursue other revenue enhancement measures. The technical assistance will comprise services to be provided by internationally or locally-recruited firms or individual consultants. *:* This activity will akso finance technical assistance to improve the operations and maintenance performance of DVK. The opportunity will be assessed to establish a medium-term Water Operator Partnership agreement with a well-qualified international water utility operator, to provide mentoring and coaching of DVK managers and staff on specific areas of operational performance need. .

c) *Training program for operational and administrative capacity building (USD 120,000).*

**4. Component 4. Implementation Support. (USD 1.49 million)**

a) *Project Management Consultant, design and supervision services (USD1,250,000):* This activity will allow the continued recruitment of an international PMC, for project management, design and supervision services. The PMC team will be updated and tailored to AF needs, with increased focus on supporting improved performance in DVK's management and operations, in addition to ensuring the day-to-day project management activities, such as design, preparation of bid packages, procurement of goods and services, financial management, compliance, supervision, compliance, monitoring and evaluation, and reporting. The PMC team will include Senior Utility Manager (also the PMC team leader) and a Senior Utility Operations Engineer, to lead the AF implementation while providing advisory technical assistance and capacity building to DVK's Director, deputy directors and line managers.

b) *Project Administration Unit operating costs (USD 150,000):* This activity will finance the operating costs of DVK's PAU, responsible for DVK's project communications and

coordination, between DVK operations, PMC, World Bank, Municipality and Government.

c) *Annual Audits (USD90,000)*: This will finance annual audits of project financial statements and of DVKs financial statements. Project funding will apply to the services of auditors recruited and managed under the block-audit program managed by the State Investments Committee (SIC).

5. **Unallocated contingency:** An unallocated contingency of USD 160,000 is also budgeted to help the project deal with unforeseen cost increases or continued unfavorable currency exchange trends. It is expected that such unallocated funds will primarily apply to investments under components 1 and 2.

## ANNEX 3: REVISED ESTIMATE OF PROJECT COSTS

| COMPONENTS | DWSP2 (2011-2015) USD 19 million | | DWSP2 ADDITIONAL FINANCING (2016-2018) USD 11 million | |
|---|---|---|---|---|
| | **Completed/on-going Investments** | **Budget** | **Planned Investments** | **Budget** |
| ***1. Metering and Demand Management*** | Supply and installation of 76,500 residential meters | 7,620,000 | Installation of 10,000 residential meters to complete metering program in south Dushanbe | 400,000 |
| | Installation of 1500 master meters | | Energy efficiency upgrades | 450,000 |
| | Rehabilitation of apartment building connections. | | Network sectorization/replacement/leak reduction, including NRW reduction strategy | 1,200,000 |
| | Bulk metering | | Communication strategy and ICT-based reporting system | 50,000 |
| | Network Information System | | Annual customer satisfaction surveys | 80,000 |
| | Communications strategy, awareness campaign, customer satisfaction surveys. | | | |
| | | | | |
| | Installation of SCADA system (cancelled) | | | |
| ***2. Water Quality Improvement*** | Reconstruction of 50% of SAM WTP filters | 6,270,000 | Construction of additional 50% of SAM WTP filters incl. necessary mains | 6,500,000 |
| | Network cleaning | | Automation of coagulation dosage at SAM WTP | 150,000 |
| | In-network rechlorination systems (deferred) | | In-network rechlorination systems | 150,000 |
| | Water quality monitoring units; | | | |
| | Reconstruction of NAP pumping station and tanks (cancelled) | | | |
| | Maintenance equipment (incl. hydraulic excavator) | | | |
| ***3. Institutional Strengthening & Capacity Building*** | Institutional Assessment | 3,340,000 | Tariff and connection fee study | 80,000 |
| | Modernization of accounting and, billing and collection systems | | Technical assistance for corporate development, financial management and customer service, and Technical assistance for operational improvements | 170,000 |

| | | | | |
|---|---|---|---|---|
| | Technical Assistance for corporate development and financial performance | | | |
| | Technical Assistance and studies for operational improvements | | Training program | 120,000 |
| | Training programs | | | |
| ***4. Implementation Support*** | Design and supervision of works | 1,780,000 | Project Management Consultant, design and supervision services | 1,250,000 |
| | Project management operating costs | | Project Administration Unit (PAU) operating costs | 150,000 |
| | Annual audits | | Annual audits | 90,000 |
| ***Contingency*** | | 0 | Contingency | 160,000 |
| **Total** | | **19,000,000** | | **11,000,000** |

## ANNEX 4: ECONOMIC AND FINANCIAL ANALYSIS

### A. Introduction

The AF provides funding needed to complete planned DWSP2 activities curtailed by the budget shortage, such as metering program and rechlorination. It will also allow to scale-up or expand activities such as water filtration, coagulation enhancement, technical assistance, tariff study, and continued customer surveys. The objective of the project is to provide potable water to the residents and other consumers in Dushanbe based on an increased metered supply. The results of the activities are estimated to have positive impact on DVK's financial performance as well as it will provide large economic benefits to Dushanbe and its residents. The AF will however not allow to expand the metering program to achieve 100 percent coverage in Dushanbe, and will thus not capture all potential demand management benefits in terms of improved service efficiency, continuity, and sustainability.

### B. Economic Assessment

An economic assessment was prepared to identify the economic benefits and return from implementing the project. Without the AF , DWSP2 objectives will not be fully met, and the water supply will not significantly improve, leaving the residents and other consumers in Dushanbe with poor service which fails potability standards. The coping costs of the residents in Dushanbe include health related costs from waterborne diseases and cost from cleaning water. The actual status of water supply as experienced by residents is documented in Customer Satisfaction Surveys (CSS) conducted as a part of DWSP2, and which are already showing significant service quality improvements. The AF plans to further improve the livelihood of the residents in Dushanbe by upgrading the water supply to potable water standards.

*Methodology*

The economic assessment uses incremental benefits and costs with the project. The benefits include: a) reduced health related costs from waterborne diseases (health care costs; loss of productivity; costs of premature death); b) reduced cost of provision of drinking water; c) reduced costs of treating water for other purposes than drinking; d) reduced costs of operation and maintenance due to water savings. The project costs are the investment costs. The economic costs of the investment costs are assumed to be close to the financial costs. The quantification of the economic benefits has been made possible from results of DKV's annual Customer Satisfaction Survey (CSS), financial/operational data from DVK and the yet to be published 2015 report from the World Bank report 2015: *"Managing Water in Central Asia: Costs and Impacts of Water Supply and Sanitation Sector Development Scenarios."*

**Table 4-1: Estimation of Economic Benefits from the AF**

| Residents' costs related benefit | Coping financial costs savings to residents | Additional Economic benefits |
|---|---|---|
| a) Health Costs | Estimated | Estimated |
| b) Drinking Water Treatment Costs | Estimated | Estimated |
| c) Consuming Water Treatment Costs | Estimated | Not estimated |
| d) Costs Savings at Water Plant | Estimated | Not estimated |

*a) Health Care Costs*

The CSS has asked the consumers on awareness of waterborne diseases and cases of diarrhea. 59% of the respondents show knowledge of waterborne diseases. Despite the large awareness of waterborne diseases a full 8% of the respondents are reporting cases of diarrhea in their family within the last six months. This corresponds to app. 28,000 cases or more for Dushanbe. Even though the water supply is considered to count for only a fraction of these cases, the related costs are significant. Apart from financial costs to families for treatment and loss or productivity, the main economic costs relates to premature death of citizens from Diarrhea. The costs related to diarrhea are based on World Bank report 2015: "Managing Water in Central Asia: Costs and Impacts of Water Supply and Sanitation Sector Development Scenarios." Economic costs of other waterborne diseases than diarrhea have not been estimated. Total health related costs are estimated to more than TJS 13 million annually.

*b) Drinking Water Related Costs*

Today the water supply in Dushanbe is not potable. Besides the general awareness of waterborne diseases, the CSS reports that 89% of the respondents are boiling water for drinking. Some of the respondents are filtering water and some are buying water for drinking. With the Additional Financing the water supply to Dushanbe will become potable and thereby eliminating costs of home treatment for drinking.

The current treatment of water for drinking, whether boiled, filtered of purchased, comes to a financial cost for the residents – the coping costs. It is estimated than the financial cost to the residents of home treatment of water for drinking – boiling and filtering – together with related indirect economic costs is at a level of TJS 26 million annually. The financial cost to the population of boiling water for drinking is estimated to TJS 9 million. The financial costs for boiling water has been calculated based on volume of water and electricity costs.

*c) Consuming Water Related Costs*

The water supply to Dushanbe is not filtered and is suffering from turbidity especially during raining seasons. To safeguard washing machines and water heaters from sediments the residents are bound to installing filters. This regards especially filters for automatic washing machines, where installation of filters is a pre-requisite for lifting warranty claims. With the AF the water supply will be filtered from the water treatment plants, as well as the project will provide a 24-hours service to all Dushanbe's residents and other consumers.

The CSS documents that 16% of the households have installed filters for other use than drinking. The related financial costs to the residents for installing filters have been estimated to more the TJS 2.5 million annually. Costs to the residents from clogging of fixtures and wear and tear on machines from sediments etc. have not been estimated.

The CSS further documents that around 24% of the residents are not provided a 24 hours service – and 79% of the residents has experienced water shortage. 80% of the residents have as a result stored water in buckets and the like to cope with the water shortage. The shortage has economic costs to the residents due to productivity loss and financial cost of buying water. The cost of coping with the poor has not been estimated as the upgraded supply not fully will reduce the shortage.

*d) Operation and Maintenance Costs*

The cost of operation and maintenance is expected to decrease due to water savings from metering and rehabilitation of network. The total costs savings is estimated to TJS 1.2 million annually. Please see the chapter on Financial Assessment for details.

*Economic benefits of implementing the AF-project*

The project will provide significant economic costs savings. Based on total investment costs of TJS 130 million and projection in real terms the project EIRR is estimated to 26%. ENPV is estimated to TJS 81 million based on a discount rate at 10%. For the analysis it is estimated that 50% of the benefits can be credited the AF.

**Table 4-2: Base Case Economic Return and Sensitivities**

| Scenarios | EIRR |
|---|---|
| Base Case | 26% |
| 20% increase in implementation costs | 22% |
| Realization of 20% Health Cost Benefits | 20% |
| Realization of 20% Drinking Water Treatment Costs Benefits | 14% |
| Realization of 20% Consuming Water Treatment Costs Benefits | 25% |
| Realization of 20% Hauling Water Costs Benefits | NA |
| Realization of 20% Costs Savings at Water Plant and Distribution | 25% |

## C. Financial Assessment

*Current Financial Status of DVK*

DVK has improved its financial performance during the timeline of the DVK II Project. Revenue has increased from TJS 21 million in 2010 to TJS 39 million in 2014. With the tariff increase of 25% due from 2015 the revenue is expected to increase further to TJS 57 million. Cost of operation has from 2010 to 2014 increased from TJS 17 million to TJS 32 million. DVK has as such been able to produce a positive margin of EBITDA. EBIT has developed positively from TJS -6 million in 2010 to a neutral level in 2014, and the Company has steadily produced losses since 2010. Accounting for the last year's depreciation of the TJS against the USD contributes to the losses as DVK's debt-portfolio is in USD. The Company's loans consist solely of the IDA funding from the Dushanbe Water Supply Project 1. The funding has been on-lent from the Ministry of Finance to the Company with a mark-up. It is likely that the Company also will face losses in 2015 due to the depreciation of the TJS against the USD. The Company's financial cash-flow is however expected to be positive.

Without the AF the Company's financial situation is expected stabilize at a positive level thanks to the latest tariff increases and to the gains from the DWSP 2 especially with respect to improvements in fee collection rates.

The Financial Management has improved significantly along the current project strongly supported by the Project Management Consultants. The Company has for the first time produced budgets for the current year and is seeking to adapt to IFRS accounting standards. The Financial Manager position at DVK is however seven years vacant mainly due to salary-level issue.

*Customer database, billing and collection*

Implementation of DVK's billing and collection system is in its final phases and already operating. The implementation has increased the number of registered residential consumers from around 400,000 in 2012 to close to 700,000 by 2015, with a few ten thousands residents still to be recorded. The increase has naturally had a positive impact on revenues. Consumers are now charged on a regular basis and old debt is collected. Billing and collection from other consumer segments than residents have moreover strengthened with rates now fully acceptable.

*Tariff system and metering*

The metering program has had a positive effect on the water supply, as water waste at metered consumers has been brought significantly down and thereby improving the water supply to other segments. The water consumption is as such only 25%-30% of the normed consumption at 360 lcd. The metered supply has however had a negative impact on the revenue from the metered customers, as the same tariff applies to both metered and non-metered residential consumers. The Anti-Monopoly Commission insists on not differentiating the water and wastewater tariffs between metered and non-metered customer segments. The metering residential consumers are as a result being given a significant discount on water and wastewater fees. The level of water & sanitation bills to non-metered household is found acceptable and 70% of the households are currently non-metered.

*Financial Assessment of the AF project*

The assessment of the financial viability of the project was prepared by identifying the incremental financial benefits and costs from implementing the project. Without the project, the water supply will still bear financial costs due to heavy discount to metered consumers, overconsumption of water by non-metered consumers, and coping financial expenses left to the residents and other consumers for filtering and treatment of the water supplied. The scope of the AF is in general targeted to provide DVK with financial benefits to cater for the financial costs of the project. With the AF the water supply will be potable reaching all connected consumers. The tariff structure will be adjusted to optimize the financial revenue to the DVK taking into consideration affordability of the supply to especially the poorest consumer segments. The reduction of water supply due to the metering program and the rehabilitation of part of the network will moreover result in cost savings at DVK. The benefits are presented below.

**Table 4.3: Financial Benefits to DVK included in the financial assessment**

| Financial Benefit | Derives from |
|---|---|
| Increase in collection rate from residents | Tariff system revision and metering program |
| Increase in general tariff level | Justified by savings in health and treatment costs to residents due to provision of service with potable water; Introduction of block tariff system. |
| Savings in production costs | Metered supply and targeted rehabilitation of network will reduce supply and losses significantly |

*a) Cost reduction in operation & maintenance*

The metering program is expecting to provide water savings from the current level. Although current supply is not fully mapped results from the metering program shows, that significant water savings can be expected. Metered consumers are as such only consuming 25%-30% of the normed supply at 360 lcd. The reduction is found fully realistic. It is estimated that a full metering program will result in reduction of water production as high as 50%. This will lower the variable production costs significantly especially cost of electricity and chemicals, as well as wear and tear will be reduced. The cost savings due to water savings from the proposed metering program is estimated to 1.5% of the current costs of Operation and Maintenance.

The targeted rehabilitation of part of the network in SAM's distribution area will moreover result in additional cost savings. The total effect is estimated at approximately 6% of the total production of water to Dushanbe with additional cost saving benefits.

The metering program and the targeted rehabilitation is expected to provide total cost savings of around TJS 1.2 million annually taking into account additional costs of chlorination of the water supply from new station in the distribution network.

*b) New tariff system supporting metering program*

The AF include a tariff study to take advantage of the metering of the consumers by investigating implementation of a block tariff structure, which optimizes financial revenue to DVK while still safeguarding poor household's water and wastewater bill. The expansion of the metering program will moreover ensure connection and registration of consumers not yet recorded in DVKs consumer database, as well as the AF support to financial management will ensure a continuous focus at billing and collection to support DVKs financial performance.

Two of the main problems which will be resolved are the current large discount to metered residents and the non-revenue from non-registered customers. By increasing collection rate in general, billing metered residents at the same level as the non-metered residents, and billing of current non-recorded consumers, the annual revenue to DVK will be lifted significantly. It is expected that fee collection from household could be lifted by not less than TJS 5 million.

The potable supply service will provide the residents and other consumer segments financial cost savings documented in the economic analysis. These cost savings together with an intelligent block tariff program can itself justify a general increase in tariffs of 10%. This will alone provide an increase in revenue to DVK at TJS 7 million annually of which residents will pay TJS 4 million. The direct coping financial costs to the residents from the current poor water supply are estimated to not under TJS 12 million annually.

*Financial benefits of implementing the AF Project*

The project will provide significant financial revenue and cost savings to DVK. Based on total investment costs of USD 12 million and projection in real terms the project FIRR is estimated to be at 15%. NPV of the investment is estimated to TJS 23 million based on a discount rate at 10%. The IRR and NPV calculations has been calculated based on 20 years, which from a liquidity perspective is very conservative comparing to the IDA Credit terms of 38 years maturity.

**Table 4-4: Base Case Financial Return and Sensitivities**

| Scenarios | FIRR |
|---|---|
| Base Case | 15% |
| 20% increase in implementation costs | 13% |
| Only 20% of residential collection target obtainable | 10% |
| Only 20% of tariff increases implementable | 8% |
| Only 20% of costs savings at Water Plant obtainable | 14% |

*DVK's affordability of the Project Investments*

The investment assumes an IDA credit of USD 10.0 million, of which 45% is a grant, and with counterpart funding of USD 1.0 million from the Municipal Government. To investigate DVK's affordability to take on the project, a financial projection has been prepared. The projection shows that the project is fully affordable to DVK, and the Company will financially develop positively – after many years of struggling. The positive development is partly thanks to the current DWSP 2, which among other objectives has a focus on implementing systems to support Accounting and Billing & Collection. The increase in recorded consumers and ensuring higher fee collection efficiency will have a positive effect on DKV's finances during implementation of the AF. To show robustness of the affordability of the project general conservative assumptions for the financial projections have been made including continuation of a reasonable discount to metered consumers and no development in tariffs for non-metered consumers. The assumptions made for the financial projections are presented below.

**Table 4-5: Assumptions for the Financial Projection**

| Topic | Assumption |
|---|---|
| **General** | The projections are made in real terms.<br>The projections include three base years. |
| **Metering and consumption** | Metered residents' consumption will be at a level at 90 lcd. |

| | |
|---|---|
| | Non-metered residents consume 360 lcd, which corresponds to the current norm.<br>The continuation of the metering program and the ongoing implementation of the billing and collection system will add additional 40.000 residents in top of an annual increase in residents of annually 2%.<br>Commercial consumption will grow at a rate at annually 4%.<br>Budgetary consumers will grow at a rate at annually 1.5%. |
| **Tariffs and fee collection** | The tariff structure will transform from a norm based tariff to a metered tariff by 2019.<br>The bill for non-metered households will be maintained at the current level.<br>The bill for the future metered households will be at the same level as the current bill to non-metered households. However a discount of 25% will be maintained to motivate households to switch to a metered supply. Today the discount is around 75% which is not financially viable.<br>General increases in tariff levels apart from the change in tariff system for households have not been included to make the affordability assessment robust.<br>Collection rate will for households increase slowly to reach 75% by 2019. |
| **Production and losses** | The network rehabilitation program will reduce losses of 8% over two years. |
| **Project and financing** | Investments will be of USD 12 million<br>USD 10 million will be provided by IDA, of which 55% is a provided as credit and 45% is provided as a grant. The on-lending of the IDA credit from the Ministry of Finance will be based on similar terms as the on-lending of the IDA funds for DWSP 1.<br>USD 1 million will be provided as counterpart funding. The counterpart funding will be provided DVK as equity contribution.<br>The project will be implemented during three years from 2016 to 2018.<br>From 2019 and onward additional annual investment of TJS 10 million will be made financed by DVK's own funds. |

The projections confirm the positive business case showing:

- Without the project the latest tariff increase and expected improvement in fee collection will improve the financial performance of DVK the coming years.
- With the AF project the financial performance of DVK will improve in the years after implementation.
- With the project there will be no need to further increase tariff levels other than the transformation to a metered tariff system where metered households water & wastewater fees are aligned with non-metered households' water & wastewater fees. Please see below.

The DVK financial projections to 2024 are shown in the back of the annex.

## D. Technical assistance to further strengthen the positive development of DVK

Technical assistance will be provided to support: tariff development with billing and collection; continuation of customer surveys; and financial management in general.

*a) Tariff Study*

To support DVK's further financial development a tariff study will be conducted in the first phase of the Additional Financing. The study will be conducted in coordination with the Anti-Monopoly Commission. The goal of the study is firstly to help DVK's transition to socially responsible block tariffs consistent with cost-recovery and demand management goals; and secondly to mitigate negative financial impact from the metering program till the new tariff system is approved by the authorities and fully implemented.

*Design and implementation of a new Tariff System:* The structure and implementation of a new block tariff system for residential households will be investigated and designed. The new tariff system will be designed and planned for taking into account:

- introducing block tariff system benefits;
- establishment of socially responsible tariff levels at lifeline water consumption for households justified by affordability analysis;
- establishment of responsible tariff levels for other consumer segments;
- adjusting ways of billing and collecting to minimize cost and optimize billing and collection rates by assessment of alternative ways of doing so;
- smooth transformation from the current system justified through assessment of alternative ways of implementation, communication to the public etc.;
- and, optimizing the financial impact on DVK's financial position from the tariff system, billing and collecting justified by financial impact analysis.

The new tariff system is expected to be fully implemented as a part of the project.

*Mitigation of negative impact from metering program:* The experience from the pilot-implementation of water meters show that metered household pays much less in water and wastewater fees than non-metered households. The non-metered households pays water and wastewater fees based on a set water consumption of 360 lcd (Liters per Capita per Day), while the new metered households consume only a fraction of this and typically only 25-35% of the norm. This is naturally a major concern as it has a negative impact on DVK's finances. It is understood that the Anti-Monopoly Commission not at present will allow introduction of a new meter based tariff system until all consumers have water meters installed. How to mitigate a potential negative impact on DVK's finances from the metering program until a new tariff system can be effective has as a part of the Tariff Study fully to be investigated and thoroughly planned for. Delays in implementing a new meter based tariff system aligning water bills paid by metered households to bills of non-metered households will put DVK in a financially unfavorable position.

*b) Continuation of Customer Satisfaction Survey*

The current annual surveys give valuable insights in the status and development of customers' satisfaction and behavior related to the water supply and sanitation to Dushanbe provided by DVK. The CSS is proposed continue under the AF.

*c) Financial Management support to DVK*

Significant improvements in the Financial Management of DVK have been made during DWSP 2 including: implementation of new accounting system; establishment of procedures and adapting IFRS regulations; implementation of billing and collection system with customer database recording increasing number of consumers. The development is made possible by the project as the Financial Manager position at DVK is seven years vacant! To further strengthening of the financial management, the AF will include support to employ a financial manager consultant, who will work closely together with DVK management throughout the AF project. The financial manager will have a primary task of stabilizing the financial position of DVK by: systematically creating financial transparency of DVK; safeguarding revenue by managing billing and collecting; creating awareness by preparing timely budgets and financial reporting; and forecasts the company's financial position to support tariff revision applications.

## Table 4-6: Financial Projections of Dushanbe Vodokanal with the AF project

| *Thousands TJS* | *2012* | *2013* | *2014* | *2015* | *2016* | *2017* | *2018* | *2019* | *2020* | *2021* | *2022* | *2023* | *2024* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Technical Assumptions** | | | | | | | | | | | | | |
| Non-metered households (#) | 172,000 | 163,516 | 129,064 | 119,713 | 123,187 | 132,046 | 141,347 | 135,254 | 135,570 | 135,893 | 136,222 | 136,556 | 136,899 |
| - water and sanitation bill (TJS/hh/month) | 14 | 14 | 18 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 |
| Metered households (#) | 3,485 | 3,485 | 41,233 | 53,990 | 53,990 | 53,990 | 53,990 | 63,990 | 67,659 | 71,401 | 75,218 | 79,112 | 83,083 |
| - water and sanitation bill (TJS/hh/month) | 4 | 4 | 5 | 6 | 6 | 6 | 6 | 17 | 17 | 17 | 17 | 17 | 17 |
| Water production (000 m3/year) | 221,224 | 206,078 | 198,651 | 193,678 | 198,478 | 209,729 | 215,251 | 205,588 | 207,660 | 209,779 | 211,945 | 214,160 | 216,427 |
| Water consumption (000 m3/year) | 56,609 | 71,797 | 66,591 | 85,218 | 87,330 | 92,281 | 97,472 | 95,893 | 96,859 | 97,847 | 98,858 | 99,891 | 100,948 |
| **Income Statement** | | | | | | | | | | | | | |
| Revenue Households | 10,084 | 13,603 | 16,685 | 21,813 | 22,382 | 23,833 | 27,167 | 32,150 | 32,689 | 33,238 | 33,798 | 34,369 | 34,951 |
| Revenue Budget Consumers | 10,764 | 10,312 | 11,103 | 13,580 | 13,784 | 13,991 | 14,201 | 14,414 | 14,630 | 14,849 | 15,072 | 15,298 | 15,528 |
| Revenue Commercial Consumers | 8,514 | 11,162 | 11,090 | 15,035 | 15,533 | 16,050 | 16,588 | 17,147 | 17,729 | 18,334 | 18,964 | 19,618 | 20,299 |
| **Total Revenue** | **29,362** | **35,077** | **38,878** | **50,429** | **51,699** | **53,874** | **57,956** | **63,712** | **65,048** | **66,421** | **67,833** | **69,285** | **70,778** |
| Salaries | 7,757 | 10,022 | 10,659 | 10,659 | 10,659 | 10,659 | 10,659 | 10,659 | 10,659 | 10,659 | 10,659 | 10,659 | 10,659 |
| Electricity | 4,216 | 5,040 | 5,129 | 5,001 | 5,125 | 5,415 | 5,558 | 5,308 | 5,362 | 5,416 | 5,472 | 5,529 | 5,588 |
| Chemicals | 5,424 | 5,076 | 5,045 | 4,919 | 5,041 | 5,326 | 5,467 | 5,221 | 5,274 | 5,328 | 5,383 | 5,439 | 5,496 |
| R&M costs | 3,492 | 3,943 | 5,037 | 5,037 | 5,068 | 5,141 | 5,177 | 5,114 | 5,128 | 5,142 | 5,156 | 5,170 | 5,185 |
| Fuel | 1,951 | 2,374 | 2,125 | 2,125 | 2,138 | 2,169 | 2,184 | 2,158 | 2,163 | 2,169 | 2,175 | 2,181 | 2,187 |
| Other operational costs | 2,695 | 1,016 | 2,252 | 2,252 | 2,263 | 2,289 | 2,302 | 2,280 | 2,285 | 2,289 | 2,294 | 2,300 | 2,305 |
| Taxes | 1,546 | 1,647 | 1,906 | 2,499 | 2,508 | 2,641 | 2,841 | 3,113 | 3,185 | 3,251 | 3,319 | 3,391 | 3,464 |
| **Costs of Operation** | **27,082** | **29,118** | **32,153** | **32,491** | **32,802** | **33,641** | **34,188** | **33,853** | **34,056** | **34,255** | **34,458** | **34,670** | **34,885** |
| **Earnings before Int-Tax-Depri-Amo** | **2,281** | **5,959** | **6,725** | **17,938** | **18,898** | **20,232** | **23,768** | **29,859** | **30,992** | **32,167** | **33,375** | **34,615** | **35,893** |
| Depreciation | 6,476 | 6,648 | 6,921 | 6,921 | 7,514 | 7,044 | 7,980 | 10,234 | 10,219 | 10,205 | 10,192 | 10,180 | 10,169 |
| **Earnings before Interest Tax** | **-4,195** | **-689** | **-196** | **11,017** | **11,383** | **13,188** | **15,788** | **19,625** | **20,773** | **21,961** | **23,183** | **24,435** | **25,724** |
| Financial Expenses | 4,527 | 8,221 | 13,541 | 20,249 | 6,277 | 6,211 | 5,955 | 5,668 | 5,369 | 5,459 | 5,416 | 5,256 | 5,024 |
| **Earnings before Tax** | **-8,722** | **-8,910** | **-13,737** | **-9,232** | **5,107** | **6,977** | **9,832** | **13,957** | **15,404** | **16,503** | **17,767** | **19,179** | **20,700** |
| Income Tax | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,181 | 3,851 | 4,126 | 4,442 | 4,795 | 5,175 |
| **Earnings after Tax** | **-8,722** | **-8,910** | **-13,737** | **-9,232** | **5,107** | **6,977** | **9,832** | **12,776** | **11,553** | **12,377** | **13,325** | **14,385** | **15,525** |
| **Balance Sheet Statement** | | | | | | | | | | | | | |
| **Assets** | **108,197** | **122,122** | **156,084** | **155,803** | **174,772** | **194,875** | **217,435** | **220,445** | **222,211** | **228,173** | **231,472** | **235,527** | **240,440** |
| Cash and cash equivalents | 2,828 | 4,199 | 5,833 | 11,291 | 15,357 | 20,139 | 28,200 | 30,537 | 32,329 | 38,319 | 41,587 | 45,614 | 50,481 |
| Other current assets | 14,292 | 18,778 | 23,232 | 24,414 | 24,831 | 25,196 | 25,675 | 26,582 | 26,775 | 26,953 | 27,176 | 27,385 | 27,599 |
| Current Assets | 17,120 | 22,977 | 29,065 | 35,705 | 40,188 | 45,335 | 53,876 | 57,119 | 59,104 | 65,272 | 68,763 | 72,999 | 78,081 |
| Fixed and intangible assets | 91,077 | 99,145 | 127,019 | 120,098 | 134,584 | 149,539 | 163,560 | 163,326 | 163,107 | 162,901 | 162,709 | 162,529 | 162,359 |
| **Equity and Liabilities** | **108,197** | **122,122** | **156,084** | **155,803** | **174,772** | **194,875** | **217,435** | **220,445** | **222,211** | **228,173** | **231,472** | **235,527** | **240,440** |
| Current Liabilities | 35,733 | 25,246 | 29,742 | 29,088 | 29,768 | 30,048 | 30,171 | 30,030 | 30,111 | 33,596 | 33,736 | 33,854 | 33,921 |
| Long term loans | 35,615 | 26,352 | 29,611 | 31,571 | 41,412 | 51,202 | 60,943 | 59,634 | 58,272 | 53,479 | 48,628 | 43,715 | 38,801 |
| Liabilities | 71,348 | 51,598 | 59,353 | 60,659 | 71,180 | 81,249 | 91,114 | 89,665 | 88,384 | 87,075 | 82,363 | 77,569 | 72,722 |
| Equity | 36,849 | 70,524 | 96,731 | 95,143 | 103,592 | 113,625 | 126,321 | 130,780 | 133,827 | 141,098 | 149,109 | 157,958 | 167,718 |